

UNIVERSITY  
OF ILLINOIS

1897-98





Learning and Labor

# CATALOGUE

OF THE

# University of Illinois

(POSTOFFICE, CHAMPAIGN OR URBANA, ILL.)

1897-98

URBANA, ILLINOIS  
PUBLISHED BY THE UNIVERSITY

77040

# CONTENTS

---

	PAGES
Board of Trustees.....	5
Officers of Administration.....	7
Faculty of the University.....	9
Faculty of the School of Medicine.....	14
Faculty of the School of Pharmacy.....	18
Instructors of the Preparatory School.....	19
State Laboratory of Natural History, Staff.....	19
Agricultural Experiment Station, Staff.....	20
History .....	21
Buildings and Grounds.....	24
Laboratories .....	27
Collections .....	28
Art Gallery.....	32
Library .....	33
Admission .....	35
To Freshman Class.....	35
As Special Students.....	42
To Advanced Standing.....	42
Change in Admission Requirements, after Sept., 1899.....	43
Registration .....	47
Examinations.....	47
Terms and Vacations.....	48
Graduation .....	48
Administration of the University.....	49
Government.....	49
Organization .....	50
College of Literature and Arts.....	53
General Course System.....	54
Specialized Course, or Group, System.....	55
Requirements for Graduation.....	57
Courses of Instruction by years and terms.....	59
Description of Departments.....	60

	PAGES
College of Engineering.....	67
Description of Departments.....	70
Architecture .....	70
Architectural Engineering.....	72
Civil Engineering.....	74
Electrical Engineering.....	75
Mechanical Engineering.....	79
Municipal and Sanitary Engineering.....	82
Physics .....	84
Theoretical and Applied Mechanics.....	85
College of Science.....	87
The Chemical and Physical Group.....	90
The Mathematical Group.....	100
The Natural Science Group.....	107
The Philosophical Group.....	119
College of Agriculture.....	123
Classification of Subjects.....	127
Winter School of Agriculture.....	129
State Library School.....	131
School of Music.....	135
Graduate School.....	138
Law School.....	142
School of Medicine.....	147
School of Pharmacy.....	154
Description of Courses.....	157
Degrees.....	241
Fellowships.....	245
Scholarships.....	247
Prizes.....	249
Beneficiary Aid.....	250
Societies and Clubs.....	250
Special Advantages for Women.....	253
Accredited High Schools.....	255
Military Science.....	260
Physical Training.....	262
Expenses .....	264
Preparatory School.....	267
Lists of Students.....	273
Summary.....	316
Holders of Scholarships, Prizes, and Commissions.....	317
Officers of Battalion.....	318
Calendar.....	319
Index.....	321

# BOARD OF TRUSTEES

---

THE GOVERNOR OF ILLINOIS,		<i>Ex Officio.</i>
JOHN R. TANNER,	Springfield.	
THE PRESIDENT OF THE STATE BOARD OF AGRICULTURE,		"
J. IRVING PEARCE,	Chicago.	
The Sherman House.		
THE SUPERINTENDENT OF PUBLIC INSTRUCTION,		"
SAMUEL M. INGLIS,	Springfield.	
NAPOLEON B. MORRISON,	Odin.	}
JAMES E. ARMSTRONG,	Chicago.	
529 W. Sixty-second Street.		Term of office expires in 1899.
ISAAC S. RAYMOND,	Sidney.	}
ALEXANDER McLEAN,	Macomb.	
SAMUEL A. BULLARD,	Springfield.	
LUCY L. FLOWER,	Chicago.	
The Virginia.		Term of office expires in 1901.
MARY TURNER CARRIEL,	Jacksonville.	}
FRANCIS M. McKAY,	Chicago.	
61 Alice Court.		
THOMAS J. SMITH,	Champaign.	Term of office expires in 1903.

## OFFICERS OF THE BOARD

FRANCIS M. McKAY, . . . Chicago, . . . President.  
 WILLIAM L. PILLSBURY, . . . Urbana, . . . Secretary.  
 ELBRIDGE G. KEITH, . . . Chicago, . . . Treasurer.  
                             Metropolitan National Bank.  
 Professor S. W. SHATTUCK, Champaign, Business Manager.

## EXECUTIVE COMMITTEE

FRANCIS M. McKAY, Chairman: SAMUEL A. BULLARD, THOMAS J. SMITH.

## STANDING COMMITTEES

### AGRICULTURE

ISAAC S. RAYMOND, Chairman: NAPOLEON B. MORRISON,  
 J. IRVING PEARCE, ALEXANDER McLEAN.

### BUILDINGS AND GROUNDS

SAMUEL A. BULLARD, Chairman: THOMAS J. SMITH,  
 JAMES E. ARMSTRONG, LUCY L. FLOWER.

## UNIVERSITY OF ILLINOIS

**FINANCE**

ALEXANDER McLEAN, Chairman: ISAAC S. RAYMOND,  
THOMAS J. SMITH.

**INSTRUCTION**

JAMES E. ARMSTRONG, Chairman: SAMUEL A. BULLARD,  
THOMAS J. SMITH, SAMUEL M. INGLIS.

**PUBLICATION**

THOMAS J. SMITH, Chairman: ISAAC S. RAYMOND,  
MARY T. CARRIEL.

**LIBRARY**

LUCY L. FLOWER, Chairman: MARY T. CARRIEL, JAMES E. ARMSTRONG  
ALEXANDER McLEAN, SAMUEL A. BULLARD.

**STUDENTS' WELFARE**

MARY T. CARRIEL, Chairman: NAPOLEON B. MORRISON,  
SAMUEL M. INGLIS.

**SCHOOL OF PHARMACY**

ALEXANDER McLEAN, Chairman: JAMES E. ARMSTRONG,  
LUCY L. FLOWER, MARY T. CARRIEL,  
NAPOLEON B. MORRISON.

**SCHOOL OF MEDICINE**

JAMES E. ARMSTRONG, Chairman: LUCY L. FLOWER,  
MARY T. CARRIEL, NAPOLEON B. MORRISON,  
ISAAC S. RAYMOND.



# OFFICERS OF ADMINISTRATION

---

## ADMINISTRATIVE OFFICERS IN THE UNIVERSITY

**PRESIDENT:** ANDREW S. DRAPER, LL.D. Office, Library Hall.

**BUSINESS MANAGER:** SAMUEL W. SHATTUCK, C.E. Office, Library Hall. Office hours, 3 to 5 p. m.

**REGISTRAR:** WILLIAM L. PILLSBURY, A.M. Office, Library Hall. Office hours, 2 to 5 p. m.

## COUNCIL OF ADMINISTRATION AND DEANS

**PRESIDENT:** ANDREW S. DRAPER, LL.D.

**DEAN OF THE GENERAL FACULTY AND OF THE GRADUATE SCHOOL:** THOMAS J. BURRILL, PH.D., LL.D. Office, 10 Natural History Hall. Office hour, 11 to 12 a. m.

**DEAN OF THE COLLEGE OF LITERATURE AND ARTS:** DAVID KINLEY, PH.D. Office, 305 University Hall. *Secretary to the Council.* Office hours, 8:30 to 9 a. m., and 1:30 to 2 p. m.

**DEAN OF THE COLLEGE OF ENGINEERING:** N. CLIFFORD RICKER, M.ARCH. Office, 300 Engineering Hall. Office hours, 2:20 to 4:20 p. m.

**DEAN OF THE COLLEGE OF SCIENCE:** STEPHEN A. FORBES, PH.D. Office, 4 Natural History Hall. Office hours, 11 to 12 a. m., and 4 to 5 p. m.

**DEAN OF THE COLLEGE OF AGRICULTURE:** EUGENE DAVENPORT, M.AGR. Office, 6 Natural History Hall. Office hour, 11 to 12 a. m.

**DEAN OF THE WOMAN'S DEPARTMENT:** VIOLET D. JAYNE, A.M. Office, 309 University Hall. Office hour, 11 to 12 a. m.

## OTHER OFFICERS

LIBRARIAN: KATHARINE LUCINDA SHARP. PH.M., B.L.S.  
Office, Library.

SUPERINTENDENT OF BUILDINGS AND GROUNDS: GEORGE  
WASHINGTON GRAHAM, 905 California Street, U. Office,  
Library Hall.

SECRETARY TO THE PRESIDENT: LILLIE HEATH. 311 West  
Washington Street, Champaign. Office, Library Hall.

ADVISORY BOARD OF THE AGRICULTURAL EXPERI-  
MENT STATION

PROFESSOR T. J. BURRILL, President.

FROM THE STATE BOARD OF AGRICULTURE,  
A. D. BARBER, Hamilton.

FROM THE STATE HORTICULTURAL SOCIETY,  
E. A. RIEHL, Alton.

FROM THE STATE DAIRYMEN'S ASSOCIATION,  
H. B. GURLER, DeKalb.

ISAAC S. RAYMOND, Sidney.

NAPOLEON B. MORRISON, Odin.

PROFESSOR STEPHEN A. FORBES.

PROFESSOR EUGENE DAVENPORT.

## ADVISORY BOARD OF THE SCHOOL OF PHARMACY

H. H. ROGERS, Kankakee, Term expires in 1898.

T. C. LOEHR, Carlinville, Term expires in 1899.

HENRY SWANNELL, Champaign, Term expires in 1900.

WM. SEMPILL, Chicago, Term expires in 1901.

A. E. EBERT, Chicago, Term expires in 1902.

W. J. FRISBIE, Bushnell, Term expires in 1903.

# FACULTY

[IN ORDER OF SENIORITY OF APPOINTMENT, EXCEPT THE PRESIDENT.]

- ANDREW SLOAN DRAPER, LL.D., PRESIDENT.  
*President's House, University Campus, U.\**
- JOHN MILTON GREGORY, LL.D., Professor of Political  
Economy, *emeritus.* *Washington, D. C.*
- THOMAS JONATHAN BURRILL, PH.D., LL.D., VICE-PRESI-  
DENT, DEAN OF THE GENERAL FACULTY and Professor of Bot-  
any and Horticulture. *1007 West Green Street, U.*
- SAMUEL WALKER SHATTUCK, C.E., Professor of Mathe-  
matics. *108 West Hill Street, C.*
- EDWARD SNYDER, A.M., Professor of the German Language  
and Literature, *emeritus.* *Pacific Beach, Cal.*
- NATHAN CLIFFORD RICKER, M.ARCH., DEAN OF THE COL-  
LEGE OF ENGINEERING and Professor of Architecture.  
*612 West Green Street, U.*
- IRA OSBORN BAKER, C.E., Professor of Civil Engineering.  
*702 West University Avenue, C.*
- STEPHEN ALFRED FORBES, PH.D., DEAN OF THE COLLEGE  
OF SCIENCE and Professor of Zoölogy.  
*1209 West Springfield Avenue, U.*
- CHARLES WESLEY ROLFE, M.S., Professor of Geology.  
*601 East John Street, C.*
- DONALD McINTOSH, V.S., Professor of Veterinary Science.  
*511 West Park Street, C.*
- ARTHUR NEWELL TALBOT, C.E., Professor of Municipal and  
Sanitary Engineering. *1011 California Avenue, U.*
- ARTHUR WILLIAM PALMER, Sc.D., Professor of Chemistry.  
*614 West Park Street, C.*
- FRANK FORREST FREDERICK, Professor of Art and Design.  
*604 South Mathews Avenue, U.*
- SAMUEL WILSON PARR, M.S., Professor of Applied Chemistry.  
*913 1-2 West Green Street, U.*
- HERBERT JEWETT BARTON, A.M., Professor of the Latin  
Language and Literature. *406 West Hill Street, C.*
- CHARLES MELVILLE MOSS, PH.D., Professor of the Greek  
Language and Literature. *806 South Mathews Avenue, U.*
- DANIEL KILHAM DODGE, PH.D., Professor of the English  
Language and Literature. *210 West White Street, C.*

\*U., stands for Urbana; C., for Champaign.

- LESTER PAIGE BRECKENRIDGE, PH.B., Professor of Mechanical Engineering. *1005 West Green Street, U.*
- DAVID KINLEY, PH.D., DEAN OF THE COLLEGE OF LITERATURE AND ARTS and Professor of Economics. *801 South Wright Street, C.*
- DANIEL HARMON BRUSH, Capt. 17th Infantry, U.S.A., Professor of Military Science. *509 West University Avenue, C.*
- EUGENE DAVENPORT, M.AGR., DEAN OF THE COLLEGE OF AGRICULTURE and Professor of Animal Husbandry. *Experiment Station Farm, U.*
- ARNOLD TOMPKINS, PH.D., Professor of Pedagogy. *410 East John Street, C.*
- ALBERT PRUDEN CARMAN, Sc.D., Professor of Physics. *403 West Hill Street, C.*
- WALTER HOWE JONES, Professor of Music. *603 East Daniel Street, C.*
- EVARTS BOUTELL GREENE, PH.D., Professor of History and SECRETARY. *905 California Avenue, U.*
- GEORGE ENOS GARDNER, A.M., Professor of Real Property, Torts, and Evidence. *507 West University Avenue, C.*
- CHARLES CHURCHILL PICKETT, A.B., Professor of Contracts, Equity, and Pleadings. *620 West Church Street, C.*
- KATHARINE LUCINDA SHARP, PH.M., B.L.S., Director of the Library School; Professor of Library Economy; Head Librarian. *205 East Green Street, C.*
- GEORGE THEOPHILUS KEMP, M.D., PH.D., Professor of Physiology. *102 West Hill Street, C.*
- GEORGE WILLIAM MYERS, PH.D., Professor of Astronomy and Applied Mathematics and Director of the Observatory. *601 West Green Street, U.*
- EDGAR J TOWNSEND, PH.M., Associate Professor of Mathematics. *402 West Clark Street, C.*
- JAMES McLAREN WHITE, B.S., Associate Professor of Architecture. *307 West Hill Street, C.*
- HENRY HOUGHTON EVERETT, Associate Professor of Physical Training and Director of the Gymnasium. *905 West Green Street, U.*
- LEWIS ADDISON RHOADES, PH.D., Associate Professor of the German Language and Literature. *912 California Avenue, U.*

- WILLIAM HUMPHREY VANDERVOORT, M.E., Assistant Professor of Mechanical Engineering.  
903 West Green Street, U.
- WILLIAM DAVID PENCE, C.E., Assistant Professor of Civil Engineering.  
909 West Green Street, U.
- HARRY SANDS GRINDLEY, Sc.D., Assistant Professor of Chemistry.  
918 West Green Street, U.
- THOMAS ARKLE CLARK, B.L., Assistant Professor of Rhetoric.  
304 West Church Street, C.
- HERMAN S PIATT, Ph.D., Assistant Professor of Romance Languages.  
930 West Green Street, U.
- BERNARD VICTOR SWENSON, B.S., Assistant Professor of Electrical Engineering.  
511 West University Avenue, C.
- ARTHUR HILL DANIELS, Ph.D., Assistant Professor of Philosophy.  
702 West Green Street, U.
- GEORGE DAY FAIRFIELD, A.M., Assistant Professor of Romance Languages.  
804 West Illinois Street, U.
- CHARLES WESLEY TOOKE, A.M., Assistant Professor of Public Law and Administration.  
508 West Green Street, U.
- FRED ANSON SAGER, B.S., Assistant Professor of Physics.  
502 West Elm Street, U.
- WILLIAM ESTY, B.S., A.M., Assistant Professor of Electrical Engineering.  
905 California Avenue, U.
- FRANK SMITH, A.M., Assistant Professor of Zoölogy, Secretary of the College of Science.  
310 West Clark Street, C.
- CYRUS DANIEL McLANE, B.S., Assistant Professor of Architectural Construction.  
311 West Columbia Avenue, C.
- PERRY GREELEY HOLDEN, M.S., Assistant Professor of Agricultural Physics.  
903 California Avenue, U.
- JOHN EDWARD MCGILVREY, A.B., Assistant Professor of Pedagogy and High School Visitor.  
1006 West Illinois Street, U.
- JAMES DAVID PHILLIPS, B.S., Assistant Professor of General Engineering Drawing.  
412 West Church Street, C.
- SETH JUSTIN TEMPLE, Ph.B., Assistant Professor of Architecture.  
719 West Hill Street, C.
- VIOLET DELILLE JAYNE, A.M., DEAN OF THE WOMAN'S DEPARTMENT and Assistant Professor of the English Language and Literature.  
112 East Green Street, C.
- CHARLES ATWOOD KOFOID, Ph.D., Assistant Professor of Zoölogy.  
909 California Avenue, U.

## INSTRUCTORS AND ASSISTANTS

- ALTON CYREL BURNHAM, B.S., Instructor in Mathematics.  
*1308 Springfield Avenue, U.*
- OSCAR QUICK, A.M., Instructor in Physics.  
*907 West Green Street, U.*
- EDWARD JOHN LAKE, B.S., Instructor in Free-Hand Drawing.  
*616 West Church Street, C.*
- ELLA HORTENSE MORRISON, Director of Physical Training  
for Women. *807 South Sixth Street, C.*
- GEORGE A HUFF, JR., Assistant Director of Gymnasium and  
Coach of Athletic Teams. *409 West University Avenue, C.*
- WILBER JOHN FRASER, B.S., Instructor in Dairying.  
*1003 South Wright Street, C.*
- CARLTON RAYMOND ROSE, PH.M., Instructor in Chemistry.  
*806 South Sixth Street, C.*
- JOSEPH CULLEN BLAIR, Instructor in Horticulture.  
*1411 West Springfield Avenue, U.*
- MARGARET MANN, Cataloguer and Instructor in Library Econ-  
omy. *205 East Green Street, C.*
- ALISON MARION FERNIE, R.A.M. (London), P.A.M. (Phil-  
adelphia), Instructor in Vocal Music.  
*407 East Daniel Street, C.*
- AGNES SPOFFORD COOK, A.B., Instructor in Rhetoric.  
*112 East Green Street, C.*
- ARTHUR CHARLES HOWLAND, PH.D., Instructor in Ancient  
and Mediæval History. *905 California Avenue, U.*
- CHESTER HARVEY ROWELL, PH.B., Instructor in German.  
*807 South Wright Street, C.*
- GEORGE HENRY MEYER, A.M., Instructor in German.  
*912 California Avenue, U.*
- WILLIAM HARRISON KAVANAUGH, M.E., Instructor in  
Mechanical Engineering. *504 West Illinois Street, U.*
- JOHN PERHAM HYLAN, PH.D., Instructor in Psychology.  
*603 East Daniel Street, C.*
- ALICE PUTNAM, Instructor in Violin.  
*405 South Wright Street, C.*
- CHARLES THORNTON WILDER, B.S., Instructor in Photog-  
raphy and in charge of Blue-Print Room.  
*305 West Hill Street, C.*
- MAUDE WHEELER STRAIGHT, A.B., Reference Librarian  
and Instructor in Library Economy. *205 East Green Street, C.*

- CHARLES FREDERICK HOTTES, M.S., Assistant in Botany.  
405 North State Street, C.
- CLENDON VAN METER MILLAR, M.S., Assistant in Chemistry, on State Water Survey. 608 South Busey Avenue, U.
- WILLIAM CHARLES BRENKE, B.S., Assistant in Mathematics. 506 South Fifth Street, C.
- JESSIE YOUNGE FOX, Assistant in Piano. 603 East Daniel Street, C.
- JAMES HARRY MCKEE, Assistant in Mechanical Engineering. 1304 West Springfield Avenue, U.
- GEORGE DAVID HUBBARD, B.S., Assistant in Geology. 403 West Illinois Street, U.
- HUBERT ANTHONY WEBBER, B.S., Assistant in General Engineering Drawing. 211 East White Street, C.
- CHARLES VICTOR SEASTONE, B.S., Assistant in Theoretical and Applied Mechanics. 307 West Green Street, U.
- RICHARD BIRD KETCHUM, B.S., Assistant in Civil Engineering. 915 West Illinois Street, U.
- HUBERT VINTON CARPENTER, B.S., Assistant in Physics. 506 East Green Street, C.
- JOHN LANGLEY SAMMIS, B.S., Assistant in Chemistry. 307 South Wright Street, C.
- ROBERT WATT STARK, B.S., Assistant in Chemistry, on State Water Survey. 616 West Church Street, C.
- MATTHEW BROWN HAMMOND, PH.D., Assistant in Economics. 804 West Illinois Street, U.
- ANNA FOSSLER, B.Sc., Library Assistant. 606 Busey Avenue, U.
- CYRIL BALFOUR CLARK, Foreman in Machine Shops. 602 East John Street, C.
- ALBERT ROOT CURTISS, Foreman in Wood Shops. 606 East John Street, C.
- HENRY JONES, Foreman in Blacksmith Shop. 602 East Green Street, C.
- JOSEPH HENDERSON WILSON, Foreman in Foundry. 602 Stoughton Street, C.
- DAVID HOBART CARNAHAN, A.B., Fellow in College of Literature and Arts. 205 West Hill Street, C.
- ALBERT CLAUDE HOBART, B.S., Fellow in College of Engineering. 713 Elm Street, U.

- EDWARD WARREN POOLE, B.S., Fellow in College of Engineering. *506 East Green Street, C.*
- FREDERICK WILLIAM SCHACHT, B.S., Fellow in College of Science. *711 West Illinois Street, U.*
- ARTHUR ERNEST PAUL, B.S., Fellow in College of Science. *701 South Wright Street, C.*
- ALBERT ST. JOHN WILLIAMSON, Assistant in Military Science. *1307 West Main Street, U.*

## SCHOOL OF MEDICINE

### COLLEGE OF PHYSICIANS AND SURGEONS OF CHICAGO

#### FACULTY

- WILLIAM E. QUINE, M.D., DEAN, Professor of Principles and Practice of Medicine and Clinical Medicine. *Columbus Memorial Building, Chicago.*
- DANIEL A. K. STEELE, M.D., ACTUARY, Professor of Principles and Practice of Surgery and Clinical Surgery. *Columbus Memorial Building, Chicago.*
- ALBERT E. HOADLEY, M.D., Professor of Orthopedic Surgery, Diseases of Joints, and Clinical Surgery. *Venetian Building, Chicago.*
- OSCAR A. KING, M.D., Professor of Neurology, Psychiatry, and Clinical Medicine. *70 State Street, Chicago.*
- HENRY PARKER NEWMAN, A.M., M.D., Professor of Clinical Gynecology. *Columbus Memorial Building, Chicago.*
- JOHN A. BENSON, A.M., M.D., Professor of Physiology of the Nervous System. *Columbus Memorial Building, Chicago.*
- BAYARD HOLMES, B.S., M.D., Senior Professor of Principles of Surgery. *Columbus Memorial Building, Chicago.*
- JOHN H. CURTIS, M.D., Professor of Therapeutics, Clinical Instructor in Medicine. *Chicago View Building, Chicago.*
- G. FRANK LYDSTON, M.D., Professor of Genito-Urinary Surgery and Venereal Diseases. *Reliance Building, Chicago.*
- ROBERT H. BABCOCK, A.M., M.D., Professor of Clinical Medicine and Diseases of the Chest. *Columbus Memorial Building, Chicago.*
- BOERNE BETTMAN, M.D., Professor of Diseases of the Eye and Ear, and Clinical Ophthalmology. *Venetian Building, Chicago.*



- JOHN E. HARPER, A.M., M.D., Associate Professor of Diseases of the Eye and Ear, and Clinical Ophthalmology.  
*Masonic Temple, Chicago.*
- J. M. G. CARTER, A.M., Sc.D., Ph.D., M.D., Professor of Clinical and Preventive Medicine.  
*Waukegan.*
- W. S. CHRISTOPHER, M.D., Professor of Pediatrics.  
*408 Center Street, Chicago.*
- JOHN B. MURPHY, M. D., Professor of Clinical Surgery.  
*Venetian Building, Chicago.*
- HENRY T. BYFORD, A.M., M.D., Professor of Gynecology and Clinical Gynecology.  
*Reliance Building, Chicago.*
- WILLIAM ALLEN PUSEY, A.M., M.D., SECRETARY OF THE FACULTY and Professor of Dermatology and Clinical Dermatology.  
*Columbus Memorial Building, Chicago.*
- MOREAU R. BROWN, M.D., Professor of Rhinology and Laryngology.  
*Venetian Building, Chicago.*
- T. A. DAVIS, M.D., Professor of Principles of Surgery.  
*987 Jackson Boulevard, Chicago.*
- J. A. WESENER, Ph.C., M.D., Professor of Chemistry. *College.*
- T. MELVILLE HARDIE, A.M., M.D., Professor of Otology.  
*Venetian Building, Chicago.*
- W. AUGUSTUS EVANS, M.D., Professor of Pathology and Superintendent of the Laboratories.  
*Columbus Memorial Building, Chicago.*
- FRANK B. EARLE, M.D., Professor of Obstetrics.  
*903 West Monroe Street, Chicago.*
- HENRY L. TOLMAN, Lecturer on Medical Jurisprudence.  
*928 Chicago Opera House Block, Chicago.*
- F. R. SHERWOOD, M.D., Professor of Anatomy.  
*70 Madison Street, Chicago.*
- W. T. ECKLEY, M.D., Professor and Demonstrator of Anatomy.  
*College.*
- ADOLPH GEHRMANN, Professor of Bacteriology.  
*3816 Ellis Avenue, Chicago.*
- J. N. BARTHOLOMEW, B.S., M.D., Professor of Surgical Anatomy.  
*133 Lincoln Avenue, Chicago.*
- A. H. BRUMBACK, M.D., Professor of Physical Diagnosis.  
*Reliance Building, Chicago.*
- EDWARD C. SEUFERT, M.D., Professor of Biology.  
*827 Milwaukee Avenue, Chicago.*
- G. W. POST, A.M., M.D., Adjunct Professor of the Practice of Medicine.  
*2081 West Lake Street, Chicago.*

- ALBERT H. BURR, A.M., M.D., Adjunct Professor of the Practice of Medicine. *Reliance Building, Chicago.*
- GEORGE F. BUTLER, PH.G., M.D., Professor of Materia Medica and Clinical Medicine. *Columbus Memorial Building, Chicago.*
- E. G. EARLE, M.D., Professor of Histology and Microscopy. *270 North Avenue, Chicago.*
- J. T. MILNAMOW, M.D., Professor of Physical Diagnosis. *1613 Park Avenue, Chicago.*
- W. M. HARSHA, M.D., Professor of Operative and Clinical Surgery. *Columbus Memorial Building, Chicago.*
- M. L. GOODKIND, M.D., Adjunct Professor of General Diagnosis. *3035 Indiana Avenue, Chicago.*
- F. E. WYNEKOOP, B.S., M.D., Professor of Biology. *1562 West Monroe Street, Chicago.*
- A. W. HARLAN, A.M., M.D., D.D.S., Professor of Dental Surgery. *Masonic Temple, Chicago.*
- T. B. WIGGIN, M.D., Professor of Physiology. *Reliance Building, Chicago.*
- W. H. G. LOGAN, D.D.S., Professor of Dental Surgery. *785 Winthrop Avenue, Chicago.*
- C. M. BURROWS, M.D., Professor of Medical Jurisprudence. *4305 Oakenwald Avenue, Chicago.*

**LECTURERS, DEMONSTRATORS, AND CLINICAL  
INSTRUCTORS**

- W. E. GAMBLE, B.S., M.D., Clinical Instructor in Ophthalmology and Otology. *264 South Halsted Street, Chicago.*
- FRANKLIN S. CHENEY, A.M., M.D., Lecturer on Diseases of Children and Clinical Instructor in Medicine. *1004 West Madison Street, Chicago.*
- CARL BECK, M.D., Instructor in Surgical Pathology. *Reliance Building, Chicago.*
- A. McDIARMID, M.D., Lecturer on Obstetrics. *Columbus Memorial Building, Chicago.*
- W. L. BALLINGER, M.D., Lecturer on Rhinology and Laryngology. *Reliance Building, Chicago.*
- F. W. E. HENKEL, M.D., Lecturer on Materia Medica. *538 Ashland Block, Chicago.*
- CHAS. M. OUGHTON, M.D., Lecturer on Surgical Anatomy. *5410 Jefferson Avenue, Chicago.*

- S. G. WEST, M.D., Lecturer on Gynecology.  
*Columbus Memorial Building, Chicago.*
- C. C. O'BYRNE, M.D., Instructor in Pathology and Clinical Instructor in Surgery, Rhinology and Laryngology.  
*7472 Monroe Street, Chicago.*
- RICHARD FYFE, M.D., Clinical Instructor in Orthopedics.  
*84 North Robey Street, Chicago.*
- W. E. COATY, JR., M.D., Instructor in Bacteriology and Pathology.  
*668 West Twelfth Street, Chicago.*
- T. A. DOEDERLEIN, M.D., Instructor in Pathology.  
*1003 North Halsted Street, Chicago.*
- C. W. BARRETT, M.D., Instructor in Gynecology.  
*438 LaSalle Avenue, Chicago.*
- M. CORBETT, M.D., Clinical Instructor in Gynecology.  
*1086 West Twelfth Street, Chicago.*
- H. PALMER FINDLAY, M.D., Clinical Instructor in Gynecology.  
*2090 Jackson Boulevard, Chicago.*
- ROSA ENGLEMAN, M.D., Clinical Instructor in Children's Diseases.  
*3034 Indiana Avenue, Chicago.*
- BENJAMIN FELTENSTEIN, Clinical Instructor in Children's Diseases.  
*California Avenue, Chicago.*
- C. L. LENARD, M.D., Clinical Instructor in Children's Diseases.  
*467 Milwaukee Avenue, Chicago.*
- W. M. BURROUGHS, M.D., Clinical Instructor in Genito-Urinary and Skin Diseases.  
*885 North Avenue, Chicago.*
- W. H. HUNTER, M.D., Clinical Instructor in Genito-Urinary and Skin Diseases.  
*Cook County Hospital, Chicago.*
- B. S. ROGERS, M.D., Clinical Instructor in Genito-Urinary and Skin Diseases.  
*325 West Madison Street, Chicago.*
- H. E. WAGNER, M.D., Clinical Instructor in Genito-Urinary and Skin Diseases.  
*74 Lincoln Avenue, Chicago.*
- A. C. CROFTON, M.D., Clinical Instructor in Chest Diseases.  
*Columbus Memorial Building, Chicago.*
- C. M. BALLARD, M.D., Clinical Instructor in Chest Diseases.  
*402 South Paulina Street, Chicago.*
- H. E. SANTER, M.D., Clinical Instructor in Chest Diseases.  
*1238 West Lake Street, Chicago.*
- G. H. LAWRENCE, M.D., Clinical Instructor in Chest Diseases.  
*Oakley Avenue and Madison Street, Chicago.*
- ANNA HOLMES, M.D., Clinical Instructor in Nervous Diseases.  
*70 State Street, Chicago.*

- U. G. DARLING, M.D., Clinical Instructor in Nervous Diseases.  
*101 West Madison Street, Chicago.*
- F. F. SEVILLE, M.D., Clinical Instructor in General Medicine.  
*1620 West Madison Street, Chicago.*
- R. H. BROWN, M.D., Clinical Instructor in Rhinology and Laryngology.  
*1211 West Van Buren Street, Chicago.*
- F. A. PHILLIPS, M.D., Clinical Instructor in Ophthalmology and Otology.  
*380 South Robey Street, Chicago.*
- H. W. BERARD, M.D., Clinical Instructor in Ophthalmology and Otology.  
*40 Rush Street, Chicago.*
- F. J. EHRMAN, M.D., Assistant in Surgery and Clinical Instructor in Surgery.  
*3488 Archer Avenue, Chicago.*
- P. B. HAYES, M.D., Clinical Instructor in Surgery.  
*1359 Jackson Street, Chicago.*
- THEODORE TIEKEN, Curator of the Laboratories. *College.*
- MISS E. M. HEELAN, Clerk. *College.*
- J. S. TOMLINSON, Superintendent. *College.*

## SCHOOL OF PHARMACY

### FACULTY

- FREDERICK MARION GOODMAN, PH.G., DEAN OF THE FACULTY, Professor of Materia Medica and Botany and Director of the Microscopical Laboratory.  
*465 State Street, Chicago.*
- CARL SVANTE NICANOR HALLBERG, PH.G., Professor of Theoretical and Practical Pharmacy and Director of the Dispensing Laboratory.  
*358 Dearborn Street, Chicago.*
- WILLIAM AUGUST PUCKNER, PH.G., Professor of Physics and Chemistry and Director of the Chemical Laboratory.  
*75 Wells Street, Chicago.*
- FRANKLIN SAMUEL HERETH, Director of the Pharmaceutical Laboratory.  
*75 Wells Street, Chicago.*
- WILLIAM BAKER DAY, PH.G., SECRETARY OF THE FACULTY, Instructor in Materia Medica and Microscopy.  
*465 State Street, Chicago.*
- GEORGE EDWIN CASE, PH.G., Instructor in Pharmacy.  
*358 Dearborn Street, Chicago.*
- LOUIS IGNATIUS SCHREINER, PH.G., Assistant in Microscopy.  
*465 State Street, Chicago.*
- EDMUND NORRIS GATHERCOAL, PH.G., Assistant in Microscopy.  
*465 State Street, Chicago.*

## PREPARATORY SCHOOL

## INSTRUCTORS

EDWARD GARDNIER HOWE, PRINCIPAL.

*South Mathews Avenue, U.*

LILLIE ADELLE CLENDENIN, Instructor in English.

*202 West Green Street, U.*

REUBEN S DOUGLASS, A.B., Assistant in Mathematics.

*403 West Hill Street, C.*

CHARLES BREWSTER RANDOLPH, A.B., Instructor in  
Greek and Latin.

*508 East John Street, C.*

CLARENCE WALWORTH ALVORD, A.B., Instructor in His-  
tory and Mathematics.

*608 East Clark Street, C.*

STATE LABORATORY OF NATURAL  
HISTORY

## LABORATORY STAFF

PROFESSOR STEPHEN ALFRED FORBES, PH.D., Director of  
State Laboratory and State Entomologist.

*1209 West Springfield Avenue, U.*

FRANK SMITH, A.M., Assistant Zoölogist.

*310 West Clark Street, C.*

CHARLES ARTHUR HART, Systematic Curator of Collections.

*917 West Green Street, U.*

CHARLES ATWOOD KOFOID, PH.D., Superintendent of Bio-  
logical Station.

*909 California Avenue, U.*

CHARLES CHRISTOPHER ADAMS, B.S., Entomological As-  
sistant.

*917 West Green Street, U.*

MARY JANE SNYDER, Secretary.

*806 South Sixth Street, C.*

HENRY CLINTON FORBES, Librarian and Business Agent.

*912 West Illinois Street, U.*

LYDIA MOORE HART, Artist.

*917 West Green Street, U.*

## AGRICULTURAL EXPERIMENT STATION

## STATION STAFF

PROFESSOR EUGENE DAVENPORT, M.AGR., DIRECTOR, Agri-  
culturist.

*Experiment Station Farm, U.*

- PROFESSOR THOMAS JONATHAN BURRILL, PH.D., Horticulturist and Botanist. *1007 West Green Street, U.*
- CYRIL GEORGE HOPKINS, M.S., Chemist. *409 West Main Street, U.*
- PROFESSOR STEPHEN ALFRED FORBES, PH.D., Consulting Entomologist. *1209 West Springfield Avenue, U.*
- PROFESSOR DONALD MCINTOSH, V.S., Consulting Veterinarian. *511 West Park Street, C.*
- GEORGE PERKINS CLINTON, M.S., Assistant Botanist. *913 California Avenue, U.*
- WILBER JOHN FRASER, B.S., Assistant in charge of Dairying. *1003 South Wright Street, C.*
- PERRY GREELEY HOLDEN, B.S., Assistant Agriculturist. *903 California Avenue, U.*
- JOSEPH CULLEN BLAIR, Assistant Horticulturist. *1411 West Springfield Avenue, U.*

# UNIVERSITY OF ILLINOIS

---

## LOCATION

The University of Illinois is situated in Champaign County, in the eastern central part of the state between the cities of Champaign and Urbana, within the corporate limits of the latter. It is one hundred and twenty-eight miles south of Chicago, at the junction of the Illinois Central, the Cleveland, Cincinnati, Chicago and St. Louis, and the Wabash railroads. The country around is a rich and prosperous agricultural region. The cities of Urbana and Champaign have a combined population of about 15,000.

## HISTORY

In 1862 the national government donated to each state in the Union public land scrip in quantity equal to 30,000 acres for each senator and representative in congress, "for the endowment, support and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts \* \* \* \* in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

On account of this grant the state pays the University, semi-annually, interest at the rate of five per cent. on about \$460,000, and the University owns about 11,000 acres of unimproved land worth approximately \$140,000.

To secure the location of the University several counties entered into competition by proposing to donate to its use specified sums of money, or their equivalent. Cham-

paign County offered a large brick building, erected for a seminary and nearly completed, about 1,000 acres of land, and \$100,000 in county bonds. To this the Illinois Central Railroad added \$50,000 in freight. In consideration of this offer the institution was located, May 8, 1867, in the suburbs of Urbana.

The state legislature has from time to time appropriated various sums for permanent improvements, as well as for maintenance. The present value of the entire property and assets is estimated at \$1,600,000.

The institution was incorporated the last day of February, 1867, under the name of the Illinois Industrial University, and placed under the control of a Board of Trustees, constituted of the Governor, the Superintendent of Public Instruction and the President of the State Board of Agriculture, as *ex-officio* members, and twenty-eight citizens appointed by the Governor. The chief executive officer, usually called President, was styled Regent, and was made *ex officio* a member of the Board and presiding officer both of the Board of Trustees and of the Faculty.

In 1873 the Board of Trustees was reorganized, the number of appointed members being reduced to nine and of *ex-officio* members to two—the Governor and the President of the State Board of Agriculture. In 1887 a law was passed making membership elective at a general state election and restoring the Superintendent of Public Instruction as an *ex-officio* member. There are, therefore, now three *ex-officio* members and nine by public suffrage. Since 1873 the President of the Board has been chosen by the members from among their own number for a term of one year.

The University was opened to students March 2, 1868, when there were present, beside the Regent, three professors and about fifty students. During the first term another instructor was added, and the number of students increased to 77—all young men.

During the first term instruction was given in algebra, geometry, physics, history, rhetoric, and Latin. Work on



the farm and gardens or about the buildings was at first compulsory for all students, but in March of the next year compulsory labor was discontinued, save when it was made to serve as a part of class instruction. A chemical laboratory was fitted up during the autumn of 1868. Botanical laboratory work began the following year. In January, 1870, a mechanical shop was fitted up with tools and machinery, and here was begun the *first shop instruction* given in any American university. During the summer of 1871 the present Engineering Laboratory was erected and equipped for students' shop work in both wood and iron.

By vote, March 9, 1870, the Trustees admitted women as students. During the year 1870-71 twenty-four availed themselves of the privilege. Since that time they have constituted from one-sixth to one-fifth of the total number of students.

By the original state law certificates showing the studies pursued and the attainments in each were given instead of the usual diplomas and degrees. The certificates proved unsatisfactory to the holders, and in 1877 the legislature gave the University authority to confer degrees.

In 1885 the legislature changed the name of the institution to the "University of Illinois."

During the same session of the legislature a bill was passed transferring the State Laboratory of Natural History from the Illinois State Normal University to the University of Illinois. This Laboratory was created by law for the purpose of making a natural history survey of the state, the results of which should be published in a series of bulletins and reports, and for the allied purpose of furnishing specimens illustrative of the flora and fauna of the state to the public schools and to the state museum. For these purposes direct appropriations are made by the legislature from session to session. A large amount of material has been collected and extended publications have been made in both the forms above mentioned.

By an act approved March 2, 1887, the national gov-

ernment appropriated \$15,000 per annum to each state for the purpose of establishing and maintaining, in connection with the colleges founded upon the congressional act of 1862, agricultural experiment stations, "to aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science." Under this provision the station for Illinois was placed under the direction of the Trustees of the University, and its grounds were located on the University farm. At least one bulletin of results is published every three months, and the copies are gratuitously distributed over the state. Editions of 18,000 copies are now issued.

For the more complete endowment of the state institutions founded upon the act of 1862, the congress of the United States, by a supplementary law passed in 1890, made further appropriations. Under this enactment each such college or university received the first year \$15,000, the second \$16,000, and thereafter was to receive \$1,000 per annum additional to the amount of the preceding year, until the amount reached \$25,000, which sum was to be paid yearly thereafter.

The total appropriations by the state to the University for all purposes to date amount to \$1,793,164.

### BUILDINGS AND GROUNDS

The land occupied by the University and its several departments embraces about 210 acres.

*The Chemical Laboratory* is a building 75 by 120 feet, and two stories high, with basement. It contains general laboratories for students, instructors' laboratories, lecture rooms, store rooms, scale rooms, and various apartments for special purposes.

*Engineering Hall* has a frontage of 200 feet, a depth of 76 feet on the wings and 138 feet in the center. The first story contains the laboratories of the departments of physics

and electrical engineering, and the masonry laboratories and instrument rooms of the department of civil engineering. The second story contains the lecture room and the preparation rooms of the department of physics, and the recitation and drawing rooms, cabinets, and studies of the departments of civil and municipal engineering. The third story contains the laboratory of the department of physics, the drawing rooms, lecture rooms, cabinets, and studies of the mechanical departments, as well as the library, the office, and the faculty parlor. The fourth story is devoted to the department of architecture, and contains drawing and lecture rooms, cabinets, a photo studio, and a blue-print laboratory.

*The Wood Shops and Testing Laboratory* is two stories high, 126 feet in length, and 88 feet in width, and contains the laboratory of applied mechanics, the hydraulic laboratory, and the mechanical engineering laboratory. The wood shop of the mechanical engineering department is situated on the first floor of this building.

*The Metal Shops* is a one-story brick building, 50 by 250 feet. It contains a lecture room, two office rooms, a machine shop, a foundry, and a forge shop. The machine shop is 48 by 140 feet. Power is brought to this shop from the Wood Shops and Testing Laboratory by a 30-horse power rope drive. A three-ton traveling crane of 12 foot span covers the center of the floor for the entire length, extending over a covered driveway between the machine shop and foundry. The floors of the foundry, cupola room, and forge shop are three feet below the floor of the machine shop.

*The Mechanical and Electrical Engineering Laboratory* is a pressed brick building, two stories high, 100 feet long and 50 feet wide, with a one-story wing 90 feet long and 50 feet wide. There is also a basement under the main part, containing some special testing rooms, store rooms, and the toilet and wash rooms.

*The Central Heating Station* is a brick building, 55 by 120 feet. It contains the apparatus used for heating the

buildings on the campus. An annex contains the pump room and the stock room. The pipes of the heating system and the wires for power and light, are carried from the Central Heating Station to the several buildings through brick tunnels  $6\frac{1}{2}$  feet high by 6 feet wide. The length of tunnel thus far constructed is 1,800 feet.

*Military Hall*, 100 by 150 feet, in one grand hall, gives ample space for company and battalion manoeuvres and for large audiences upon special occasions.

*Natural History Hall* is 134 by 94 feet, with basement, two main stories and an attic. It is occupied by the departments of botany, zoölogy, physiology, mineralogy, and geology, for each of which there are laboratories, lecture rooms, and offices; it also contains the office and equipments of the State Laboratory of Natural History, and of the State Entomologist, as well as the office, library, and chemical laboratory of the Agricultural Experiment Station. There are six laboratory rooms on each of the main floors—sufficient altogether to accommodate two hundred students, besides offering abundant facilities for the private work of the instructors.

*The Astronomical Observatory* is in the form of the letter T, the stem of which extends toward the south. The equatorial room, surmounted by the dome, is at the intersection of the stem and bar of the T. Besides the equatorial room the Observatory contains four transit rooms, a clock room, a recitation room, a study, and dark rooms for photographic purposes.

*University Hall* occupies three sides of a quadrangle, measuring 214 feet in front and 122 feet upon the wings. It is devoted almost exclusively to class rooms.

The new *Library Building* is 167 by 113 feet, with a tower 132 feet high. The main floor contains the reference room, the reading room, the conversation room, the Library School lecture room, and the delivery room, which opens into the second story of the book-stack. The second floor contains the Library School class room, four seminary

rooms, and the administrative offices of the University. The basement contains well lighted rooms, which are at present used for various purposes. The book-stack is a rear wing to the building, separated from the rest of it by a fire-proof wall. The stack will eventually contain five stories, and will accommodate 150,000 volumes. At present only three stories are fitted with shelving.

There are, in addition to these buildings, a veterinary hall, four dwellings, three large barns and two greenhouses.

## LABORATORIES

### SCIENCE LABORATORIES\*

The *botanical, geological, physiological, and zoological laboratories* are in Natural History Hall.

The *chemical laboratory* occupies the building of the same name, already described.

The *physical laboratory* is in Engineering Hall. It is provided with piers, a constant temperature room and other conveniences for measurement work.

The *psychological laboratory*, in Natural History Hall, is well provided with apparatus of many different kinds for use in experimental study, research, and instruction.

### ENGINEERING LABORATORIES

The *cement laboratory* of the department of civil engineering occupies rooms in Engineering Hall, and is provided with slate tables, testing machines, molding machines, sieves, etc., and sample barrels of hydraulic cement, varieties of sand, and other necessary materials.

The *electrical engineering laboratory* is partly in Engineering Hall and partly in the Mechanical and Electrical Engineering Laboratory.

The *mechanical laboratory* occupies a part of the Wood

---

\*For a more detailed account of these laboratories, see under the appropriate College.

Shops and Testing Laboratory, and each of its departments is equipped for practical work by students.

The *laboratory of applied mechanics* is located in the Wood Shops and Testing Laboratory.

#### SPECIAL LABORATORIES FOR RESEARCH

The *laboratory of the Agricultural Experiment Station* occupies a part of the basement of Natural History Hall.

The laboratory rooms of the *State Laboratory of Natural History* are in Natural History Hall.

A *Biological Experiment Station* has been established by the University on the Illinois River at Havana, Illinois, and equipped for field and experimental work in aquatic biology. It has its separate staff, but is open to students of the University at all times, on application, and to special students not otherwise connected with the University during the summer months.

A laboratory for *sanitary water analysis* has been equipped with all necessary appliances, and chemical investigation of the water supplies of the state is carried on.

#### COLLECTIONS\*

##### AGRICULTURAL

A large room in University Hall is devoted to the exhibition of the products of the industrial arts, especially of agriculture. Prominent among the agricultural specimens exhibited is an excellent collection of the sub-species and varieties of Indian corn. There is also a collection of small grains and of grasses; a collection of fibers in various states of manufacture, and a large collection illustrating the forestry of Illinois, Florida, and California. The exhibits made by the University at the Centennial and at the Cotton Exposition at New Orleans find a permanent abode here; large additions have also been made of materials received from the Columbian Exposition of 1893.

\*For a more detailed account of the collections in the different departments, see the appropriate subject under each College.

## BOTANICAL

The herbarium contains nearly all the species of flowering plants indigenous to Illinois, including a complete set of grasses and sedges. The flora of North America is fairly well represented, and a considerable collection of foreign species has been made. A collection of fungi includes a full set of those most injurious to other plants, causing rusts, smuts, molds, etc. A collection of wood specimens from two hundred species of North American trees well illustrates the varieties of native wood.

Plaster casts represent fruits of many of the leading varieties as well as interesting specimens of morphology, showing peculiarities of growth, effects of cross-fertilization, etc.

## ENGINEERING

The following departments of the College of Engineering have made extensive and valuable collections which will be found in rooms in Engineering Hall:

## ARCHITECTURE

A large number of specimens of stone, bricks, terra cotta, sanitary fixtures, casts of moldings and of ornament have been accumulated, together with some excellent specimens of industrial arts, models of structures, working drawings of important buildings, 2,500 lantern slides, 20,000 plates and photographs, and the most necessary books.

## CIVIL ENGINEERING

The civil engineering department has a large room containing samples of iron, steel, wood, brick, and stone; materials for roads and pavements; models of arches and trusses, one of the latter being full-sized details of an actual modern railroad bridge. The department also possesses a very large collection of photographs and blue-print working drawings of bridges, metal skeleton buildings, masonry structures, and standard railroad construction.

**ELECTRICAL ENGINEERING**

A number of display boards of wires and cables has been collected, together with carbons, insulators, lighting specialties, signaling devices, primary and secondary cells, rail bonds, and several hundred photographs, blue-prints, and pamphlets descriptive of the best modern practice in electrical engineering.

**MECHANICAL ENGINEERING**

This department has among other things a partial set of Reuleaux models, together with models of valve gears, sections of steam pumps, injectors, valves, skeleton steam and water gauges, standard packings, steam-pipe coverings, and drop forgings. There are also fine examples of castings, perforated metal, defective boiler plates, and sets of drills, with numerous samples of oil, iron, and steel. A large number of working drawings from leading firms and from the United States Navy Department forms a valuable addition to the above collections.

**GEOLOGICAL**

*Lithology* is represented by type collections of rocks (2,900 specimens), arranged to illustrate Rosenbusch, from Voigt and Hochgesang, Dr. L. Eger, and A. Kranz; a type collection from Ward; a large number of ornamental building stones, and a stratigraphic collection to illustrate Illinois geology.

The *mineralogical* collection is especially rich in rock-forming minerals, ores, and materials of economic value. It contains over 7,000 specimens carefully selected to meet the wants of the student.

The *paleontological* collection (43,400 specimens) contains representative fossils from the entire geologic series. It embraces the private collections of Dr. A. H. Worthen, including 650 type specimens; Tyler McWhorter; Rev. Mr. Hertzner; the Ward collection of casts, and a considerable number of special collections representing the fauna and flora of particular groups.



A series of relief maps of noted localities adds greatly to the facilities for illustration.

### ZOÖLOGICAL

The *zoölogical* collections have been specially selected and prepared to illustrate the courses of study in natural history, and to present a synoptical view of the zoölogy of the state.

The mounted mammals comprise an unusually large and instructive collection of the ruminants of our country, including male and female moose, elk, bison, deer, antelope, etc., and also several quadrumana, large carnivora and fur-bearing animals, numerous rodents, good representative marsupials, cetaceans, edentates, and monotremes. Fifty species of this class are represented by eighty specimens. All the orders, excepting the Proboscidea, are represented by mounted skeletons. There is also a series of dissections in alcohol, illustrating the comparative anatomy of the group.

The collection of mounted birds includes representatives of all the orders and families of North America, together with a number of characteristic tropical, Bornean, and New Zealand forms. The collection is practically complete for Illinois species. There is also a fine collection of the nests and eggs of Illinois birds. A series of several hundred unmounted skins is available for the practical study of species, and the internal anatomy is shown in alcoholic dissections and in mounted skeletons of all the orders.

The cold-blooded vertebrates are represented by a series of mounted skins of the larger species, both terrestrial and marine; mounted skeletons of typical representatives of the principal groups; alcoholic specimens, both entire and dissected, and casts. The alcoholics include series of the reptiles, amphibians, and fishes, the latter comprising about three hundred species. The dissections illustrate the internal anatomy of the principal groups. The casts represent about seventy-five species, nearly all fishes.

The Mollusca are illustrated by alcoholic specimens of all classes and orders, and dissections showing the internal anatomy of typical forms. There are several thousand shells belonging to seventeen hundred species. The collection of Illinois shells is fair but incomplete.

Of the Arthropoda the entomological cabinet contains about three thousand species (principally American), named, labeled, and systematically arranged. There is also a series of Crustacea, some dried, but mostly in alcohol, the latter including a number of dissections.

The lower invertebrates are represented by several hundred dried specimens and alcoholics, and by a large series of the famous Blaschka glass models.

The embryology of vertebrates and invertebrates is illustrated by a set of Ziegler wax models, and several series of slides, sections, and other preparations.

In addition to the above, the extensive collections of the State Laboratory of Natural History are available for illustrative purposes, as well as for original investigation by advanced students.

#### ART GALLERY

The University art gallery was the gift of citizens of Champaign and Urbana. It occupies a room in the basement of Library Building, and furnishes an excellent collection of models for students of art. In sculpture it embraces thirteen full-size casts of celebrated statues, forty statues of reduced size and a large number of busts and bas-reliefs, making in all over four hundred pieces. It includes also hundreds of large autotypes, photographs, and fine engravings, representing many of the great masterpieces of painting of nearly all the modern schools, and a gallery of historical portraits, mostly large French lithographs of peculiar fineness, copied from the great national portrait galleries of France.

Other collections of special value to art students embrace a large number of casts of ornament from the Alham-

bra and other Spanish buildings, presented by the Spanish government; a set of casts from Germany, illustrating German Renaissance ornament; a series of art works from the Columbian Exposition; large numbers of miscellaneous casts, models, prints, and drawings, such as are usually found in the best art schools, and a model in plaster and a complete set of drawings of a competitive design by Henry Lord Gay for a monument to be erected in Rome, commemorative of Victor Emanuel, first king of Italy.

#### LIBRARY

The *library* contains 34,388 volumes and 6,750 pamphlets. The reading room contains 240 periodicals. The library of the State Laboratory of Natural History and that of the Agricultural Experiment Station contain about 7,000 volumes and 16,000 pamphlets. Both these libraries are open to students of the University.

The library and the reading room are open every day except Sunday from 8 a. m. until 5 p. m., and until 9 p. m. on Mondays, Tuesdays, and Thursdays.



## ADMISSION

---

*For changes in the requirements for admission on and after September, 1899, see page 43.*

Applicants for admission to the freshman class must be at least sixteen years of age, and it is desirable that they be two or three years older than this.

Entrance may be made at any time, provided the candidate is competent to take up the work of the classes then in progress; but it is better to begin upon the first collegiate day in September.

Admission to the freshman class of the University may be obtained in one of three ways: (a) by certificate from a fully accredited high school; (b) by examination; (c) by transfer of credits from some other college or university.

### ADMISSION BY CERTIFICATE FROM ACCREDITED HIGH SCHOOLS\*

Certain public high schools and a few private preparatory schools have been, after examination, approved by the Faculty of the University, and full graduates of these schools are admitted to the freshman class without examination. Candidates for admission in this way must file with the Registrar upon entrance a certificate of graduation and of preparatory studies. Blanks for these certificates must be obtained from the Registrar in advance, and it is better to forward them to him for approval before registration days.

---

\*For an account of these, see "Accredited High Schools," p. 255.

## ADMISSION BY EXAMINATION

Examinations of candidates for admission to the University are held at the University on the Thursday, Friday, and Saturday before the beginning of the fall term in September, and on the two days previous to the opening of each of the other terms. Each candidate must be in attendance during the whole period of the examinations.

The scholarship examinations\* held each year on the first Saturday in June and the day preceding, in the several counties of the state, afford an opportunity to pass the entrance examinations before coming to the University, since these examinations are taken as equivalents of the regular entrance examinations.

The subjects upon which the entrance examinations are held are described below.

Text-books are named merely to aid in showing the requirements. Equivalents are accepted.

The examinations which a candidate is required to pass depend in part on which of the four colleges of the University he intends to enter. In the following statement of subjects for examination, those requirements which are common to all the colleges are given first; then follow statements of the additional requirements for each college. To determine on what subjects he must pass examinations, then, a candidate must add to the uniform requirements first stated those classed as additional for the particular college he wishes to enter.

**SUBJECTS IN WHICH ALL CANDIDATES FOR ADMISSION MUST BE EXAMINED**

For additional requirements for the different colleges, see pages 38, 39, 40.]

I. ALGEBRA.—Fundamental operations, factoring, fractions, simple equations, involution, evolution, radicals, quadratic equations and equations reducible to the quadratic form, surds, theory of exponents, and the analysis and solution of problems involving these. The subject as given in Wells's Higher Algebra through quadratic equations, or the same work in Wentworth's Algebra, or an equivalent.

\*See "Scholarships," p. 214.

2. COMPOSITION AND RHETORIC.—Correct spelling, capitalization, punctuation, paragraphing, idiom, and definition; the elements of Rhetoric. The candidate will be required to write two paragraphs of about one hundred and fifty words each to test his ability to use the English language. The subject as presented in Genung's *Outlines of Rhetoric*, Scott and Denney's *English Composition*, or an equivalent.

3. ENGLISH LITERATURE.—(a) Each candidate is expected to have read certain assigned literary masterpieces, and will be subjected to such an examination as will determine whether or not he has done so. The books assigned for the next three years are as follows:

1898.—Milton's *Paradise Lost*, Books I. and II.; Pope's *Iliad*, Books I. and XXII.; The Sir Roger de Coverley Papers in *The Spectator*; Goldsmith's *The Vicar of Wakefield*; Coleridge's *Ancient Mariner*; Southey's *Life of Nelson*; Carlyle's *Essay on Burns*; Lowell's *Vision of Sir Launfal*; Hawthorne's *House of the Seven Gables*.

1899.—Dryden's *Palamon and Arcite*; Pope's *Iliad*, Books I., VI., XXII., and XXIV.; The Sir Roger de Coverley Papers in *The Spectator*; Goldsmith's *The Vicar of Wakefield*; Coleridge's *Ancient Mariner*; De Quincey's *Flight of a Tartar Tribe*; Cooper's *Last of the Mohicans*; Lowell's *Vision of Sir Launfal*; Hawthorne's *House of the Seven Gables*.

1900.—Dryden's *Palamon and Arcite*; Pope's *Iliad*, Books I., VI., XXII. and XXIV.; The Sir Roger de Coverley Papers in *The Spectator*; Goldsmith's *The Vicar of Wakefield*; De Quincey's *Flight of a Tartar Tribe*; Cooper's *Last of the Mohicans*; Lowell's *Vision of Sir Launfal*; Scott's *Ivanhoe*.

(b) In addition to the above, the candidate will be required to present a brief outline of American Literature. Hawthorne and Lemmon's *Outline of American Literature*, or an equivalent.

4. GEOMETRY.—Plane Geometry, as given in Wells's or Wentworth's *Geometry*, or an equivalent. Great importance is attached to the ability of the student to solve original problems.

5. HISTORY.—At least one year in one of the following subjects: (a) The History of England and of the United States; (b) General History; (c) The History of Greece and Rome. The statement of requirements in each subject implies the use of a substantial text-book, together with some elementary training in the use of large reference books.

6. PHYSICS.—The elements of physical science as presented in such text-books as Appleton's *School Physics*, or Avery's *Elements of Natural Philosophy*, or Carhart and Chute's *Elements of Phys-*

ics, or Gage's Elements of Physics. The candidate must have had laboratory practice equivalent to that described in the laboratory text-books of Hall and Bergen, Allen, or Chute. The candidate's laboratory note-book will be accepted as part of the examination.

*In addition to the preceding subjects, any two of the following:*

7. **ASTRONOMY.**—The subject as given in Young's Elements of Astronomy or Newcomb and Holden's Astronomy for High Schools.

8. **BOTANY.**—The subject as given in Bergen's Elements of Botany or its equivalent. The text of Gray's School and Field Book of Botany, with such laboratory work, preferably including the use of the compound microscope, as is outlined in the former book, is accepted; but laboratory practice in any case is essential. The ability to determine species and some knowledge of the most important families of flowering plants are required.

9. **CHEMISTRY.**—Elementary Inorganic Chemistry as presented in Remsen's Elementary Chemistry; Shepard's Elements of Chemistry; Williams's Elementary Chemistry; Storer and Lindsay's Manual of Elementary Chemistry; Armstrong and Norton's Laboratory Manual of Chemistry, or Clark's Elements of Chemistry. Laboratory practice is essential for preparation in this subject. The laboratory note-book must be presented.

10. **PHYSIOLOGY.**—The anatomy, histology, and physiology of the human body and the essentials of hygiene, taught with the aid of charts, models, and demonstrations upon inferior animals, to the extent given in Martin's Human Body (Briefer Course).

11. **ZOOLOGY.**—The subject as taught in the best high schools with laboratory facilities. Mere text-book work will not be accepted. The following will indicate the scope of the work required: Colton's Practical Zoölogy, Parker's Elementary Biology, and Thompson's Outlines of Zoölogy.

#### **ADDITIONAL REQUIREMENTS FOR ADMISSION TO THE COLLEGE OF LITERATURE AND ARTS**

[The following, in addition to the requirements on pages 36—38.]

12. **ENGLISH LITERATURE.**—The candidate will be examined on the form and substance of one or more books in addition to those named under (3), page 37. For 1898, 1899, and 1900 the books will be selected from the lists below. The examination will be of such a character as to require a minute and thorough study of each of the works named, in order to pass it successfully.



1898.—Shakspeare's Macbeth; Burke's Speech on Conciliation with America; De Quincey's The Flight of a Tartar Tribe; Tennyson's The Princess.

1899.—Shakspeare's Macbeth; Milton's Paradise Lost, Books I. and II.; Burke's Speech on Conciliation with America; Carlyle's Essay on Burns.

1900.—Shakspeare's Macbeth; Milton's Paradise Lost, Books I. and II.; Burke's Speech on Conciliation with America; Macaulay's Essays on Milton and Addison; Tennyson's The Princess.

13. LATIN.—Four books of Cæsar's Commentaries, six orations of Cicero, six books of Vergil's Æneid, the scansion of hexameter verse, and Latin composition based on the reading above specified. Increasing importance is placed on ability to write Latin and on a knowledge of the quantity of the vowels. Candidates are urged to make special preparation in these directions. It is recommended that not more than two books of Cæsar be read, and that other authors be substituted for the books omitted. Equivalents for any of the above requirements will be accepted. Allen and Greenough's, Bennett's, or Harkness's Latin Grammar is recommended and Collar's or Daniell's Latin Prose Composition. The Roman pronunciation is used. Frequent oral reading throughout the whole of the preparatory course is especially urged.

*Students desiring to pursue Greek in the University must have also the following, which will be accepted instead of the three sciences OTHERWISE required:*

14. GREEK.—Grammar, a thorough knowledge of forms and syntax; an amount of prose composition equal to that given in Woodruff's Greek Prose Composition; the first three books of Homer's Iliad, except lines 494-759 of Book II.; three books of Xenophon's Anabasis or an equal amount of text from some other classic prose author.

Teachers preparing students for the freshman class are particularly requested to lay stress upon a knowledge of the forms of the language, and to give pupils practice in impromptu translation of easy prose.

#### **ADDITIONAL REQUIREMENTS FOR ADMISSION TO THE COLLEGE OF ENGINEERING**

[The following, in addition to the requirements stated on pages 36-38.]

15. FREE-HAND DRAWING.—Ten hours a week for one term, or the equivalent thereof. The nature of the work is indicated by Cross's Free-hand Drawing.

16. GEOMETRY.—Solid and spherical geometry as given in Wells's or Wentworth's Plane and Solid Geometry, or an equivalent.

*One of the following:*

17. FRENCH.—Elements of grammar, tested by the translation of simple French prose at sight. At least one year's work. Char-denal's Complete French Course, or an equivalent, and about three hundred pages of easy prose.

18. GERMAN.—Elements of grammar, tested by the translation of easy German prose. At least one year's work. Joynes-Meissner's German Grammar, Joynes' German Reader, or equivalents, and 100 pages of easy prose.

19. LATIN.—Elements of grammar, tested by the translation of easy Latin prose. At least one year's work. Allen and Greenough's Grammar and Viri Romae, or an equivalent.

#### **ADDITIONAL REQUIREMENTS FOR ADMISSION TO THE COLLEGE OF SCIENCE**

[The following, in addition to the requirements stated on pages 36—38.]

16. GEOMETRY.—Solid and spherical geometry as given in Wells's or Wentworth's Plane and Solid Geometry, or an equivalent.

*One of the following:*

17. FRENCH.—Elements of grammar, tested by the translation of simple French prose at sight. At least one year's work. Char-denal's Complete French Course, or an equivalent, and about 300 pages of easy prose.

18. GERMAN.—Elements of grammar, tested by the translation of easy German prose. At least one year's work. Joynes-Meissner's German Grammar, Joynes' German Reader, or equivalents, and about 100 pages of easy prose.

19. LATIN.—Elements of grammar, tested by the translation of easy Latin prose. At least one year's work. Allen and Greenough's Grammar and Viri Romae, or an equivalent.

#### **ADDITIONAL REQUIREMENT FOR THE COLLEGE OF AGRICULTURE**

[The following, in addition to the requirements stated on pages 36—38.]

16. GEOMETRY.—Solid and spherical geometry, as given in Wells's or Wentworth's Plane and Solid Geometry, or an equivalent.

## PROGRAM OF EXAMINATIONS, SEPTEMBER 8-13, 1898

All persons who wish to enter the University at the opening of the fall term, 1898, except those holding certificates of graduation from accredited schools and scholarship certificates, and those for whom a transfer of all entrance credits from some other college or university has already been approved, must present themselves at the Registrar's office, Library Hall, at 9 o'clock a. m., Thursday, September 8th. At that time applications for admission will be received, and applicants will be given all necessary directions as to examinations.

The program of examinations is as follows:

History.....	Thursday	1:00 p.m.
Physics.....	Thursday	3:00 p.m.
Algebra....	Friday	8:00 a.m.
Physiology....	Friday	1:00 p.m.
Botany.....	Friday	3:00 p.m.
Geometry.....	Saturday	8:00 a.m.
Zoölogy.....	Saturday	1:00 p.m.
German.....	Saturday	3:00 p.m.
English Literature and Composition..	Monday	8:00 a.m.
French.....	Monday	1:00 p.m.
Chemistry.....	Monday	3:00 p.m.
Latin.....	Tuesday	8:00 a.m.
Free-hand Drawing....	Tuesday	9:00 a.m.
Astronomy.....	Tuesday	1:00 p.m.
Greek.....	Tuesday	3:00 p.m.

## ADMISSION BY TRANSFER FROM OTHER COLLEGES AND UNIVERSITIES

A person who has entered another college or university of recognized standing will be admitted to this University upon his presenting a certificate of honorable dismissal from the institution from which he comes and an official statement of the subjects upon which he was admitted to such institution, provided it appears that the subjects are those required here for admission by examination, or real equivalents. Candidates, to enter the University in this way, should submit such papers to the Registrar before the time of entrance, so that all doubtful points may be cleared up in advance.

## ADMISSION AS SPECIAL STUDENTS

Persons over twenty-one years of age, not candidates for a degree, may be admitted to classes, after satisfying the President and the professor in charge of the department in which such classes are taught, that they possess the requisite information and ability to pursue profitably, as special students, the chosen subjects. Such students are not matriculated; they pay a tuition fee of five dollars a term, in addition to the regular incidental fee of seven dollars and a half.

## ADMISSION TO ADVANCED STANDING

After satisfying in some of the ways already enumerated all the entrance requirements for admission to the freshman class of the college which he wishes to enter, the applicant for advanced standing may secure such standing either by examination or by transfer of credits from some other college or university.

1. *By Examination.*—Candidates for advanced standing, not from other colleges or universities, may secure such standing on examination. In the case of freshman students seeking advanced standing on the basis of their preparatory work, such standing shall be granted after satisfactory examination only, unless the applicants are from fully accredited schools. In that case a transfer of credits may be made as provided below.

2. *By Transfer of Credits.*—Credits from other colleges or universities may be accepted by the Faculty for advanced standing; but at least one year's work in residence at the University is required of all candidates for a bachelor's degree.

In all cases, a certificate of honorable dismissal is required, together with a certified record of work done in the institution from which the applicant comes. These should be presented for approval some time before the student enters for work.

Upon approval of the Faculty freshmen may receive credit for advanced work done in fully accredited high schools.

CONDITIONS OF ADMISSION ON AND AFTER  
SEPTEMBER, 1899

In September, 1899, and thereafter, the requirements for admission to the freshman class of the University will be as follows:

In all cases 36 credits will be required, the term credit meaning the work in one subject continuously pursued, with daily recitations, through one of the three terms of the high school year; or, in other words, the work of sixty recitation periods of forty minutes each, or the equivalent in laboratory, or other, practice. Of these 36 credits, 28 must be obtained by all candidates in the subjects, and according to the valuation, stated in the first list given below. The remainder of the 36 may be made up by offerings in any of the subjects in the elective list given below, with the following restrictions and provisions:

1. No offering will be accepted in any one of these elective subjects unless at least equal in quantity to the minimum specified in the table. For example: Astronomy is listed for from 1 to  $1\frac{1}{2}$  credits. Nothing less than one term's work, that is, one credit, will be accepted, therefore, in that subject.

2. Those who wish to enter upon the courses leading to the degree of bachelor of arts must choose from among the electives at least one foreign language in addition to the language chosen from among the prescribed subjects in the first list. The language from the elective list may or may not be the same as that offered in the prescribed list. Those who wish to pursue the study of Latin or Greek in the University must, however, offer nine credits in Latin or six in Greek, respectively.

3. Those who wish to enter upon the courses leading to the degree of bachelor of science, in any line of study except agriculture, must offer solid and spherical geometry among their electives.

4. For entrance upon the agricultural courses leading to the degree of bachelor of science any six credits from

the elective list will be accepted instead of the six credits in foreign language. But at least two years of foreign language study in the University must be taken by those who make this option.

The amount of work in each subject which, in the judgment of the University authorities, corresponds to the minimum number of credits assigned is shown by the description of the amount of work required in each subject, on pages 36 to 40, and 45 to 47.

The prescribed subjects, with the number of credits allowed for each, are as follows:

Algebra.....	4 credits.
English Composition...	3 credits.
English Literature.....	6 credits.
French, or German, or Greek, or Latin.....	6 credits.
Plane Geometry.....	3 credits.
History.....	3 credits.
Physical or Biological Science.....	3 credits.

The subjects in the elective list, with the minimum and maximum number of credits allowed for each, are as follows:

Astronomy.....	1	to	1½	credits.
Botany.....	1½	to	3	credits.
Civics.....	1	to	3	credits.
Biology.....	3	to	6	credits.
Drawing.....	1	to	3	credits.
Chemistry.....	2	to	3	credits.
French.....	3	to	9	credits.
Geology.....	2	to	3	credits.
Geometry, Solid and Spherical.....	1			credit.
German.....	3	to	9	credits.
Greek.....	3	to	7	credits.
History.....			3	credits.
Latin.....	3	to	12	credits.
Manual Training.....	1	to	2	credits.
Physics.....			3	credits.
Physiography.....	1½	to	3	credits.
Physiology.....	1	to	3	credits.
Zoölogy.....	1½	to	3	credits.

The following is a description of the amount of work required for the minimum number of credits assigned to the corresponding subjects in the list of electives:

**BIOLOGY.**--The subject as taught in good high schools with laboratory equipment. For the minimum number of credits, one year's work upon such types as are presented in Huxley and Martin's Practical Biology, or Parker's Elementary Biology. For further credits, advanced laboratory work and field collections. Note-books, drawings, collections of specimens, etc., showing work done, must be presented.

**CIVICS.**--The amount of study on the United States Constitution, its history and interpretation, such as is given in text-books like Young's Civil Government or Townsend's Civil Government, is regarded as sufficient for one term. The work may advantageously be combined with the elements of political economy, as given, for example, in Walker's, or Meservey's, or Thompson's Political Economy, or in Ely's "Introduction."

**DRAWING.**--Free-hand or mathematical drawing, or both. Drawing books or plates must be submitted. The number of credits allowed will depend upon the quantity and quality of the work submitted.

**FRENCH.**--*One year's work.*--A thorough knowledge of elementary grammar and the irregular verbs. Correct pronunciation; the ability to translate simple spoken French phrases and to translate at sight ordinary French prose. Reading of some 300 pages of easy prose, including one modern comedy.

*Two years' work.*--In addition to the above, proficiency in advanced grammar and the essentials of syntax. Elementary composition. Reading of not less than 400 pages of standard authors, including two plays of Molière. Memorizing not less than six fables or anecdotes.

**GEOLOGY.**--Familiarity with the matter found in Scott's Introduction to Geology, published by Macmillan, or a real equivalent. The student must be able to recognize well marked types of crystalline and fragmental rocks, and to explain the origin of the topography of the region in which he lives. Additional laboratory and field work will be given such credit as it merits.

**GERMAN.**--*One year's work.*--Elementary grammar, especially declension of articles and ordinary nouns and pronouns, use of the strong and the weak adjective, the two conjugations of verbs, with the principal parts and meanings of all the strong verbs, separable and inseparable prefixes, the use of common prepositions, the inverted and transposed sentence order. Practice in writing German sentences should accompany this work throughout the course,

but the German script is not insisted upon. Besides the work in grammar the student should read not less than 150 pages of easy narrative or descriptive prose, giving careful attention to its translation into good idiomatic English.

GERMAN.—*Two years' work*.—In addition to the work outlined under the one year requirement, the pupil should know the syntax of cases, uses of the subjunctive and infinitive, complex sentence structure, uses of modal auxiliaries and of participial constructions. The translation into German of about thirty-five pages of narrative prose should insure ready application of grammatical principles. As an additional reading requirement, from 250 to 300 pages, including one of Schiller's historical dramas and about 30 pages of German lyrics, should be translated. Constant practice in reading German should secure an accurate pronunciation and a feeling of the rhythm and rhetorical form of the works studied.

GERMAN.—*Three years' work*.—The third year's study should aim to secure an easy reading knowledge of the language. Accurate and idiomatic translations into English, constant practice in sight translation and in writing from dictation should be insisted upon. Standard prose of the grade represented by Heine, Freytag, or Dahn, not less than 100 pages should be read, together with selections from classic poetry. Lessing's *Minna von Barnhelm* and Goethe's *Egmont* or *Iphigenie auf Tauris* are especially recommended. Additional work in prose composition, or in the writing of paraphrases of the texts read, should insure the ability to write simple German.

LATIN.—*One year's work, 3 credits; two years' work, 6 credits; three years' work, 9 credits*.—A student coming from a school having a four years' course in Latin, the full equivalent of the work described on p. 39, will be given 3, 6, and 9 credits, respectively, for one, two, and three years of such course.

A student coming from a school having a three years' course in Latin comprising in addition to the usual grammar study and prose composition, the reading of not less in amount than three books of Cæsar, three orations of Cicero, and two books of Vergil with scansion, or equivalents, shall also be given 3, 6, and 9 credits, respectively, for one, two, and three years of such course.

ZOOLOGY.—Field, laboratory and text-book work to the amount of a half year in the high school. Colton's *Practical Zoölogy*, the zoölogical part of Huxley and Martin's *Practical Biology*, or of Parker's *Elementary Biology* will satisfy the laboratory require-



ments. Thomson's Outlines of Zoölogy, or its equivalent, will be accepted as a suitable text.

PHYSIOGRAPHY.—The amount and character of the work required for the minimum credit may be seen by referring to Mill's Reader of Nature, published by Scribner.

For additional credits the principles of climatology, ability to read physical and contour maps, interpretation of weather maps and forecasting of weather, etc., will be considered.

PHYSICAL OR BIOLOGICAL SCIENCE.—For this there may be offered any one of the following subjects or combination of subjects: Physics, one year; chemistry, one year; botany and zoölogy, each a half year; biology, the study of plant or animal types, one year.

The subjects must be taught in part by laboratory methods and the pupil's note-books must be submitted. Other evidences of work done, as illustrative drawings, collections of specimens, etc., should be presented. Examinations cover the subject-matter as presented in text-books in most common use in high schools. See also the descriptions given under the several subjects.

## REGISTRATION

At the beginning of each term each student must present himself for registration within the time set for that purpose, before the formation of classes, and he must be present at the first exercise of each class he is to attend.

## EXAMINATIONS

Examinations are held as often as in the judgment of the instructor the necessities of the work require. Examinations are also given at the close of each term, on the work of the term, in all subjects except those whose character renders it unnecessary or impracticable. Students who are conditioned in term examinations are required to take second examinations soon after the beginning of the following term. Those who fail to pass the term examination are precluded from proceeding with any University work without special permission.

A record is kept of each student's standing.

## TERMS AND VACATIONS

The University year is divided into three terms. The first covers fourteen weeks of instruction and each of the others eleven. There is a vacation of two weeks at the end of the first term, and of one week at the end of the second. For the dates of opening and closing, see the "Calendar."

## GRADUATION

In all cases 40 credits are required for graduation. For men two of these must be obtained in military and physical training. For women two of these may be obtained in physical training. In order to graduate, a student in any course must complete all of the subjects prescribed for graduation and make up the rest of his 40 credits by means of electives. The combinations of studies under which a student may graduate are too numerous to describe here. They are given under the separate colleges and schools. The courses offered in the College of Engineering are nearly all prescribed, so that a student who is working for a degree cannot be permitted to deviate from them.

# ADMINISTRATION OF THE UNIVERSITY

---

## GOVERNMENT

The government of the University is vested by the Trustees primarily in the President of the University, in the Faculty, in the Council of Administration, and in the Deans. The President is the executive head of the University.

The Dean of the General Faculty has general oversight of the instructional work of the University, and especial supervision of the graduate school. By order of the Board of Trustees he also fills the office of Vice-President.

The Dean of each college is responsible for the enforcement of all University regulations within his college.

The Council of Administration is composed of the President, the Dean of the General Faculty, the Dean of the Woman's Department and the Deans of the separate colleges. It constitutes an advisory board to the President, *and has exclusive jurisdiction over all matters of discipline.*

The Council does not exercise general legislative functions, but when any matter arises which has not been provided for by rule or common usage or legislative action by the General Faculty, and which cannot be conveniently laid over till the next meeting of the General Faculty, the Council may act upon the same according to its discretion, and its action in such cases is not subject to reversal by the General Faculty.

The determination of the general internal policy of the University is in charge of the Faculty.

The faculties of the different colleges and schools of the University are composed of the members of the corps

of instruction of these colleges and schools, and have jurisdiction over all matters which pertain exclusively to these organizations, subject always to higher University authority.

## ORGANIZATION

For the purpose of more efficient administration, the University is divided into several colleges and schools. This division does not imply that the colleges and schools are educationally distinct. They are interdependent and together form a unit. In addition to the courses mentioned as given in each college and school, instruction in military science and physical training is provided. The organization is as follows:

- I. The College of Literature and Arts.
- II. The College of Engineering.
- III. The College of Science.
- IV. The College of Agriculture.
- V. The Graduate School.
- VI. The School of Library Science.
- VII. The School of Music.
- VIII. The School of Law.
- IX. The School of Medicine.
- X. The School of Pharmacy.

### THE COLLEGE OF LITERATURE AND ARTS

The College of Literature and Arts offers—

1. General courses, classified according to the principal line of work chosen.
2. Specialized courses, or courses under the group system, including—
  - a. The Classical Group.
  - b. The English Group.
  - c. The German and Romance Language Group.
  - d. The Latin and Modern Language Group.
  - e. The Philosophical Group.
  - f. The Political Science Group.

## THE COLLEGE OF ENGINEERING

The College of Engineering offers courses—

1. In Architecture.
2. In Architectural Engineering.
3. In Civil Engineering.
4. In Electrical Engineering.
5. In Mechanical Engineering.
6. In Municipal and Sanitary Engineering.

## THE COLLEGE OF SCIENCE

The College of Science offers courses arranged in four groups, as follows—

1. The Chemical and Physical Group.
2. The Mathematical Group.
3. The Natural Science Group.
4. The Philosophical Group.

## THE COLLEGE OF AGRICULTURE

The College of Agriculture offers—

1. A course leading to Animal Husbandry as a specialty.
2. A course leading to Horticulture as a specialty.
3. A term's work, running through the winter term, offered to students not otherwise enrolled.

## THE GRADUATE SCHOOL

The Graduate School offers courses in—

1. Agriculture.
2. Engineering.
3. Literature, Philosophy, and the Arts.
4. The Sciences.

An enumeration of the departments of graduate study is given at the beginning of "General Description of Courses," and the separate graduate courses offered are described in connection with the proper subjects in the list of courses which there follows.

## THE SCHOOL OF LIBRARY SCIENCE

The School of Library Science, or the State Library School, offers a course of study, extending over four years, in preparation for the practice of the work of a librarian. The course leads to the degree of bachelor of library science.

## THE SCHOOL OF MUSIC

The School of Music offers courses in vocal and instrumental music, leading to the degree of bachelor of music.

## THE LAW SCHOOL

The Law School offers a course of study leading to the degree of bachelor of laws.

## THE SCHOOL OF MEDICINE

The School of Medicine offers a course of study leading to the degree of M. D.

## THE SCHOOL OF PHARMACY

The School of Pharmacy offers a course in all branches necessary to a complete scientific and practical knowledge of pharmacy, including pharmacy, chemistry, materia medica, botany, physics, and physiology. The course leads to the degree of graduate in pharmacy or to that of pharmaceutical chemist.

# COLLEGE OF LITERATURE AND ARTS

---

## FACULTY

- ANDREW S. DRAPER, LL.D., PRESIDENT.  
DAVID KINLEY, PH.D., DEAN, Economics.  
THOMAS J. BURRILL, PH.D., LL.D., Botany.  
SAMUEL W. SHATTUCK, C.E., Mathematics.  
CHARLES W. ROLFE, M.S., Geology.  
ARTHUR W. PALMER, Sc.D., Chemistry.  
FRANK F. FREDERICK, Art and Design.  
HERBERT J. BARTON, A.M., Latin.  
CHARLES M. MOSS, PH.D., Greek.  
DANIEL K. DODGE, PH.D., English.  
DANIEL H. BRUSH, CAPTAIN 17TH INFANTRY, U.S.A.,  
Military Science.  
ARNOLD TOMPKINS, PH.D., Pedagogy.  
ALBERT P. CARMAN, Sc.D., Physics.  
EVARTS B. GREENE, PH.D., History.  
GEORGE T. KEMP, M.D., PH.D., Physiology.  
GEORGE W. MYERS, PH.D., Astronomy.  
EDGAR J. TOWNSEND, PH.M., Mathematics.  
HENRY H. EVERETT, Physical Training.  
LEWIS A. RHOADES, PH.D., German.  
HARRY S. GRINDLEY, Sc.D., Chemistry.  
T. ARKLE CLARK, B.L., Rhetoric.  
HERMAN S. PIATT, PH.D., Romance Languages.  
ARTHUR H. DANIELS, PH.D., Philosophy.  
GEORGE D. FAIRFIELD, A.M., Romance Languages.  
CHARLES W. TOOKE, A.M., SECRETARY, Public Law and  
Administration.  
FRANK SMITH, A.M., Zoölogy.

JOHN E. MCGILVREY, A.B., Pedagogy.  
VIOLET D. JAYNE, A.M., English.  
ALTON C. BURNHAM, B.S., Mathematics.  
EDWARD J. LAKE, B.S., Art and Design.  
ELLA H. MORRISON, Physical Training for Women.  
GEORGE A. HUFF, JR., Coach of Athletic Teams.  
AGNES S. COOK, A.B., Rhetoric.  
A. C. HOWLAND, PH.D., History.  
CHESTER H. ROWELL, PH.B., German.  
GEORGE H. MEYER, A.M., German.  
JOHN P. HYLAN, PH.D., Psychology.  
CHARLES F. HOTTES, M.S., Botany.  
GEORGE D. HUBBARD, B.S., Geology.  
MATTHEW B. HAMMOND, PH.D., Economics and Sociology.  
DAVID H. CARNAHAN, A.B., Fellow, French.  
ALBERT ST. J. WILLIAMSON, Military Science.

#### AIMS AND SCOPE

The College of Literature and Arts includes those branches usually comprised in a department of philosophy and arts, with the exception of the natural sciences. The aim of the College is a double one: to furnish a liberal education, and to afford the largest opportunity for specialization in literary and philosophical subjects. It is believed that this double purpose can be best accomplished by a judicious combination of disciplinary and information studies, which, while so directing the work of the student as to secure the desired mental training, shall also allow him large liberty of choice both in his main lines of work and in subjects auxiliary thereto.

In accordance with this general plan, it is provided that students may graduate either under the general course system or under the specialized course, or group, system.

#### THE GENERAL COURSE SYSTEM

A general course is one in which less than three years' work in any one subject, or group of allied subjects, is required for graduation, and in which no thesis is required.



In the general courses a minimum of prescribed work is laid out for the first two years. The whole of the work of the first year, and part of that of the second, is prescribed. The work for the rest of the course is elective. Within the limits of the prescribed work, however, the student is permitted a choice of lines of work.

In choosing his electives, each student must select at least two subjects from the major electives.

In the choice of his electives other than his major work the student may take a minimum of work in a maximum number of subjects, or he may take a maximum amount of work in the minimum number of subjects necessary to fill up his time according to the rules of the University.

The elective courses open to the students of the College include subjects from the Colleges of Science and Engineering. The sciences are not an integral part of the work of the College, but the training derived from their study is so important a part of a liberal education that every student of the College is earnestly advised to extend his study of them so far as may be.

#### THE SPECIALIZED COURSE, OR GROUP, SYSTEM

A specialized, or group, course is one which contains at least two years of major work in a single subject preceding the senior year, followed by an additional year of major work in that subject, and the writing of an acceptable thesis. No student may be enrolled in a specialized course without the permission of the head of the department in which he wishes to do his principal work, and each student who wishes to be so enrolled must specify the course he desires to enter not later than the beginning of his junior year.

In the specialized course, or group, system the prescribed work is the same as in the general course system. The other credits necessary for graduation are to be obtained in the subjects of the group which the student enters. (See requirements for graduation, below.)

Only those students who pursue a specialized course shall, as a rule, be selected from this College for fellowships, scholarships, and other similar University honors.

The groups are as follows:

The *Classical Group*, including Greek and Latin as the major subjects. One of these languages must be taken for nine, the other for six, terms.

The *English Group*, including the Scandinavian languages. Students in this group must take two years of French or German before the beginning of the junior year. Those electing the course in language must have at least two years of German.

The *German and Romance Language Group*. Either German or French may be taken as a major, but as a condition of graduation six credits in the other must be secured. Besides the required work in English, all students must elect additional English sufficient to make a total of at least three credits. Students of marked ability, taking French as a major, will be advised to take the courses offered in Spanish or Italian.

The *Latin and Modern Language Group*, including Latin as a major and German and French as minors. Six credits in one minor are required.

The *Philosophical Group*, including pedagogy, philosophy, psychology, and mathematics as major subjects. In this group the second year of the student's work is devoted to studies specifically preparatory to the principal subject, which is itself taken up at the beginning of the third year.

Students in this group who make philosophy a major must, in the second year, make three full term-credits from among these subjects: Anthropology, psychology, economics 6 (sociology), Greek 5.

Those who make psychology their major subject must, in their second year, make three full term-credits from among these subjects: Botany 1b, c; economics 6; philosophy 1, 6, 9, 10; physiology 4; zoölogy 3.

When pedagogy is the major, three second year credits

must be obtained in logic (philosophy 8) and two terms of psychology.

Those students who make mathematics their major work must take the following courses in mathematics—2, 4, 6, 7, 8, 9, 10, 11, 15, 16, 17, and may elect as many more courses as desired. They must also make three credits in philosophy (including philosophy 8), and either 6 credits in German or 3 credits in French.

The *Political Science Group*, including economics, history, and public law and administration. All students in this group must take the three elementary courses: History 1, economics 1, a and b, and political science 1; and must also secure at least one credit in philosophy, selected from courses 1, 2, 3, 4, and 8. All students in the group must, before the beginning of the junior year, have taken one year's work in either French or German, or must give other satisfactory evidence of their ability to use at least one of these languages.

## REQUIREMENTS FOR GRADUATION

### UNDER THE GENERAL COURSE SYSTEM

Forty full term-credits, including military and physical training, are required for graduation under the general course system. Every student must take the prescribed subjects; in addition, he must select at least two subjects from the list of major electives, and he must then choose work sufficient to yield him the remainder of his necessary credits.

No credits will be granted in any subject except according to the enumeration given. For example, if work is offered in a subject for from three to six credits, no credit will be allowed for less than three terms' work.

### UNDER THE SPECIALIZED COURSE, OR GROUP, SYSTEM

Forty full term-credits, including military and physical training, together with an acceptable thesis, are required for graduation under the group system. Every student must take the prescribed subjects. In addition he must,

not later than the beginning of his junior year, specify the group in which he wishes to graduate. He must at this time select one subject in the group as his major subject, the study of which, alone or with the subjects designated as specifically preparatory\* to it, he must pursue during the remaining two years, securing therein at least nine full term-credits. He must also select, with the approval of the head of the department in which his major subject lies, a sufficient number of other studies to yield him the necessary complement of credits, and he must present an acceptable thesis.

The thesis required for graduation must be on a topic connected with the student's major study. It must present the results of investigation made under the immediate supervision of the instructor during the last year of the student's course. This work of investigation shall be the required work in the major subject, in whole or in part, during that year, and shall receive credit like any other study. Separate credit will not be given for the thesis.

No credit will be allowed in any subject except according to the enumeration given, and the same work shall not be credited both as major and minor work.

The only degree given in this College is that of A. B.

The prescribed studies must be taken in the term and year indicated in the outline of courses by years and terms.

## CLASSIFICATION OF SUBJECTS

### PRESCRIBED

Advanced Algebra (Math. 1, 2); 1 or 1½ credits.

English 1; 1½ credits.

French 1, German 1 and 8, Greek 1, 2, 3, or Latin 1, 2, 3; 3 credits.

Geometry, Solid and Spherical (Math. 19); 1 credit.

History 1; 1½ credits.

Logic (Philosophy 8); 1 credit.

Military 1, 2, and Physical Training 1; 2 credits.

---

\*See page 56.

Natural Science; 3 credits.  
 Rhetoric 1; 2 credits.  
 Trigonometry (Math. 3, 4); 1 or  $\frac{3}{8}$  credit.

### ELECTIVE

#### MAJOR COURSES

Economics 1 to 18, 101, 102; 6 to 17 $\frac{1}{2}$  credits.  
 English 1 to 14; 6 to 21 $\frac{3}{8}$  credits.  
 French 1 to 4; 6 to 12 credits.  
 German 1 to 4, 8 and 9; 6 to 16 credits.  
 Greek 1 to 9; 6 to 9 credits.  
 History 1 to 12; 6 to 15 $\frac{3}{8}$  credits.  
 Latin 1 to 10; 6 to 10 credits.  
 Mathematics 1 to 24; 6 to 18 credits.  
 Pedagogy 1 to 6; 6 credits.  
 Philosophy 1 to 7, 9; 6 credits.  
 Public Law and Administration 1 to 9; 6 to 9 $\frac{2}{8}$  credits.  
 Psychology 1 to 4, 8, 101; 6 to 9 $\frac{1}{8}$  credits.  
 Rhetoric 1 to 4; 6 credits.

#### MINOR COURSES

The necessary number of credits additional to those provided for in the prescribed subjects and the required two major electives may be secured from any of the subjects offered in the College of Literature and Arts, or in the College of Science, the requirements for which the student can meet. Not more than six credits may be counted in art and design, nor more than two in physical training for women. Course 13 of library science may be taken as a minor.

### COURSE OF INSTRUCTION BY YEARS AND TERMS

All the prescribed subjects must be *finished by the end of the sophomore year*. The following statement gives the years and terms in which they occur.

#### FIRST YEAR

1. Advanced Algebra and Trigonometry (Math. 2, 4); French 1, German 1, Greek 1, or Latin 1; Military 1, 2; Natural Science: Chemistry 1; Zoölogy 10, 11; Physical Training 1; Rhetoric 1.

2. Advanced Algebra and Trigonometry (Math. 2, 3); French 1, German 1, Greek 2, or Latin 2; Military 1, 2; Natural Science; Chemistry 2, 3a; Geology 4; Zoölogy 1, 2, 3; Physical Training 1; Rhetoric 1.

3. French 1, German 8, Greek 3, or Latin 3; Geometry, Solid (Math. 19); Military 2; Natural Science: Astronomy 4a; Botany 6; Chemistry 2, 3b, 4, 20; Zoölogy 1, 2, 8; Physical Training 1; Rhetoric 1.

#### SECOND YEAR

1. English 1; History 1; Natural Science: Astronomy 4b; Botany 1; Chemistry 1; Physics 1 and 3; Zoölogy 1, 3, 10, 11; Military 2; Electives.

2. English 1; History 1; Natural Science: Botany 1; Chemistry 2, 3a; Geology 4; Physiology 4; Zoölogy 1, 2, 3; Military 2; Electives.

3. English 1; History 1; Logic (Philos. 8); Natural Science: Astronomy 4a; Botany 1, 6; Chemistry 2, 3b, 4, 20; Physiology 5; Zoölogy 1, 2, 8; Military 2; Electives.

The studies of the third and fourth years are all elective.

### DESCRIPTION OF DEPARTMENTS

#### ART AND DESIGN

This work subserves a threefold purpose: (1) It affords students the opportunity to acquire such a knowledge of free-hand drawing as their chosen courses may require. (2) It offers such as have a talent for art the best facilities for pursuing studies in all branches of fine art. (3) It offers those who wish to become teachers of drawing special opportunities for study.

Special students, not otherwise connected with the University, may enter this department upon payment of moderate fees. For such students a fourth year of work is offered in drawing, painting, modeling, or design, as they may elect.

#### ECONOMICS

The work in economics for undergraduates is so arranged that the student can take a continuous course for from one to three years. The introductory courses are repeated each year, and the advanced courses are divided

into two groups and given in alternate years. The courses are designed to cover as large a field as possible in the literature of the subject, and to present all disputed matters from different points of view.

Minor courses in sociology are provided for in the department.

#### **ENGLISH LANGUAGE AND LITERATURE**

The courses are designed to give a continuous view of the twofold subject from the earliest times to our own day. In the junior and senior years double courses are offered, so that students, having had the fundamental work of the sophomore year, may, if desired, confine themselves either to philology or to literature. The aim in the study of literature is to approach the works of an author from the philosophical, emotional, and esthetic, as well as from the merely linguistic and historical points of view.

#### **FRENCH**

(See Romance Languages, p. 66.)

#### **GERMAN**

Four years of instruction are offered in this subject. By alternating the work in the third and fourth years, provision is made that students whose knowledge of the language at entrance enables them to begin with the third year's work can pursue the subject throughout their course. The work of the first and second years is intended to give the student the best possible reading knowledge. In the second year an opportunity is offered those whose special interest in the language is as a tool in scientific or technical studies to read scientific works during the winter and spring terms; but ability to translate readily and accurately is, in all cases, especially emphasized.

The work of the third and fourth years consists of a critical study of the classic poets and modern writers, and of lectures in German literature.

### GREEK

The general purpose of the courses laid out in this subject are: first, to teach the Greek language; second, to train students to appreciate its literature; and third, to call attention to those numerous problems in the history, thought, and institutions of the Greeks which illustrate similar phenomena noticeable among ourselves. To accomplish the first object, due attention is paid to the principles of grammar, particularly by making the syntax appear as the evidence of orderly mental procedure, and by continual practice in extemporaneous translation. The second is effected by a study of the surroundings and spirit of an author, and of those literary devices which give character to his productions. The third end is reached through familiar talks upon suitable topics as they are met.

### HISTORY

The work of this department begins with an elementary course, prescribed for sophomores, in the history of mediæval and modern Europe. The advanced undergraduate work falls into two main divisions, mediæval history and modern history. The seminary courses are designed for graduates and for seniors of high standing who have had the requisite preliminary training.

Throughout the courses the effort is made not merely to give students a general knowledge of historical facts, but also to give them some conception of the aims and methods of historical science, and of the materials with which it deals. To this end exercises in historical investigation, more or less elementary, will form a prominent part of the work in all the higher undergraduate courses, as well as in the seminaries.

### ITALIAN

(See Romance Languages, p. 66.)

### LATIN

The courses at present offered in Latin are ten in number and extend over three years. The first term's instruc-



tion is, as far as needed, grammatical, prominence being given to Latin writing as the best method of acquiring a mastery of the language.

As soon as this preliminary work is done, the attention is directed to two ends. The first is the acquisition of power to read the language with ease and pleasure. The thought is constantly emphasized that students are not simply reading Latin—they are reading some of the great literary masterpieces of the world, and should enjoy them as such. The second aim is to introduce the student to the daily life of the Roman; to make his home life vivid, his political life a reality. The contribution of the Roman world to the language, literature, and institutions of our time is so great that an intimate acquaintance with that life is of the highest educational value.

The courses offered include a teachers' class, the work of which is based on the needs of those teaching preparatory Latin, and methods of presentation, difficulties, aims, and results are discussed. The members of the class do the work which they, as teachers, should require of their pupils, and at intervals take charge of the recitation.

#### MATHEMATICS

The object of the instruction in pure mathematics is to promote habits of mental concentration and continuity of thought, to develop the capacity to form and combine abstract conceptions, and to cultivate deductive reasoning. The course is so arranged as to meet the requirements of those who wish to fit themselves for teaching, and of those who study the science for the love of it.

The mathematical courses, open to students of the College of Literature and Arts, include the entire offering of the University in pure mathematics.

#### MILITARY SCIENCE

The work of the department of military science is prescribed for all male students. The department therefore belongs to all the colleges alike. A full description of the

work offered and of the aims and scope of the department will be found farther on in the catalogue.

#### **PEDAGOGY**

The work of the department of pedagogy is designed for those who desire a more thorough and philosophic knowledge of the principles and practice of teaching than can be gained from the other means of professional preparation furnished by the state. It seeks to give a comprehensive insight into school education, its phases, and problems; and thus to be of special service to those who may hold positions in school work. The course is elastic, and, in so far as possible, will be adjusted to suit the needs of the students who take the work.

#### **PHILOSOPHY**

The work in this department includes history of philosophy, metaphysics, ethics, and logic, and is so arranged that the student may take a continuous course for either one or two years.

The courses are planned to meet the needs of those who make philosophy their specialty, and also of those who desire an acquaintance with the subject as a means of general culture. It is the constant aim to emphasize the meaning and interest of philosophy and the relations of its problems to the life of man.

#### **PHYSICAL TRAINING**

The work of this department is offered to all students in the University. Consequently the department properly belongs in all the colleges. A full description of its aim and scope is given farther on.

#### **PUBLIC LAW AND ADMINISTRATION**

The courses in public law and administration are planned with two purposes in view: (1) to give, in conjunction with the instruction in economics and history, that information and training which are requisite to intelligent citizenship; and (2) to afford opportunities for advanced work

to those who may desire more thorough preparation, either for active political life or preliminary to the study of law.

To meet these ends, the work is so arranged that the subject may be pursued continuously for three years. The elementary courses are given every year, while the advanced courses are offered in alternate years.

The courses, as a whole, are intended to cover the theory of the state, its organization, and practical operation.

### PSYCHOLOGY

Besides the opportunity offered in this department for scientific training and original research, there is also given a basis for general culture. The student is taught to observe psychic phenomena in himself and in his social surroundings, both individual and collective, and is thus given a standpoint from which to approach intelligently the social and ethical questions which may confront him.

The development of mind is traced from its beginnings at the bottom of the animal scale, and correlated, so far as possible, with the evolution of nervous structure. The unfolding of the child's mind is carefully followed from the first days of infancy and traced to the end of adolescence. So far as practicable, the relation of mind to matter and the meaning and value of consciousness as a biological factor are given a place in this scheme.

Historically, psychology is treated with a view to giving the student a connected idea of the development of the subject. Its experimental development and recent phases are given special attention, with particular comment upon the probable lines of its future development, and the place in human economy which it aims to fill.

### RHETORIC

The courses at present offered in rhetoric are four, and extend over two years and one term. The object of the courses is not only to acquaint the student with the principles of rhetoric, but to teach him correctness and effectiveness in the use of English. In the first year's work a text-

book is used, supplemented with lectures and a critical discussion of the written exercises. From ten to thirty short themes a term are required from each student. More emphasis is put upon practice than upon theory.

The second year's work is a daily theme course, and is intended to give practice in higher English composition and criticism.

A one-term course is offered in the theory and practice of argumentative discourse.

#### ROMANCE LANGUAGES AND LITERATURES

This department offers four years of instruction in French and one year each in Spanish and Italian. In the elementary courses the main object is to give the student correct pronunciation, grammatical knowledge, and the ability to read the languages with facility. In the second year attention is especially directed to various phases of nineteenth century literature; effort is made to ground the student thoroughly in the modern idiom, and lectures are given upon the outlines of French literature. The work of the third year is a study of the masterpieces of the seventeenth century. Ability to understand readily spoken French is requisite for admission to this course. The field of the fourth year's work is literature and society in the eighteenth century. A graduate course is offered in Old French; some of the more important texts are studied, and attention is given to the origins of the language.

#### SOCIOLOGY

(See economics in the philosophical group in the College of Science, p. 120, and courses 6 and 7, under economics, in the "General Description of Courses," p. 232. See also, for allied courses, anthropology, p. 160, and psychology, p. 185.)

#### SPANISH

(See Romance Languages.)

# COLLEGE OF ENGINEERING

---

## FACULTY

- ANDREW S. DRAPER, LL.D., PRESIDENT.  
N. CLIFFORD RICKER, M.ARCH., DEAN, Architecture.  
THOMAS J. BURRILL, PH.D., LL.D., Botany.  
SAMUEL W. SHATTUCK, C.E., Mathematics.  
IRA O. BAKER, C.E., Civil Engineering.  
CHARLES W. ROLFE, M.S., Geology.  
ARTHUR N. TALBOT, C.E., Municipal and Sanitary Engineering, Mechanics.  
ARTHUR W. PALMER, Sc.D., Chemistry.  
FRANK F. FREDERICK, Art and Design.  
SAMUEL W. PARR, M.S., Applied Chemistry.  
DANIEL K. DODGE, PH.D., English.  
LESTER P. BRECKENRIDGE, PH.B., Mechanical Engineering.  
DAVID KINLEY, PH.D., Economics.  
DANIEL H. BRUSH, CAPTAIN 17TH INFANTRY, U.S.A., Military Science.  
ALBERT P. CARMAN, Sc.D., Physics and Electrical Engineering.  
GEORGE W. MYERS, PH.D., Astronomy and Applied Mathematics.  
EDGAR J TOWNSEND, PH.M., Mathematics.  
JAMES M. WHITE, B.S., Architecture.  
WILLIAM H. VAN DERVOORT, M.E., Mechanical Engineering.  
WILLIAM D. PENCE, C.E., SECRETARY, Civil Engineering.  
HARRY S. GRINDLEY, Sc.D., Chemistry.  
T. ARKLE CLARK, B.L., Rhetoric.

HERMAN S PIATT, A.M., French.  
BERNARD V SWENSON, B.S., Electrical Engineering.  
FRED A. SAGER, B.S., Physics.  
WILLIAM ESTY, A.M., Electrical Engineering.  
CYRUS D. MCLANE, B.S., Architecture, Mechanics.  
JAMES D. PHILLIPS, B.S., General Engineering Drawing.  
SETH J. TEMPLE, B.S., Architecture.  
VIOLET D. JAYNE, A.M., English.  
ALTON C. BURNHAM, B.S., Mathematics.  
OSCAR QUICK, A.M., Physics.  
EDWARD J. LAKE, B.S., Free-Hand Drawing.  
CHESTER H. ROWELL, PH.B., German.  
GEORGE H. MEYER, A.M., German.  
WILLIAM H. KAVANAUGH, M.E., Mechanical Engineering.  
WILLIAM C. BRENKE, B.S., Mathematics.  
JAMES H. MCKEE, B.S., Mechanical Engineering.  
GEORGE D. HUBBARD, B.S., Geology.  
HUBERT A. WEBBER, B.S., General Engineering Drawing.  
CHARLES V. SEASTONE, B.S., Mechanics.  
RICHARD B. KETCHUM, B.S., Civil Engineering.  
HUBERT V. CARPENTER, B.S., Physics.  
CYRIL B. CLARK, Machine Shop.  
ALBERT R. CURTISS, Wood Shop.  
HENRY JONES, Forge Shop.  
JOSEPH H. WILSON, Foundry.  
ALBERT C. HOBART, B.S., Fellow, Civil Engineering.  
EDWARD W. POOLE, B.S., Fellow, Electrical Engineering.  
ALBERT ST. J. WILLIAMSON, Military.

#### AIMS AND SCOPE

The purpose of the College of Engineering is thoroughly to educate engineers and architects. Its aim is therefore twofold—general and technical. A considerable proportion of the course of study is devoted to general and literary work, since a graduate is now expected to arrange his ideas in clear order and to write and speak effectively. Professional success depends upon this power far more than is commonly supposed.

There is an ever increasing fund of general and scientific knowledge with which every educated man is expected to be conversant, if he desires to retain the esteem of his associates and clients. Much of the most valuable of this knowledge is still locked up in foreign languages, and these must be acquired by patient study and practice.

It might appear that this general training would be sufficient to demand the entire attention of the student during his whole course, but not less than one-half his time must be given to purely technical training and to the acquirement of a professional capital or a stock of information and knowledge of details.

### METHODS OF INSTRUCTION

Whenever suitable text-books can be found, they are employed, because their use saves much time in acquiring facts and data, and because such books become doubly valuable for later reference when enriched by notes and additions. But to arouse most fully the enthusiasm of the student, discussions and formal lectures are necessary, and they must be fully illustrated by sketches, diagrams, drawings, and photographs of executed work. In all courses of study offered by this College, drawing, in its manifold forms and uses, is made a special feature, both in its applications and its modes of execution.

### EQUIPMENT

The equipment of the various departments is described under appropriate heads. In addition to this, the College has a good reference library and some valuable apparatus of a general character. The most important portion consists of a collection of machines and apparatus for abbreviating computations, and especially for use in the calculation of tables. The principal instruments are here described:

(1) A Thomas ten-place arithmometer, the largest size manufactured, imported especially for the University, and giving products of numbers to twenty places. (2) Two

Thacher's computing scales for performing multiplication, division, squaring, and extraction of square root. (3) An Amsler's polar planimeter for measuring areas of figures of any form, and employed principally in graphic statics, or in measuring indicator diagrams. (4) A Coradi's rolling planimeter and a Coradi's polar planimeter for very accurate use. (5) An Amsler's integrator for obtaining area, static moment, and moment of inertia of a plane figure, especially of sections of columns, beams, etc. (6) A Coradi's pantagraph of best construction for the reduction of drawings and maps. (7) Various computing machines, including Boucher's calculator, Ram's slide rules, duplex slide rule, Webb's adder, the ribbon adder, etc. (8) Grant's computing machines.

## DESCRIPTION OF DEPARTMENTS

### ARCHITECTURE

The department of architecture and architectural engineering occupies nearly the entire upper story of Engineering Hall, with spacious drawing rooms lighted by skylights, convenient class rooms, cabinet, museum, and studies.

### EQUIPMENT

A large collection of casts of ornament from Spain and from Germany are jointly used by the departments of architecture and of art. Models of ceilings, roof trusses, stairs, joints in woodwork, with a large number of specimens of stone, terra cotta, molded bricks, etc., are found in the architectural collections, together with some interesting Norwegian, Indian, and Japanese art works. A series of working drawings of buildings, designed by noted architects, is placed in the architectural cabinet for convenient reference.

A fine collection of 20,000 engravings, photographs, and photoprints, mounted on cards eleven by fourteen inches, is placed in the drawing rooms, classified according to the Dewey decimal system, for use in construction, history of



architecture, and designing, forming a most valuable working library for draftsmen and designers.

An electric arc lantern is permanently placed in a special lecture room with stepped floor. For use with it, there are 2,500 lantern slides, illustrating the history of architecture, including Richardson's best work, American houses and clubhouses, and European buildings.

The University has an excellent working library in architecture and building, and the department has a fine collection of books for use in architectural designing.

Apparatus is provided for making tests in heating and ventilation, and for making photographs and lantern slides.

The department also possesses a large collection of working drawings, from the offices of noted architects, of residences, offices, United States buildings, and especially of the more important structures of the World's Columbian Exposition.

#### COURSE OF INSTRUCTION

##### *Required for Degree of B.S. in Architecture*

##### **First Year**

1. Advanced Algebra and Trigonometry (Math. 2, 4); Elements of Drafting (Drawing, Gen. Eng'g 1); Free-hand Drawing or Modeling (Arch. 20 or 21); French 5, or German 1, or English 1, 2; Military 1, 2; Physical Training 1.

2. Advanced Algebra (Math. 2); Descriptive Geometry (Drawing, Gen. Eng'g 2); Free-hand Drawing or Water Color (Arch. 20 or 21); French 5, or German 1, or English 1, 2; Military 1, 2; Physical Training 1.

3. Analytical Geometry (Math. 6); Lettering and Sketching (Drawing, Gen. Eng'g 3, 4); Architectural Drawing (Arch. 8); French 5, or German 7, or English 1, 2; Military 2; Physical Training 1.

##### **Second Year**

1. Applied Mechanics (Theo. and App. Mech. 4); Wood Construction (Arch. 2); Physics 1, 3; Architectural Drawing (Arch. 9); Rhetoric 2; Military 2.

2. Strength of Materials (Theo. and App. Mech. 5); Stone, Brick, and Metal Construction (Arch. 3); Physics 1, 3; Architectural Drawing (Arch. 9); Rhetoric 2; Military 2.

3. Sanitary Construction (Arch. 4); Free-hand Drawing or Sketching (Arch. 20 or 21); Physics 1, 3; Architectural Drawing (Arch. 9); Rhetoric 2; Military 2; Vacation Sketches (Arch. 26).

#### Third Year

1. History of Architecture (Arch. 6); Architectural Seminary (Arch. 11); Architectural Designing (Arch. 17); Chemistry 1; Architectural Drawing (Arch. 9).

2. History of Architecture (Arch. 6); Architectural Seminary (Arch. 11); Architectural Perspective (Arch. 14); Requirements and Planning of Buildings (Arch. 15); Architectural Drawing (Arch. 9).

3. History of Architecture (Arch. 7); Architectural Seminary (Arch. 11); Roofs (Arch. 5); Architectural Composition (Arch. 18); Architectural Drawing (Arch. 9); Vacation Sketches (Arch. 26).

#### Fourth Year

1. Heating and Ventilation (Arch. 13); Architectural Designing (Arch. 16); Renaissance Design (Arch. 22); Thesis.

2. Superintendence, Estimates, and Specifications (Arch. 12); Gothic Design (Arch. 23); Romanesque Design (Arch. 24)\*; Thesis.

3. Surveying (Civil Eng'g 10); Composition of Ornament (Arch. 25); Thesis.

### ARCHITECTURAL ENGINEERING

This course of study prepares graduates for professional employment as architects, structural designers and computers, as well as superintendents of construction. It is intended for students who prefer the structural and mathematical side of the profession to its artistic side, and who desire to pursue the full engineering course in mathematics and to acquire a thorough knowledge of the iron and steel construction now employed in buildings. It differs from the architectural course principally in the addition of a second year of mathematics; in the substitution of a year of civil engineering study in bridge analysis and design for the year of free-hand drawing, and in devoting considerably less time to architectural drawing and designing.

\*A second term in Arch. 22 will be accepted in lieu of Arch. 23 or Arch. 24.

## COURSE OF INSTRUCTION

*Required for Degree of B.S. in Architectural Engineering***First Year**

1. Advanced Algebra and Trigonometry (Math. 2, 4); Elements of Drafting (Drawing, Gen. Eng'g 1); Shop Practice (Mech. Eng'g 1); French 5, or German 1, or English 1, 2; Military 1, 2; Physical Training 1.

2. Advanced Algebra (Math. 2); Descriptive Geometry (Drawing, Gen. Eng'g 2); Shop Practice (Mech. Eng'g 1); French 5, or German 1, or English 1, 2; Military 1, 2; Physical Training 1.

3. Analytical Geometry (Math. 6); Lettering and Sketching (Drawing, Gen. Eng'g 3, 4); Architectural Drawing (Arch. 8); French 5, or German 7, or English 1, 2; Military 2; Physical Training 1.

**Second Year**

1. Differential Calculus (Math. 7); Wood Construction (Arch. 2); Physics 1, 3; Architectural Drawing (Arch. 9); Rhetoric 2; Military 2.

2. Advanced Analytical Geometry (Math. 8); Stone, Brick, and Metal Construction (Arch. 3); Physics 1, 3; Architectural Drawing (Arch. 9); Rhetoric 2; Military 2.

3. Integral Calculus (Math. 9); Sanitary Construction (Arch. 4); Physics 1, 3; Architectural Drawing (Arch. 9); Rhetoric 2; Military 2.

**Third Year**

1. Analytical Mechanics (Theo. and Appl'd Mech. 1); History of Architecture (Arch. 6); Architectural Drawing (Arch. 9); Architectural Seminary (Arch. 11); Chemistry 1.

2. Resistance of Materials (Theo. and Appl'd Mech. 2); History of Architecture (Arch. 6); Architectural Drawing (Arch. 9); Architectural Seminary (Arch. 11); Chemistry 16.

3. Hydraulics (Theo. and Appl'd Mech. 3); Roofs (Arch. 5); Dynamo-Electric Machinery (Elect. Eng'g 2); Architectural Drawing (Arch. 9).

**Fourth Year**

1. Bridge Analysis (Civil Eng'g 12); Architectural Designing (Arch. 16); Heating and Ventilation (Arch. 13); Thesis.

2. Bridge Details (Civil Eng'g 13); Superintendence, Estimates, and Specifications (Arch 12); Thesis.

3. Bridge Design (Civil Eng'g 14); Surveying (Civil Eng'g 10); Architectural Engineering (Arch. 19); Thesis.

## CIVIL ENGINEERING

The design in this department is to furnish a course of theoretical instruction, accompanied and illustrated by a large amount of practice, which will enable the student to enter intelligently upon the various and important duties of the civil engineer. While the instruction aims to be practical by giving the student information and practice directly applicable in his future professional work, the prime object is the development of the mental faculties. The power to acquire information and the ability to use it are held to be of far greater value than any amount of so-called practical knowledge.

**EQUIPMENT**

This department has an extensive equipment of compasses, engineers' transits, solar transits, levels,—ordinary and precise,—plane tables, sextants, chronometers, barometers, etc. For the lecture room, the department is provided with full-size joints of an actual railroad bridge, sections of columns, eye-bars, etc., and a large collection of lithographs, photographs and blue-prints of bridges and buildings.

**COURSE OF INSTRUCTION***Required for the Degree of B. S. in Civil Engineering***First Year**

1. Advanced Algebra and Trigonometry (Math. 2, 4); Elements of Drafting (Drawing, Gen. Eng'g 1); Shop Practice (Mech. Eng'g 1); French 5, or German 5, or English 1, 2; Military 1, 2; Physical Training 1.

2. Advanced Algebra (Math. 2); Descriptive Geometry (Drawing, Gen. Eng'g 2); Shop Practice (Mech. Eng'g 1); French 5, or German 5, or English 1, 2; Military 1, 2; Physical Training 1.

3. Analytical Geometry (Math. 6); Lettering and Sketching (Drawing, Gen. Eng'g 3, 4); Shop Practice (Mech. Eng'g 1); French 5, or German 5, or English 1, 2; Military 2; Physical Training 1.

**Second Year**

1. Differential Calculus (Math. 7); Land Surveying (Civil Eng'g 1); Physics 1, 3; Rhetoric 2; Military 2.

2. Advanced Analytical Geometry (Math. 8); Drawing and Surveying (Civil Eng'g 2 and 3); Physics 1, 3; Rhetoric 2; Military 2.

3. Integral Calculus (Math. 9); Drawing and Surveying (Civil Eng'g 2 and 3); Physics 1, 3; Rhetoric 2; Military 2.

#### Third Year

1. Analytical Mechanics (Theo. and Appl'd Mech. 1); Railroad Engineering (Civil Eng'g 4); Chemistry 1.

2. Resistance of Materials (Theo. and Appl'd Mech. 2); Railroad Engineering (Civil Eng'g 4); Road Engineering (Municipal and San. Eng'g 1); Steam Engines (Mech. Eng'g 16); Steam Boilers (Mech. Eng'g 17).

3. Hydraulics (Theo. and Appl'd Mech. 3); Descriptive Astronomy (Astronomy 4a); Roofs (Arch. 5).

#### Fourth Year

1. Masonry Construction (Civil Eng'g 5); Bridge Analysis (Civil Eng'g 12); Water Supply Engineering (Mun. and San. Eng'g 2); Thesis.

2. Bridge Details (Civil Eng'g 13); Sewerage (Mun. and San. Eng'g 3); any two of the following: Railroad Structures (Civil Eng'g 17); Tunneling (Civil Eng'g 15); Geodesy (Civil Eng'g 6); Thesis.

3. Bridge Design (Civil Eng'g 14); Geology 3; Practical Astronomy (Astronomy 6, *half term*); Engineering Contracts and Specifications (Civil Eng'g 16); Thesis.

## ELECTRICAL ENGINEERING

### INSTRUCTION

This is a course in theoretical and applied electricity. It extends through four years. The first two years are substantially the same as in the mechanical engineering courses. In the last two years the course includes the fundamental subjects in theoretical and applied mechanics and steam engineering, but a large part of the time is given to courses in electricity and its applications. The features of the instruction are the facilities offered for laboratory work by the student; the work done in calculating, designing and making working drawings of electrical apparatus; the senior thesis requirements and facilities offered for original work.

**EQUIPMENT**

The class rooms, drafting rooms, seminary rooms, laboratory for more exact electrical measurements, studies, and offices are in Engineering Hall. The dynamo laboratory, battery room, photometer room, and workshop are in the Mechanical and Electrical Engineering Laboratory.

The department has the six large pier-rooms of the physics department for the more exact electrical and magnetic measurements. These rooms, with their equipment, are described in more detail under the equipment of the physics department. The drafting and seminary rooms are well lighted and supplied with every convenience. The seminary room is accessible to members of the upper classes at all times. It contains files of the leading journals of theoretical and applied electricity in English, French, and German, besides a department reference library.

The dynamo laboratory is equipped with various types of direct current dynamos and motors, alternators and transformers, with apparatus and every convenience for making complete tests. Included in this equipment are a 300-light Thomson-Houston alternator with exciter, switchboard appliances, and a large number of transformers of various makes; also Brush and Thomson-Houston arc light machines, Thomson-Houston and Edison incandescent machines, and 500-volt generators, several Jenny motors, and two small Westinghouse single-phase machines. The equipment includes a large number of Weston voltmeters, ammeters and wattmeters, thus giving facilities for the accurate determination of E. M. F., current and power in both direct and alternate current circuits. In addition to these are various other standard instruments, such as a number of Whitney and Hoyt ammeters, Kelvin balances and electrostatic voltmeters, several different makes of recording and indicating wattmeters, electro-dynamometers, electrometers, hysteresis meters, condensers, inductive and non-inductive resistances, lamp and water rheostats, Brackett cradle dynamometer, tachometers, revolving con-

tact makers, and other devices and appliances which are essential to the thorough experimental study of direct and alternating currents.

The photometer room is supplied with an electric-light photometer, types of incandescent and of direct and alternating current arc lamps, and various conveniences for making electric light tests.

The battery room contains a collection of primary cells and a large battery of secondary cells, fitted with switch-board and testing conveniences.

The workshop is supplied with an engine lathe, a speed lathe, grinder, etc., and a line of fine tools. An electric motor furnishes power for this machinery. The services of an experienced mechanic enable the department to manufacture special apparatus as required.

The University electric lighting and power plant is available for tests for the department. It consists of two Westinghouse two-phase alternating current dynamos, one of 75-kilowatt and one of 45-kilowatt capacity, with four induction motors, having a combined output of 100 horse power; a 30-kilowatt 500-volt constant potential generator with six motors, and a Wood series arc light machine for lighting the grounds and Military Hall. The transformer capacity of the alternating plant is for seven hundred 16-candle power incandescent lamps. The prime motors for the plant are 100 horse power and 50 horse power Ideal steam engines and a 50 horse power Westinghouse steam engine.

#### COURSE OF INSTRUCTION

##### *Required for the Degree of B. S. in Electrical Engineering*

##### **First Year**

1. Advanced Algebra and Trigonometry (Math. 2, 4); Elements of Drafting (Drawing, Gen. Eng'g 1); Shop Practice (Mech. Eng'g 1); French 5, or German 1, or English 1, 2; Military 1, 2; Physical Training 1.

2. Advanced Algebra (Math. 2); Descriptive Geometry (Drawing, Gen. Eng'g 2); Shop Practice (Mech. Eng'g 1); French 5, or German 1, or English 1, 2; Military 1, 2; Physical Training 1.

3. Analytical Geometry (Math. 6); Lettering and Sketching (Drawing, Gen. Eng'g 3, 4); Shop Practice (Mech. Eng'g 1); French 5, or German 7, or English 1, 2; Military 2; Physical Training 1.

#### Second Year

1. Differential Calculus (Math. 7); Elements of Machine Design (Mech. Eng'g 4); Shop Practice (Mech. Eng'g 2); Physics 1, 3; Rhetoric 2; Military 2.

2. Advanced Analytical Geometry (Math. 8); Elements of Machine Design (Mech. Eng'g 4); Shop Practice (Mech. Eng'g 2); Physics 1, 3; Rhetoric 2; Military 2.

3. Integral Calculus (Math. 9); Elements of Machine Design (Mech. Eng'g 4); Shop Practice (Mech. Eng'g 2); Physics 1, 3; Rhetoric 2; Military 2.

#### Third Year

1. Analytical Mechanics (Theo. and Appl'd Mech. 1); Mechanism (Mech. Eng'g 5); Chemistry 1; Electrical and Magnetic Measurements (Physics 4).

2. Resistance of Materials (Theo. and Appl'd Mech. 2); Steam Engines (Mech. Eng'g 16); Steam Boilers (Mech. Eng'g 17); Electrical and Magnetic Measurements (Physics 4); Elective (1 credit for winter and spring terms together), Mathematics 16, or Chemistry 3a, or Civil Engineering 10.

3. Hydraulics (Theo. and Appl'd Mech. 3); Mechanical Engineering Laboratory (Mech. Eng'g 13); Electrical Measurements (Physics 4); Elements of Dynamo Machinery (Elect. Eng'g 11); Elective (same as winter term).

#### Fourth Year

1. Thermodynamics (Mech. Eng'g 7); Dynamo-Electric Machinery (Elect. Eng'g 3a); Electrical Design (Elect. Eng'g 3b); Telegraphy and Telephony (Elect. Eng'g 6); Seminary (Elect. Eng'g 10); Thesis.

2. Alternating Currents and Alternating Current Machinery (Elect. Eng'g 4a); Electrical Design (Elect. Eng'g 4b); Photometry (Elect. Eng'g 5); Electric Lighting Plants (Elect. Eng'g 8); Seminary (Elect. Eng'g 10); Thesis.

3. Alternating Currents and Alternating Current Machinery (Elect. Eng'g 4a); Electrical Design (Elect. Eng'g 4b); Electrical Transmission of Power (Elect. Eng'g 9); Advanced Electrical Measurements (Physics 9); Seminary (Elect. Eng'g 10); Thesis.



## MECHANICAL ENGINEERING

It is the object of this course to give the student a thorough training in the theoretical principles underlying the science of machines and mechanics, and at the same time to enable him to become practically familiar with some of the numerous applications of these principles.

## EQUIPMENT

The equipment of this department is arranged for work under three heads—class and drawing room work, laboratory work, and shop practice.

The *drawing rooms* are equipped with modern desks, boards, filing cabinets, card indexes, reference books, catalogues, odontographs, gear charts, tables, etc. In the cabinet rooms are kinematic models and sectioned steam specialties, many of which were donated by the manufacturers.

The *steam engineering laboratory* is in the *Mechanical and Electrical Engineering Laboratory*. It contains the lighting and power plant of the University, consisting of one 50 horse power Ideal single-cylinder, high-speed engine, one 50 horse power Westinghouse engine, and one 100 horse power Ideal tandem compound engine. These engines are supplied with high pressure steam through an independent main to the boilers.

There are five other experimental steam engines, connected by independent steam main to the boilers. There are also gas engines, air compressors, a volume fan, steam pumps, a hot air engine, and numerous steam specialties arranged for experimental tests.

The laboratory contains a large assortment of the usual instruments for testing purposes. A four-ton traveling crane of 20-foot span covers the central floor space.

The boiler room of the new central heating station contains two vertical boilers, one 100 horse power horizontal tubular boiler, equipped with Brightman mechanical stoker, one 250 horse power National water tube boiler, equipped with the Murphy furnaces, two 220 horse power Babcock

& Wilcox boilers, equipped with the Roney mechanical stokers, together with all necessary accessory apparatus, all available for testing purposes. The pumping station and power plants of the two cities furnish additional opportunities for experimental work.

Considerable apparatus designed for use on locomotive road tests has been constructed and arrangements have been made for regular tests of locomotives in actual service.

The machine shop, foundry, and forge shop are located in the Metal Shops.

The *machine shop* contains one twenty-seven-inch by twelve-foot bed F. E. Reed & Co. engine lathe; one twenty-one-inch by fourteen-foot bed Putnam Standard Engine lathe; twelve engine lathes of from twelve- to twenty-inch swing; two ten-inch speed lathes; one centering lathe; one fifteen-inch Gould & Eberhardt shaper; one fifteen-inch Hendey shaper; one No. 3 Brown & Sharpe plain milling machine; one Brainard universal milling machine; one twenty- by twenty-inch by five-foot Putnam planer; one thirty- by thirty-inch by eight-foot G. A. Gray & Co., planer; one No. 2 improved Brown & Sharpe universal grinding machine; one Brown & Sharpe cutter and reamer grinder; one No. 1 Bickford radial drill; one twenty-eight-inch drill press; one twenty-inch drill press; one sensitive drill press; one water emery tool grinder; one center grinding machine; one Stover power hack saw; one Worcester twist drill grinder; complete set of United States standard taps and dies; drills, arbors, reamers, gear and milling cutters, caliper gauges, calipers, scales, and other small tools.

The *wood shop* occupies the first floor of the Wood Shops and Testing Laboratory, and contains twenty-six improved wood-working benches, fourteen of which are fitted with Wyman and Gordon patent vises; one thirty-four-inch F. H. Clement & Co. band saw; one thirty-six inch Yerkes & Finan band saw; one twenty-inch Clement Co. band saw; one thirty-six-inch Yerkes & Finan band saw; one twenty-inch Clement & Co. wood planer; one J. A.

Fay & Co. jig-saw; one J. A. Fay & Co. jointer; eight ten-inch wood lathes; one eighteen-inch pattern-maker's lathe; one No. 4 E. Fox trimmer, together with a complete equipment of small tools.

The *foundry* occupies a room 48 by 48 feet in the Metal Shops, and is equipped with a twenty-four-inch Whiting patent cupola, a core oven, and the necessary sand, ladels, and flasks for making castings. A No. 7 Buffalo steel pressure fan furnishes blast for the cupola.

The *forge shop* occupies a room 36 by 48 feet in the Metal Shops, and contains ten latest improved Buffalo down-draft forges. Blast is furnished these forges by a No. 5 Sturtevant pressure blower, and all gases of combustion are exhausted under ground by means of a No. 9 Sturtevant exhaust fan.

#### COURSE OF INSTRUCTION

##### *Required for the Degree of B. S. in Mechanical Engineering*

##### First Year

1. Advanced Algebra and Trigonometry (Math. 2, 4); Elements of Drafting (Drawing, Gen. Eng'g 1); French 5, or German 1, or English 1, 2; Shop Practice (Mech. Eng'g 1); Military 1, 2; Physical Training 1.

2. Advanced Algebra (Math. 2); Descriptive Geometry (Drawing, Gen. Eng'g 2); French 5, or German 1, or English 1, 2; Shop Practice (Mech. Eng'g 1); Military 1, 2; Physical Training 1.

3. Analytical Geometry (Math. 6); Lettering and Sketching (Drawing, Gen. Eng'g 3 and 4); French 5, or German 7, or English 1, 2; Shop Practice (Mech. Eng'g 1); Military 2; Physical Training 1.

##### Second Year

1. Differential Calculus (Math. 7); Elements of Machine Design (Mech. Eng'g 4); Shop Practice (Mech. Eng'g 2); Physics 1, 3; Rhetoric 2; Military 2.

2. Advanced Analytical Geometry (Math. 8); Elements of Machine Design (Mech. Eng'g 4); Shop Practice (Mech. Eng'g 2); Physics 1, 3; Rhetoric 2; Military 2.

3. Integral Calculus (Math. 9); Elements of Machine Design (Mech. Eng'g 4); Shop Practice (Mech. Eng'g 2); Physics 1, 3; Rhetoric 2; Military 2.

**Third Year**

1. Analytical Mechanics (Theo. and Appl'd Mech. 1); Mechanism (Mech. Eng'g 5); Chemistry 1; Power Measurements (Mech. Eng'g 3).

2. Resistance of Materials (Theo. and Appl'd Mech. 2); Steam Engines (Mech. Eng'g 16); Steam Boilers (Mech. Eng'g 17); Chemistry 16; Power Measurements (Mech. Eng'g 3).

3. Hydraulics (Theo. and Appl'd Mech. 3); Electrical Engineering (Elect. Eng'g 1); Surveying (Civil Eng'g 10); Power Measurements (Mech. Eng'g 3).

**Fourth Year**

1. Thermodynamics (Mech. Eng'g 7); High Speed Steam Engine Design (Mech. Eng'g 14); Valve Gears (Mech. Eng'g 15); Advanced Mechanical Laboratory (Mech. Eng'g 12); Seminary (Mech. Eng'g 19); Thesis.

2. Mechanics of Machinery (Mech. Eng'g 8); Graphical Statics of Mechanism (Mech. Eng'g 18); Advanced Designing (Mech. Eng'g 9); Advanced Mechanical Laboratory (Mech. Eng'g 12); Seminary (Mech. Eng'g 19); Thesis.

3. Mechanics of Machinery (Mech. Eng'g 8); Advanced Designing (Mech. Eng'g 9); Estimates (Mech. Eng'g 10); Seminary (Mech. Eng'g 19); Thesis.

**MUNICIPAL AND SANITARY ENGINEERING**

This course is designed for students desiring to make a specialty of city engineering work. It prepares for the varied duties of engineer of the department of public works of cities and includes instruction in modern methods of sanitation of cities.

**INSTRUCTION**

Instruction is given by lectures, by text-book and seminary work, and by field, laboratory, and drafting work. The methods of training are intended to develop power to take up and solve new problems connected with municipal public works, as well as to design and to superintend the ordinary constructions. Surveying, structural materials, and structural design are taught as in the civil engineering course. Chemistry, botany, and bacteriology, so far as necessary to a

comprehension of the questions involved in water supply and sewage disposal, are given.

### COURSE OF INSTRUCTION

*Required for Degree of B. S. in Municipal and Sanitary Engineering*

#### First Year

1. Advanced Algebra and Trigonometry (Math. 2 and 4); Elements of Drafting (Drawing, Gen. Eng'g 1); Shop Practice (Mech. Eng'g 1); French 5, or German 1, or English 1, 2; Military 1, 2; Physical Training 1.

2. Advanced Algebra (Math. 2); Descriptive Geometry (Drawing, Gen. Eng'g 2); Shop Practice (Mech. Eng'g 1); French 5, or German 1, or English 1, 2; Military 1, 2; Physical Training 1.

3. Analytical Geometry (Math. 6); Lettering and Sketching (Drawing, Gen. Eng'g 3, 4); Shop Practice (Mech. Eng'g 1); French 5, or German 7, or English 1, 2; Military 2; Physical Training 1.

#### Second Year

1. Differential Calculus (Math. 7); Land Surveying (Civil Eng'g 1); Physics 1, 3; Rhetoric 2; Military 2.

2. Advanced Analytical Geometry (Math. 8); Drawing and Surveying (Civil Eng'g 2, 3); Physics 1, 3; Rhetoric 2; Military 2.

3. Integral Calculus (Math. 9); Drawing and Surveying (Civil Eng'g 2 and 3); Physics 1, 3; Rhetoric 2; Military 2.

#### Third Year

1. Analytical Mechanics (Theo. and Appl'd Mech. 1); Railroad Engineering (Civil Eng'g 4); Chemistry 1.

2. Resistance of Materials (Theo. and Appl'd Mech. 2); Road Engineering (Mun. and San. Eng'g 1); Railroad Engineering (Civil Eng'g 4); Bacteriology (Mun. and San. Eng'g 5a); Steam Engines and Boilers (Mech. Eng'g 16).

3. Hydraulics (Theo. and Appl'd Mech. 3); Roofs (Arch. 5); Practical Electrical Engineering (Elect. Eng'g 1).

#### Fourth Year

1. Water Supply Engineering (Mun. and San. Eng'g 2); Masonry Construction (Civil Eng'g 5); Bridge Analysis (Civil Eng'g 12); Thesis.

2. Sewerage (Mun. and San. Eng'g 3); Bridge Details (Civil Eng'g 13); Chemistry 3a; Thesis.

3. Water Purification, Sewage Disposal, and General Sanitation (Mun. and San. Eng'g 6); Engineering Contracts and Specifications (Civil Eng'g 16); Mechanical Engineering Laboratory (Mech. Eng'g 13); Chemistry 20; Thesis.

## PHYSICS

The courses in this department are designed to furnish the student who intends to follow the profession of engineering, science teaching, or research in physical science, with such a knowledge of the phenomena and laws of physics as may be of greatest use in his chosen calling.

### EQUIPMENT

The rooms devoted to physics are in Engineering Hall. They include a large lecture room and cabinet, a large general laboratory and cabinet, several small laboratories, a constant-temperature room, a battery room, a workshop, and several private studies, laboratories, and offices.

The *lecture room* is in the form of an amphitheater, and is furnished with opera chairs provided with tablet arms. Piers at the lecture desk and in the center of the room make demonstrations with the more delicate apparatus possible. A permanent screen and rolling blinds operated by a motor facilitate illustration by lantern. The cabinet rooms adjoining the lecture room are supplied with apparatus suitable for illustration and demonstration, and are provided with conveniences for preparing apparatus for lectures.

The general laboratory is a room sixty feet square and is well lighted and ventilated. It is supplied with tables, shelves, and sinks, arranged for general experimental work. The cabinet room adjoining this laboratory contains the apparatus designed for elementary experimental work, and also a line of high-grade apparatus intended for advanced experimental work and research.

The *small laboratories*, six in number, are on the first floor, and are abundantly provided with masonry piers, wall shelves, sinks, dark curtains, etc. These rooms are now equipped with apparatus for electrical measurements.

The *constant-temperature* room is on the first floor. It is isolated from the surrounding space by double masonry walls and double doors. It is arranged for such experiments as require a low, uniform temperature.

The department shares with the electrical engineering department the workshop in Mechanical and Electrical Engineering Laboratory. This gives the department special facilities for preparing special apparatus of use in advanced and original investigations.

In addition to the preceding, there are a number of private studies and laboratories for the use of advanced students and instructors.

Electrical current is supplied to all the laboratories from the battery room, and also from the dynamo laboratory in Mechanical and Electrical Engineering Laboratory.

#### THEORETICAL AND APPLIED MECHANICS

The courses in theoretical and applied mechanics are designed to meet the needs of students of the College of Engineering.

#### EQUIPMENT

The laboratory of applied mechanics is located in the Metal Shops. It comprises the materials laboratory and the hydraulic laboratory.

The *materials laboratory* has an Olsen testing machine of 200,000 pounds' capacity, arranged to test beams twenty feet long; a Riehle testing machine of 100,000 pounds' capacity; a smaller apparatus for testing beams, a Riehle wire-testing machine, extensometers and deflectometers, a stone-grinding machine, a rattler for abrasion tests of stone and brick, with other apparatus for making all necessary measurements and observations, etc. The laboratory is fitted up as a working laboratory, where students may acquire such practice in experimental work as engineers are called upon to perform, as well as for the purpose of illustrating principles, and also for use in original investigation.

The *hydraulic laboratory* contains a steel standpipe con-

nected with city water supply and having several openings, a steam pump, tanks, pits, scales, pressure gauges, hook gauges, meters, including a Venturi meter, water motor and other apparatus for experiments with orifices, tubes, weirs, pipes, hose, and nozzles. Experiments are made in connection with the regular class instruction.



## COLLEGE OF SCIENCE

---

### FACULTY.

- ANDREW S. DRAPER, LL.D., PRESIDENT.  
STEPHEN A. FORBES, PH.D., DEAN, Zoölogy.  
THOMAS J. BURRILL, PH.D., LL.D., Botany and Horticulture.  
SAMUEL W. SHATTUCK, C.E., Mathematics.  
CHARLES W. ROLFE, M.S., Geology.  
ARTHUR W. PALMER, Sc.D., Chemistry.  
FRANK F. FREDERICK, Art and Design.  
SAMUEL W. PARR, M.S., Applied Chemistry.  
DAVID KINLEY, PH.D., Economics.  
DANIEL H. BRUSH, CAPTAIN 17TH INFANTRY, U.S.A.,  
Military Science and Tactics.  
ARNOLD TOMPKINS, PH.D., Pedagogy.  
ALBERT P. CARMAN, Sc.D., Physics.  
GEORGE T. KEMP, M.D., PH.D., Human Physiology and  
Vertebrate Anatomy.  
EVARTS B. GREENE, PH.D., History.  
GEORGE W. MYERS, PH.D., Astronomy and Mathematics.  
EDGAR J TOWNSEND, PH.M., Mathematics.  
HENRY H. EVERETT, Physical Training.  
HARRY S. GRINDLEY, Sc.D., Chemistry.  
T. ARKLE CLARK, B.L., Rhetoric.  
HERMAN S PIATT, PH.D., French.  
ARTHUR H. DANIELS, PH.D., Philosophy.  
CHARLES W. TOOKE, PH.D., Public Law and Administration.  
FRED A. SAGER, B.S., Physics.  
FRANK SMITH, A.M., SECRETARY, Zoölogy.

JOHN E. MCGILVREY, A.B., Pedagogy.  
VIOLET D. JAYNE, A.M., English.  
CHARLES A. KOFOID, PH.D., Zoölogy.  
A. C. BURNHAM, B.S., Mathematics.  
OSCAR QUICK, A.M., Physics.  
EDWARD J. LAKE, B.S., Free-Hand Drawing.  
ELLA H. MORRISON, Physical Training for Women.  
GEORGE A. HUFF, JR., Coach of Athletic Teams.  
CARLTON R. ROSE, PH.M., Chemistry.  
AGNES S. COOK, A.B., Rhetoric.  
ARTHUR C. HOWLAND, PH.D., History.  
CHESTER H. ROWELL, PH.B., German.  
GEORGE H. MEYER, A.M., German.  
JOHN P. HYLAN, PH.D., Psychology.  
CHARLES F. HOTTES, M.S., Botany.  
CLENDON V. MILLAR, M.S., Chemistry.  
WILLIAM C. BRENKE, B.S., Mathematics.  
CHARLES T. WILDER, B.S., Photography.  
GEORGE D. HUBBARD, B.S., Geology.  
HUBERT V. CARPENTER, B.S., Physics.  
JOHN L. SAMMIS, B.S., Chemistry.  
ROBERT W. STARK, B.S., Chemistry.  
MATTHEW B. HAMMOND, PH.D., Economics and Sociology.  
F. W. SCHACHT, B.S., Fellow, Zoölogy.  
ARTHUR E. PAUL, B.S., Fellow, Chemistry.  
ALBERT ST. J. WILLIAMSON, Military Science.

#### AIMS AND SCOPE

The College of Science is based upon the idea that the methods of science and the branches of study to which those methods are applicable present a subject-matter and a discipline ample for the purposes of a liberal education, and that an education so derived differs materially in character and value from one whose sources are mainly literary. This College is distinguished in general from the technical colleges of the University by the fact that its choice of subjects is not limited by practical ends, and from the College of

Literature and Arts by the predominance, in its courses and requirements, of the strictly scientific subjects. It is articulated with the latter, however, by the liberal elections from the literary courses permitted to students who have satisfied its demands as to scientific work, and by the special courses in science open to election by students from the companion college.

It affords an opportunity for the study of the natural, physical, mathematical, and mental sciences, and of economic, sociological, and philosophical subjects, either as specialties or as the substance of a general education. The candidate for graduation may take a year each in any four of the principal subjects of this College, with a considerable amount of language, literature, and general study; he may concentrate his major work on any one of the several subjects in which major courses are offered; or he may adopt any program of concentration of his major work intermediate between these extremes. The subjects presented in this College are accordingly arranged in four groups,—chemical and physical, mathematical, natural science, and philosophical,—each characterized by the predominant importance and development of the subjects indicated by its name. The studies of each group are again divided into required and elective subjects, and the latter are further subdivided into two lists, A and B. All the required subjects are necessary to graduation in the group of studies specified; those of the elective lists A and B are open to election, restricted of the elective lists are restricted only by certain general requirements, varying in the different groups, regarding the amount and distribution of the work to be done on them.

It is the purpose of this system of classification and requirement to permit large liberty of choice with respect both to main lines of study and to associated or secondary subjects, and at the same time so to guide the student's elections that his course of study shall always contain a central core or axis of closely articulated major work. Preference

is further given by this means to those minor subjects most important because of their relations to the major work elected.

The only degree given in this College is that of bachelor of science. Forty full term-credits for University studies are required for graduation, three of which may be earned by investigation work, the results of which are to be presented in a final thesis. Credit will be given for fractions of courses of instruction in exceptional cases only, by vote of the College Faculty.

#### EQUIPMENT

*Laboratories.*—The College of Science occupies three of the University buildings—the Chemical Laboratory, Natural History Hall, and the Astronomical Observatory—together with several rooms in University Hall assigned to the mathematical department and to some of the departments of the philosophical group. The physics laboratories and lecture room are in Engineering Hall, and the natural history museum is in University Hall.

The laboratory and library facilities of this College have been acquired with primary reference to the needs of the undergraduate student, and are scarcely surpassed, for their purpose, in grade and completeness, among American universities. The graduate student likewise finds here an ample equipment, material, and opportunity for independent investigation in several departments of study, notably in those covered by the operations of the State Laboratory of Natural History and of the State Entomologist's office.

### THE CHEMICAL AND PHYSICAL GROUP

#### AIMS

The purposes of the chemical and physical group may be distinguished as general and technological.

Provision is made for such students as desire to direct their attention to the purely scientific aspects of chemistry or physics.

Provision is made for the constantly growing demand for technical chemical knowledge and skill in the industrial world. Ample opportunities are offered those who wish to follow work along technological lines, special attention being given to the underlying chemical principles and their applications in the various industries.

For those who wish to prepare along the more advanced pharmaceutical lines, opportunity is offered for preparation in a thoroughly scientific manner for the work of the investigating and manufacturing pharmacist.

### EQUIPMENT FOR CHEMISTRY

*Laboratories.*—The Chemical Laboratory is 75 by 120 feet and three stories high, including basement. The basement contains the water survey laboratory and rooms for storage and dispensing, and for work in assaying and metallurgical chemistry. The first floor has a lecture room and laboratory for general chemistry and qualitative analysis, each of which accommodates 150 students; a large private laboratory, and a store room. The second floor has a laboratory for quantitative analysis and organic chemistry, a balance and reading room, and a large private laboratory.

Rooms for the special work in physical chemistry are in University Hall.

*Apparatus.*—These laboratories are amply furnished with all the modern conveniences and supplies for the various lines of work in pure and applied chemistry.

The apparatus for general use includes twenty-nine high-grade analytical balances of Sartorius's, Becker's, and Troemner's make, an abundant supply of platinum ware, including combustion tubes, and a large retort for making pure hydrofluoric acid, Kahlbaum's mercurial air pumps, Schmidt and Haentsch saccharimeters, sets of Hofmann's and Lepsius' apparatus for lecture demonstrations, complete sets of Orsat's and Hempel's apparatus for gas analysis, spectroscopes, refractoscopes, calorimetric bombs, appliances for electrolytic analysis and for determination of physical constants.

A very important feature of the equipment consists of the chemical library, which, in addition to all the modern, standard chemical texts, dictionaries, and encyclopedias, includes complete sets of nearly all the more important chemical journals, especially the German and the English. The current numbers of many others are regularly received.

### EQUIPMENT FOR PHYSICS

The rooms devoted to physics are in Engineering Hall. The general laboratory is equipped for general and advanced experimental work and research. The small laboratories, six in number, on the ground floor, are equipped with apparatus for electrical measurements and with a considerable amount of fine apparatus for measurements in light. The constant-temperature room, also on the ground floor, has double masonry walls and double floors, and is arranged for experiments requiring a uniform temperature. The workshop, near the small laboratories, is equipped for the manufacture and repair of apparatus. In addition to the preceding there are several private studies, laboratories, and offices for the use of instructors and advanced students.

### CHEMICAL COURSES

#### CLASSIFICATION OF SUBJECTS

##### Prescribed

1. *Chemical*.—General Elementary Chemistry (Chem. 1); 1 credit.  
 Descriptive Inorganic Chemistry (Chem. 2a); 1 credit.  
 Inorganic Preparations (Chem. 2b); 1 credit.  
 Organic Chemistry (Chem. 9); 2 credits.  
 Qualitative Analysis (Chem. 3a, 3b); 2 credits.  
 Quantitative Analysis (Chem. 5a, 5b); 2 credits.  
 Seminary (Chem. 19); 2 credits.
2. *General*.—Advanced Algebra and Trigonometry (Math. 1 and 3, or 2 and 4); 2 credits.  
 German 1, 8, 6; 6 credits.  
 Military 1, 2, and Physical Training; 2 credits.  
 Physics 1, 3; 3 credits.  
 Rhetoric 2; 2 credits.

**Elective***List A (Chemical)*

- Agricultural Chemistry (Chem. 13); 2 credits.  
 Chemical Technology (Chem. 6); 1 credit.  
 Elements of Organic Chemistry (Chem. 4); 1 credit.  
 Iron and Steel Analysis (Chem. 8); 1 credit.  
 Industrial Chemistry (Chem. 17); 1 credit.  
 Metallurgy (Chem. 14); 1 credit.  
 Metallurgical Chemistry (Chem. 15); 1, 2, or 3 credits.  
 Physical Chemistry (Chem. 7); 1, 2, or 3 credits.  
 Proximate Organic Analysis (Chem. 21); 1 or 2 credits.  
 Quantitative Analysis (Chem. 5c); 1 credit.  
 Sanitary Analysis (Chem. 10); 1 credit.  
 Special Courses (Chem. 18a, b, c, d);  $\frac{1}{2}$  to 5 $\frac{3}{8}$  credits.  
 Theoretical Chemistry (Chem. 12); 1 credit.  
 Thesis and Investigations (Chem. 11); 2 credits.

*List B (General)*

- Botany 6, 1; 1 or 3 credits.  
 Drawing, Gen'l Engineering 1; 1 credit.  
 Economics 1 to 18; 12 credits.  
 Electrical Engineering 1; 1 credit.  
 English 1 to 9;  $1\frac{1}{2}$  to 9 credits.  
 Geology 4, 1; 1, 2, or 3 credits.  
 Greek 1 to 3; 3 credits.  
 Latin 1 to 3; 3 credits.  
 Mathematics 2 to 9; 3 or 4 credits.  
 Mechanical Engineering 1, 2, 7, 16, 17; 1 to 6 credits.  
 Mineralogy 1, 2; 1, 2, or 3 credits.  
 Physics 4 to 7; 11 credits.  
 Physiology 4, 1; 1 or 2 credits.  
 Theoretical and Applied Mechanics 1 to 5; 1 to 3 credits.  
 Zoölogy 3, 1; 2 or 3 credits.

**REQUIREMENTS FOR GRADUATION**

In order to graduate in chemistry, the candidate must have completed all the required courses (25 credits), and must have at least three credits additional for subjects to be chosen from the chemical list A of electives. For the twelve remaining credits he must choose six subjects from list B and six either from lists A and B or from any University offerings for which he is prepared, subject to the approval

of the head of the department of chemistry. He must make, in all, forty full term-credits, and present an acceptable thesis.

Special exceptions as to the required number of chemical options may be made for those who desire to prepare themselves as teachers of chemistry rather than as technical chemists.

#### COURSE OF INSTRUCTION BY YEARS AND TERMS

The following program of prescribed courses and chemical electives shows the terms in which the principal studies of the chemical group must be taken. The prescribed studies, which are in *italics*, must be taken also in the year and term indicated.

##### First Year

1. *General Introductory Chemistry* (Chem. 1); *German* 1; *Mathematics* 3, or 2, 4; *Military* 1, 2; *Physical Training* 1.
2. *Descriptive Inorganic Chemistry* (Chem. 2a); *German* 1; *Mathematics* 1 or 2; *Military* 1, 2; *Physical Training* 1; *Qualitative Analysis* (Chem. 3a).
3. *Analytical Geometry* (Math. 6); *Descriptive Inorganic Chemistry* (Chem. 2); *Elements of Organic Chemistry* (Chem. 4); *German* 8; *Military* 2a, 2b; *Qualitative Analysis* (Chem. 3b).

##### Second Year

1. *German* 6; *Military* 2; *Physics* 1, 3; *Quantitative Analysis* (Chem. 5a); *Rhetoric* 2.
2. *Physical Chemistry* (Chem. 7); *Agricultural Chemistry* (Chem. 13); *Chemical Technology* (Chem. 6); *German* 6; *Military* 2; *Physics* 1, 3; *Quantitative Analysis* (Chem. 5b); *Rhetoric* 2.
3. *Physical Chemistry* (Chem. 7); *Agricultural Chemistry* (Chem. 13); *Chemical Technology* (Chem. 6); *German* 6; *Iron and Steel Analysis* (Chem. 8); *Military* 2; *Quantitative Analysis* (Chem. 5c); *Physics* 1, 3; *Rhetoric* 2.

##### Third Year

1. *Physical Chemistry* (Chem. 7); *Metallurgical Chemistry* (Chem. 15); *Metallurgy* (Chem. 14); *Rhetoric* 2; *Seminary* (Chem. 19).
2. *Chemistry* (Chem. 7); *Metallurgical Chemistry* (Chem. 15); *Organic Chemistry* (Chem. 9); *Proximate Organic Analysis* (Chem. 21); *Rhetoric* 2; *Seminary* (Chem. 19); *Theoretical Chemistry* (Chem. 12).



3. Chemistry (Chem. 7); Metallurgical Chemistry (Chem. 15); *Organic Chemistry* (Chem. 9); Proximate Organic Analysis (Chem. 21); *Rhetoric 2*; *Seminary* (Chem. 19); *Theoretical Chemistry* (Chem. 12).

#### Fourth Year

1. Physical Chemistry (Chem. 7); Metallurgy (Chem. 14); Metallurgical Chemistry (Chem. 15); Sanitary Analysis (Chem. 10); *Seminary* (Chem. 19); Special Analytic Chemistry (Chem. 18).

2. Physical Chemistry (Chem. 7); Metallurgical Chemistry (Chem. 15); Proximate Organic Analysis (Chem. 21); *Seminary* (Chem. 19); Special Courses (Chem. 18); *Thesis and Investigations* (Chem. 11).

3. Physical Chemistry (Chem. 7); Metallurgical Chemistry (Chem. 15); Proximate Organic Analysis (Chem. 21); *Seminary* (Chem. 19); Special Courses (Chem. 18); *Thesis and Investigations* (Chem. 11).

### APPLIED CHEMISTRY AND ENGINEERING

To meet the needs of those who wish to fit themselves for such work as devolves upon the managers of establishments in which the operations depend upon chemical processes, a four years' course in chemistry with related engineering subjects has been arranged.

#### REQUIREMENTS FOR GRADUATION

The requirements for graduation, as indicated on pages 93 and 94, are modified as follows: Chemistry, 19; one credit only is required. The electives to be chosen from lists A and B must include chemistry 6, 8, 14, 15; general engineering drawing 1, two subjects listed under "Mathematics," six under "Mechanical Engineering," and three under "Mechanics, Theoretical and Applied."

A thesis is required, and completion of the work leads to the degree of bachelor of science in chemistry and engineering.

#### COURSE OF INSTRUCTION BY YEARS AND TERMS

The prescribed and chemical electives, together with the engineering subjects necessary to meet the above conditions, are indicated below. Subjects must be taken in the

term indicated, and those in *italics* must be taken in the year indicated.

#### First Year

1. Drawing, Gen'l Eng'g 1; *General Chemistry* (Chem. 1); *German* 1; Mathematics 3, or 2, 4; *Military* 1, 2; *Physical Training* 1.
2. *Descriptive Inorganic Chemistry* (Chem. 2); *German* 1; Mathematics 1 or 2; *Military* 1, 2; *Physical Training* 1. *Qualitative Analysis* (Chem. 3a).
3. *Analytical Geometry* (Math. 6); *Descriptive Inorganic Chemistry* (Chem. 2); *German* 8; *Qualitative Analysis* (Chem. 3b); *Military* 2; *Physical Training* 1.

#### Second Year

1. *Differential Calculus* (Math. 7); *German* 6; *Military* 2; *Physics* 1, 3; *Quantitative Analysis* (Chem. 5a); *Rhetoric* 2; *Shop Practice* (Mech. Eng'g 1).
2. *Advanced Analytical Geometry* (Math 8); *German* 6; *Military* 5; *Physics* 1, 3; *Quantitative Analysis* (Chem. 5b); *Rhetoric* 2; *Shop Practice* (Mech. Eng'g 1).
3. *German* 6; *Integral Calculus* (Math. 9); *Iron and Steel Analysis* (Chem. 8); *Military* 2; *Physics* 1, 3; *Rhetoric* 2; *Shop Practice* (Mech. Eng'g 1).

#### Third Year

1. *Analytical Mechanics* (Theo. and Appl'd Mech. 1 or 4); *Metallurgy* (Chem. 15); *Metallurgical Analysis and Assaying* (Chem. 14); *Shop Practice* (Mech. Eng'g 2); *Special Analytical Chemistry* (Chem. 18); *Seminary* (Chem. 19).
2. *Chemical Technology* (Chem. 6); *Industrial Chemistry* (Chem. 17); *Organic Chemistry* (Chem. 9); *Resistance of Materials* (Theo. and Appl'd Mech. 2 or 5); *Seminary* (Chem. 19); *Steam Engines* (Mech. Eng'g 16); *Steam Boilers* (Mech. Eng'g 17); *Shop Practice* (Mech. Eng'g 2).
3. *Chemical Technology* (Chem. 6); *Electrical Engineering* 1; *Hydraulics* (Theo. and Appl'd Mech. 3); *Organic Chemistry* (Chem. 9); *Special Analytical Chemistry* (Chem. 18); *Seminary* (Chem. 19); *Shop Practice* (Mech. Eng'g 2).

#### Fourth Year

1. *Chemistry* 14, 15, 18; *Thermodynamics* (Mech. Eng'g 7).
2. *Chemistry* 6, 12, 17, 18; *Steam Engines* (Mech. Eng'g 16); *Steam Boilers* (Mech. Eng'g 17); *Thesis and Investigation* (Chem. 11).
3. *Chemistry* 6, 12, 18; *Civil Engineering* 1; *Thesis and Investigation* (Chem. 11).

## PHYSICAL COURSES

## CLASSIFICATION OF SUBJECTS

**Prescribed**

- Chemistry 1, 2; 2 credits.  
 German 1, 8, 6, or French 1, 2, 5; 6 credits.  
 Mathematics 2 (Advanced Algebra); 1½ credits.  
 Mathematics 4 (Trigonometry); ¾ credit.  
 Mathematics 5 (Analytical Geometry); 1 credit.  
 Mathematics 7 (Differential Calculus); 1 credit.  
 Mathematics 8 (Advanced Analytical Geometry); 1 credit.  
 Mathematics 9 (Integral Calculus); 1 credit.  
 Military Science 1, 2; Physical Training 1; 2 credits.  
 Physics 1 and 3; 3 credits.  
 Rhetoric 2; 2 credits.

**Elective***List A (Physical)*

- Physics 5 and 6; 3 credits.  
 Physics, 7; 3 credits.  
 Physics 8; 1½ credits.  
 Mathematics 10 (Theory of Equations); 1 credit.  
 Mathematics 16 (Differential Equations); 1 credit.  
 Astronomy; 1 to 3 credits.

*List B (Chemical-Physical)*

- Physics 5 and 6; 3 credits.  
 Physics 7; 3 credits.  
 Chemistry 3a; 1 credit.  
 Chemistry 4; 1 credit.  
 Chemistry 5a; 1 credit.  
 Chemistry 5b; 1 credit.  
 Chemistry 12; 1 credit.  
 Chemistry 7; 1 to 3 credits.

**REQUIREMENTS FOR GRADUATION**

The foregoing courses have been arranged for those who wish to prepare themselves for special work in physics and allied sciences. In addition to the subjects of the prescribed list, two general lines of work are offered under elective lists A and B, one of which must be taken with the list of prescribed subjects. The advanced theoretical work

of the first of these lines is largely general mechanical physics; that of the second more especially chemical. The laboratory work follows the same lines. The additional studies necessary to complete the forty credits required for graduation may be elected from the various University courses, with the approval of the head of the department of physics.

### **COURSE OF INSTRUCTION BY YEARS AND TERMS**

#### **First Year**

1. Advanced Algebra and Trigonometry (Math. 2, 4); German 1; Chemistry 1; Rhetoric 2; Military 1, 2; Physical Training 1.
2. Advanced Algebra (Math. 2); German 1; Chemistry 2; Chemistry 3a or Rhetoric 2; Military 1, 2; Physical Training 1.
3. Analytical Geometry (Math. 6); German 8; Chemistry 2; Chemistry 4, or Rhetoric 2; Military 1, 2; Physical Training 1.

#### **Second Year**

1. Physics 1, 3; Differential Calculus (Math. 7); Rhetoric 2; German 6, or Chemistry 5a; Military 1, 2.
2. Physics 1, 3; Advanced Analytical Geometry (Math. 8); Rhetoric 2; German 6, or Chemistry 5b, 12; Military 1, 2.
3. Physics 1, 3; Integral Calculus (Math. 9); Rhetoric 2; German 6, or Chemistry 12; Military 1, 2.

#### **Third Year**

Physics 5, 6; Mathematics 10, 16; Astronomy or Chemistry 7; German 6; Electives.

#### **Fourth Year**

Physics 7, or Physics 7, 8; Electives.

It will generally be necessary to follow the above, but other arrangements consistent with sequences of course may be made in special cases.

## **DESCRIPTION OF DEPARTMENTS.**

### **CHEMISTRY**

The chemical offerings include courses of instruction in general elementary, inorganic, organic, physical, and theoretical chemistry, and several lines of qualitative and

quantitative analysis. [See *Chemistry*, in DESCRIPTION OF COURSES, p. 174.]

The first year is devoted to the consideration of general descriptive inorganic chemistry and qualitative analysis, and the first two terms of the second year are occupied with general courses in quantitative analysis, both gravimetric and volumetric. The work of these five terms and of two terms of third year, which are devoted to organic chemistry, is prescribed for all students of the chemical courses, and is intended to impart a knowledge of the facts of chemistry, to develop skill and accuracy in manipulation, and to constitute a thoroughly scientific grounding in the fundamental principles and laws of chemistry.

Aside from this prescribed work there are offered numerous electives in chemistry, which, by judicious selection, afford opportunity for specialization along any of the lines of analytical, pharmaceutical, technological, or pure chemistry.

In order that an acquaintance with chemical literature may be had, and to keep pace with the advances in chemistry, students of the third and fourth years are required to take part in the chemical seminary, in which the work consists chiefly of reviews and discussions of assigned articles in current numbers of the various journals.

Two or three terms' work in the fourth year may be devoted to the investigation of some chemical problem. This practice both furnishes an opportunity to specialize along some chosen line and serves as an introduction to the methods of chemical research.

To students who are preparing to become teachers of science opportunity is offered for the acquirement of some experience in supervising laboratory practice in elementary chemistry. The work includes criticism and discussion of methods and application of pedagogical principles and is conducted with the coöperation of the department of pedagogy.

**APPLIED CHEMISTRY**

In this department there are offered ten separate courses in technological subjects. These require as preliminary work the seven general and analytical courses. They may be further supplemented by special advanced work along some chosen line. Frequent visits are made to metallurgical and other works employing chemical processes.

**PHYSICS**

The department of physics offers a lecture course in general descriptive physics with class room experiments, extending through the year, and accompanied by an introductory laboratory course in physical measurements. This is followed by two courses, one experimental and the other theoretical. In the experimental course the student is trained in the most exact methods of making the fundamental physical measurements and taught how to discuss his results. The theoretical course running parallel to this discusses, with the aid of elementary calculus, the theory of some of the main subjects of physics. In the senior year the student is supposed to take up some special problem for investigation and to center his laboratory work about that. An advanced mathematical course is also offered for those who wish to follow the most advanced theories and results of the science.

**THE MATHEMATICAL GROUP****AIMS**

The mathematical group includes the entire offering of the University in pure mathematics, astronomy, and physics, and aims to lay the mathematical foundation for special work in any one of these lines, as well as to offer an opportunity for advanced work. It is hoped that the courses offered will meet the requirements of those who need mathematics as a tool as well as those who wish to make it a specialty.

Parallel to the pure mathematics two lines of associated

work in applied mathematics are offered, namely, in physics and astronomy. Either of these may be taken by the student wishing to graduate from this group. The one leads through the physics of the sophomore year to the mathematical theory of electricity and magnetism, heat, light, and sound; the other through surveying to celestial mechanics and general and mathematical astronomy. In addition to these, a course in astronomy and physics is offered, including the mathematics through the junior year, but leading to theoretical astronomy and advanced physics in the senior year.

## CLASSIFICATION OF SUBJECTS

### PRESCRIBED

General Engineering Drawing 1, 2; 2 credits.

Mathematics 2, 4, 6, 7, 8, 9, 10, 11, 14, 16, 17; 10½ credits.

Military Science 1, 2; Physical Training 1; 2 credits.

Rhetoric 2; 2 credits.

### ELECTIVE

#### *List A (Mathematics and Astronomy)*

Mathematics 13, 23 or 12, 18, 24; 1½ credits.

Mathematics 20, 21, 22, or Astronomy 7, 8, 9; 1½ credits.

Mathematics 15 or Astronomy 10.

Astronomy 1, 2, 3, 4; 4 credits.

Physics 1, 3; 2 credits.

Civil Engineering 10; 1 credit.

German 1, 8, 6, or French 1, 2, 5; 6 credits.

#### *List B (Mathematics and Physics)*

Mathematics 13, 23, or Mathematics 12, 18, 24; 1½ credits.

Mathematics 15, 1½ credits.

Physics 1, 3, 5, 6; 6 credits.

German 1, 8, 6, or French 1, 2, 5; 6 credits.

#### *List C (Astronomy and Physics)*

Astronomy 7, 8, 9, or Mathematics 20, 21, 22; 1½ credits.

Astronomy 4a, 4b, 5, 6; 4 credits.

Astronomy 10; 1½ credits.

Physics 1, 3, 5, 6; 5 credits.

Civil Engineering 10; 1 credit.

German 1, 8, 6; 6 credits.

*List D*

- Anthropology 1; 1 credit.  
 Botany 1 or 6; 1 or 3 credits.  
 Chemistry 1, 3a, 3b, or 4; 1 or 3 credits.  
 Economics 1 to 18; 2 to 15½ credits.  
 English 1, 2; 3 credits.  
 French 1, 5, 2, or German 1, 8, 6; 6 credits.  
 Geology 1, 3, 4; 1, 2, or 3 credits.  
 History 1, 2; 1 or 3 credits.  
 Latin 1, 2, 3; 3 credits.  
 Library 13; 1 credit.  
 Mineralogy 1, 2; 1, 2, or 3 credits.  
 Pedagogy 1 to 7; 1 to 4 credits.  
 Philosophy 1 to 8; 1 to 4 credits.  
 Physiology 1 or 4; 1 or 3 credits.  
 Public Law and Administration 1 to 9; ½ to 9½ credits.  
 Psychology 1 to 8; 1 to 4 credits.  
 Theoretical and Applied Mechanics 1; 1 credit.  
 Zoölogy 1, 8, 10; 1, 2, or 3 credits.

## REQUIREMENTS FOR GRADUATION

To graduate as a bachelor of science in the mathematical group, it is necessary for the student to complete the list of prescribed subjects, together with those of any one of lists A, B, or C of electives, and to present an acceptable thesis. The necessary number of forty full term-credits for University studies may then be made up by election from lists A, B, C, and D.

## COURSES OF INSTRUCTION BY YEARS AND TERMS

The studies of the mathematical group may best be taken according to the following outlines of courses in mathematics and physics, in mathematics and astronomy, and in astronomy and physics, respectively.

The electives provided for in the junior and senior years may be readily chosen by a reference to the preceding lists of electives and to the scheme or table of subjects by years and terms.



**COURSE IN MATHEMATICS AND PHYSICS****First Year**

1. Plane and Spherical Trigonometry (Math. 4); Engineering Drawing 1; French 1 or 5, or German 1, 8; Military 1, 2; Physical Training 1; Rhetoric 2.
2. Advanced Algebra (Math. 2); Descriptive Geometry (Drawing, Gen'l Eng'g 2); French 1 or 5, or German 1, 8; Military 1, 2; Physical Training 1; Rhetoric 2.
3. Analytical Geometry (Math. 6); French 1 or 5, or German 1, 8; Military 2; Physical Training 1; Rhetoric 2; Electives.

**Second Year**

1. Differential Calculus (Math. 7); Physics 1, 3; French 2, or German 2; Military 2.
2. Advanced Analytical Geometry (Math. 8); French 2, or German 2 or 6; Military 2; Physics 1, 3.
3. Integral Calculus (Math. 9); French 2, or German 2 or 6; Military 2; Physics 1, 3.

**Third Year**

1. Theory of Equations (Math. 10); Least Squares (Math. 14); Physics 5; Electives.
2. Theory of Determinants (Math. 11); Differential Equations (Math. 16); Physics 5; Electives.
3. Geometry of Space (Math. 17); Differential Equations (Math. 16); Physics 5; Electives.

**Fourth Year**

1. Modern Geometry (Math. 23) or Invariants (Math. 12); Physics 6; Mathematical Seminary and Thesis (Math. 15); Electives.
2. Theory of Functions (Math. 13) or Higher Plane Curves (Math. 18); Physics 6; Mathematical Seminary and Thesis (Math. 15); Electives.
3. Theory of Functions (Math. 13) or Algebraic Surfaces (Math. 24); Physics 6; Mathematical Seminary and Thesis (Math. 15); Electives.

**COURSE IN MATHEMATICS AND ASTRONOMY**

The freshman and sophomore years are the same as in the preceding course, except that surveying (C. E. 10) is required in spring term of first year and that astronomy 4a takes the place of physics 1, 3, spring term second year.

**Third Year**

1. Theory of Equations (Math. 10); Differential Equations (Math. 16); Astronomy 4b; Electives.
2. Theory of Determinants (Math. 11); Differential Equations (Math. 16); Astronomy 5; Electives.
3. Geometry of Space (Math. 17); Least Squares (Math. 14); Astronomy 6; Electives.

**Fourth Year\*, †**

1. Modern Geometry (Math. 23) or Invariants (Math. 12); Astronomy 7; Mathematics 15 or Astronomy 10; Electives.
2. Theory of Functions (Math. 13) or Higher Plane Curves (Math. 18); Astronomy 8; Mathematics 15 or Astronomy 10; Electives.
3. Theory of Functions (Math. 13) or Algebraic Surfaces (Math. 24); Astronomy 9; Mathematics 15 or Astronomy 10; Electives.

**ASTRONOMY AND PHYSICS**

Freshman and sophomore years the same as before excepting that astronomy 4a is required in the spring term of the sophomore year.

**Third Year**

1. Theory of Equations (Math. 10); Descriptive and General Astronomy (Astron. 4b); Least Squares (Math. 14).
2. Theory of Determinants (Math. 11); Cosmogony (Astron. 5); Differential Equations (Math. 16); Electives.
3. Practical Astronomy (Astron. 6); Differential Equations (Math. 16); Geometry of Space (Math. 17).

**Fourth Year†**

1. Theory of Orbits (Astron. 7); Physics 5, 6; Electives.
2. Perturbations (Astron. 8); Physics 5, 6; Electives.
3. Celestial Mechanics (Astron. 9); Physics 5, 6; Electives.

**DESCRIPTION OF DEPARTMENTS****ASTRONOMY**

The instruction given in astronomy is planned to meet the needs of four distinct classes of students, viz.: (a) those who do not wish to take the time necessary to become thor-

\* Mathematics 12, 18, and 24 will be given in 1898-9. † Astronomy 7, 8, and 9 will be given in 1898-1899.

oughly familiar with the facts, principles, and methods of the science, but who desire a general acquaintance with its present state and some idea of how this state has been reached; (b) engineers whose work necessitates a practical knowledge of some parts of it; (c) those students of the college of science who wish to specialize in the geological and biological sciences, and who require a more intimate acquaintance with astronomy than can be got in one term's work; (d) those students who wish to make astronomy their specialty.

In the first courses of instruction the work of the laboratory is subordinated to that of the recitation room, but as soon as the general notions of the science become fixed in his mind, the student is required to take data and solve practical problems in the observatory. After the student has been given sufficient practice to enable him to comprehend and appreciate the more advanced subjects of theoretical astronomy, an opportunity is provided him to familiarize himself with these subjects by the lectures and work of the senior year.

For students of class (a) course 4a, presupposing mathematics through trigonometry only, is offered; for the second, courses 4a and 6, requiring the same preliminary mathematics and a term's experience in practical work with instruments, is given; for the third, courses 4a, 4b, 5, and 6, extending through four terms and requiring the same mathematical preparation as course 4a; and for the fourth class, all astronomical courses from 4a—13, inclusive, are offered. Courses 7, 8, and 9 are to be given in alternate years with 11, 12, and 13. The courses in astronomy 7, 8, and 9, as also 11, 12, and 13, count either as graduate or as undergraduate work, but neither set can count for both. The subjects treated in the astronomical seminary will be related to those considered in courses astronomy 7, 8, and 9 and 11, 12, and 13 respectively.

**EQUIPMENT**

The equipment of the astronomical department consists of a students' astronomical observatory, containing the following instruments:

An equatorial telescope of 12 inches aperture, the optical parts of which are by Brashear. The instrument was built and mounted by Warner & Swasey. It is provided with graduated circles, driving clock, filar micrometer, a complete set of positive and negative eyepieces, and a dial for setting in right ascension. The construction of the telescope is such that spectroscopic, or photographic, apparatus may be attached without further work on the mechanician's part; a new 4-inch equatorial by Saegmüller with graduated circles, driving clock, and eyepieces, and an old 4-inch equatorial by Newton & Co., to be used in photometric eye estimates; a combined transit and zenith telescope by Warner & Swasey, with the usual micrometer and a number of smaller instruments, such as chronometers, a Riefler clock, an altazimuth, two chronographs, two sextants with mercurial horizons, two small astronomical transits, one of 21 inches focal length and  $1\frac{7}{8}$  inches aperture, by Saegmüller, and one of 24 inches focal length and 2 inches aperture, by Newton & Co.; a Green barometer and thermometers, a mier mark, and half a dozen masonry piers for portable instruments for the use of students in practical astronomy.

**MATHEMATICS**

The courses offered in pure mathematics are so arranged as to meet the needs (a) of those who desire such mathematical knowledge as is necessary to carry on investigation in some line of applied mathematics, and (b) of those who wish to make mathematics a specialty. The instruction is given, for the most part, by the aid of textbooks, but several of the advanced courses are given by lectures with collateral reading. To cultivate a spirit of independent investigation, all senior and graduate students who make mathematics their major, are required to take in

connection with their thesis a year's work (two-fifths study) in the mathematical seminary, where the results of their investigation are presented and discussed. To the seniors and graduate students two lines of work in pure mathematics are offered, and each is given on alternate years. During 1898-99 will be given courses in invariants (Math. 12), higher plane curves (Math. 18), and algebraic surfaces (Math. 24). In the following year will be given modern geometry (Math. 23), and the theory of functions (Math. 13).

Courses 10 to 24 (excepting 19) count either as graduate or undergraduate work, but in no case as both.

#### EQUIPMENT

The department is supplied with eighty-five of Brill's mathematical models. The collection includes an excellent set of plaster models illustrating the properties of surfaces of the second order, a set of string models for ruled surfaces, a set of paper models illustrating the real circular sections of certain conicoids, a complete set of Brill's models for the theory of functions, and a collection of surfaces of third order.

#### PHYSICS

For a general description of the work of the department and the physical equipment see pp. 84 and 85.

### THE NATURAL SCIENCE GROUP

#### AIMS

The courses of the natural science group are especially intended:

1. To give a thorough liberal education with a basis in the objective sciences.
2. To prepare for the pursuit of specialties in zoölogy, entomology, physiology, botany, or geology as a scientific career.
3. To lay in biological work and study a liberal foundation for a course in medicine.
4. To prepare for the teaching of the natural or physical sciences in high schools and colleges.

Special advantages are offered graduate students for whose work the museums, laboratories, and libraries, and the field and experimental equipment of the University and of the associated State Laboratory of Natural History, furnish an extraordinarily full provision. The University Biological Station, at Havana, is regarded as one of the University laboratories, and work done there by students may receive credit like work in any of the other laboratories.

## CLASSIFICATION OF SUBJECTS

### PRESCRIBED

- Art and Design 1, 2; 2 credits.
- Chemistry 1, 3a, 3b or 4; 3 credits.
- German 1, 8, 6; 6 credits.
- Mathematics 1 to 6; 2 credits.
- Military Science 1, 2; Physical Training 1; 2 credits.
- Rhetoric 2; 2 credits.

### ELECTIVE

#### *List A\** (Major Courses)

- Astronomy 4 to 6; 1 to 4 credits.
- Botany 1 to 5; 3 to 6, or 9 credits.
- Chemistry 5, 7, 9, 12; 3 credits.
- Geology 1, 2; 2 to 6 credits.
- Mineralogy 1, 2; 1, 2, or 3 credits.
- Paleontology 1; 2 credits.
- Physics 1, 3; 3 credits.
- Physiology 1, 2, 3, 5; 2 to 8 credits.
- Zoölogy 1, 2, 3, 4 to 7, 9; 2 to 9 credits.

#### *List B* (Minor Courses)

- Botany 6 or 1; 1 or 2 credits.
- Geology 4 or 1; 1 or 2 credits.
- Physics 2; 1 credit.
- Physiology 4; 1 credit.
- Zoölogy 10a or 2; 1 or 2 credits.

The major and minor courses in lists A and B in this group are respectively the maximum offerings and the minimum requirements in the various subjects of these lists.

---

\*No number of credits in any subject will be accepted as major work other than the numbers specified against that subject in list A. Credit will not be given for both major and minor work in the same subject.

## REQUIREMENTS FOR GRADUATION

In the natural science group a student may graduate from either a specialized or a general course.

A specialized course is one containing at least two years of major work in a single subject preceding the senior year, followed by an additional year of major work in that subject, and the writing of an acceptable thesis. No student may be enrolled in a specialized course without the permission of the head of the department in which he wishes to do his principal work. Only those students who pursue a specialized course will, as a rule, be selected for fellowships, scholarships, and other similar University honors. A general course is one in which less than three years' work in any one line is required for graduation, and in which no thesis is required.

Students who specialize in geology or mineralogy may count all work done in these branches and their credits in chemistry in the list of credits required before the beginning of the senior year.

No student may graduate in natural science until he has completed all the required courses, has done at least nine terms' work on one major elective, or twelve terms' work on more than one such major (list A), and has taken at least minor courses in all the other electives in which such courses are offered (list B). The necessary number of forty full term-credits for University studies may be made up by additional elections from any courses offered in the College of Science or in the College of Literature and Arts, the precedent requirements for which the student can meet.

A graduate from a four years' medical course at a school recognized by the University as of high rank may, if a matriculated student, receive for his professional medical studies credits in this group equal to one year's resident study at the University, being thus enabled to obtain his bachelor's degree in science after a three years' University course.

## COURSE OF INSTRUCTION BY YEARS AND TERMS

The following list of prescribed studies and major electives shows the terms in which the principal studies of the natural science group must be taken. The prescribed studies, which are in *italics*, must be taken also in the year indicated. Students intending to graduate from a specialized course should begin the study of their special subjects at the earliest time practicable.

**FIRST YEAR**

1. *Art and Design* 1; *Chemistry* 1; *Military* 1, 2; *Physical Training* 1; Trigonometry (Math. 3); Zoölogy 10, 11.
2. *Chemistry* 3a; *Military* 1, 2; *Physical Training* 1; Advanced Algebra (Math. 1); Zoölogy 1, 2, 3.
3. Analytical Geometry (Math. 6); *Art and Design* 2; Botany 6; *Chemistry* 3b, 4; Entomology, Practical (Zoöl. 8); *Military* 2; *Physical Training* 1; Zoölogy 1, 2.

**SECOND YEAR**

1. Botany 1; *German* 1; *Military* 2; Mineralogy 1; Physics 1, 3; Zoölogy 1, 3, 5, 10, 11.
2. Botany 1; Embryology (Zoöl. 4); Entomology (Zoöl. 6); Geology 1; *German* 1; *Military* 2; Physics 1, 3; Physiology 1.
3. Botany 1; Entomology (Zoöl. 6); Geology 1; *German* 8; *Military* 2; Physics 1, 3; Physiology 1.

**THIRD YEAR**

1. Bacteriology (Bot. 2); Botany 3; Entomology, Advanced (Zoöl. 7); Geology 1; *German* 6; Physiology 2; *Rhetoric* 2; Zoölogy 1, 10, 11.
2. Botany 3; *German* 6; Mineralogy 2; Paleontology 1; Physiology 2; *Rhetoric* 2; Zoölogy 4 (Embryology), 5, 6 (Entomology), 7.
3. Botany 4; *German* 6; Mineralogy 2; Paleontology 1; Physiology 2; *Rhetoric* 2; Zoölogy 5, 6 (Entomology), 7, 8.

**FOURTH YEAR**

1. Thesis (Bot. 5; Geol. 2; Zoöl. 9).
2. Thesis (Bot. 5; Geol. 2; Physiol. 3; Zoöl. 9).
3. Mineralogy 2; Paleontology 1; Thesis (Bot. 5; Geol. 2; Physiol. 3; Zoöl. 9).



## SUGGESTIONS AS TO CHOICE OF COURSES

Students who wish to take major courses in several natural science subjects, with the intention of graduating in natural science without a thesis, should take the required subjects of the freshman year together with zoölogy 2; may follow this in the second year with botany 1, German, physics, and military, each throughout the year; may select for the junior year mineralogy 1, to be followed by geology 1, bacteriology or elementary entomology, embryology, general biology, German, minor physiology, and rhetoric 2, finishing geology 1 in the fall term of the senior year, and completing their course by selecting studies amounting to eight elective credits from the remaining subjects open to them. Numerous variations of this course may readily be arranged to the same general effect.

Those who wish to concentrate their major work in zoölogy only should take courses 1, 4, and 5 or 6 in zoölogy, beginning with the second term of the freshman year; minor courses in physiology, physics, and botany in the second year; mineralogy 1 and geology 4 in the third year, and anthropology 1 and thesis investigation during the senior year.

For a zoölogical course with principal reference to entomology, zoölogy 2 may be taken instead of 1, and followed by courses 6 and 7, with the omission of course 4 from the above list.

The student who desires to specialize in physiology should take the subjects precedent to course 1 and follow these with all the physiology offered, except course 4. His work otherwise may be like that suggested above for the zoölogical specialist.

A special course in botany may be made up on lines similar to those of the special zoölogical course by taking, instead of major zoölogy, the botanical courses 1 to 4 in the second and third years, preferably preceded by zoölogy 6 in the freshman year, and followed by botany 5 (thesis work).

Students who desire to make the most of the offerings in geology are advised to take chemistry in the freshman year, begin their mineralogy in the fall term of the sophomore year, take geology in the winter and spring terms of that year and the fall term of the junior year, take mineralogy 2 or paleontology 1 during the winter and spring terms of the junior year, and the remaining subjects together with thesis investigation (geology 2) during the senior year.

### SPECIAL COURSE PRELIMINARY TO MEDICINE

To students who wish to select studies leading to a degree in natural science as a liberal preparation for a course in medicine, the following course or its substantial equivalent is recommended:

#### FIRST YEAR

1. Trigonometry (Math. 3); Chemistry 1; Art and Design or Zoölogy 10\*; Military 1, 2; Physical Training 1.
2. Zoölogy 3; Chemistry 2, 3a; Art and Design 2; Military 1, 2; Physical Training 1.
3. Analytical Geometry (Math. 6); Chemistry 2, 3b; Art and Design 2, or Botany 6; Military 1, 2; Physical Training 1.

#### SECOND YEAR

1. Zoölogy 3; Chemistry 5a; German 1; Military 2.
2. Physics 1, 3; Chemistry 9; German 1; Military 2.
3. Physics 1, 3; Chemistry 9; German 8; Military 2.

#### THIRD YEAR

1. Physics 1, 3; Physiology 1 or 2; German 6; Rhetoric 2.
2. Physiology 1 or 2; Zoölogy 4; German 6; Rhetoric 2.
3. Physiology 1 or 2; Botany 6; German 6; Rhetoric 2.

#### FOURTH YEAR

1. Physiology 1 or 2; Bacteriology (Bot. 2); French 5.
2. Physiology 1 or 2; Geology 4; French 5.
3. Physiology 1 or 2; Logic (Phil. 8); French 5.

---

\*To be taken in case zoölogy has not been presented for entrance.

Prospective students in medicine not wishing to graduate here before taking their medical course will be assisted to make up special study lists.

Students in the natural science group of the College of Science will be given credits on their medical courses at the School of Medicine of the University of Illinois for University work taken by them, as follows:

For zoölogy 3; biology.

For physiology 1 and 2; histology and freshman physiology.

For botany 2; bacteriology.

For chemistry 1, 3a and 4; freshman chemistry.

For chemistry 1, 3a and 9, followed by physiology 1; all of freshman and sophomore chemistry except toxicology.

## DESCRIPTIONS OF DEPARTMENTS

### BOTANY

Seven courses of instruction are offered in this subject—five primarily intended to meet the wants of students making botanical work more or less a specialty, and the others, each occupying a single term, complete in themselves, for students whose chief attention is given to other branches. Three to nine terms' work constitute a major course; a single term, course 6, is offered as a minor course. To a very large extent natural objects are studied rather than books, but constant endeavor is made to introduce students to pertinent existing literature. In the laboratory much use is made of the compound microscope, and special attention is given to its manipulation for best results, and to the preparation of objects. Course 8 is devoted to economic botany.

### EQUIPMENT

The botanical laboratories are: One of large size with full equipment of microscopes, microtomes, aquaria, models, charts, etc., for general work; one specially arranged and fitted up for bacteriological instruction and investigation, supplied with sterilizers, thermostats, microscopes, a full line of glassware, metal vessels, and chemicals; one ad-

joining the latter and used in connection with it for vegetable physiology, and having attached a glazed structure, two stories in height, well adapted to facilitate experiments upon living plants and for the growth of specimens required in the laboratories. There are also provisions for private laboratory work by instructors. The department is furnished with a lecture room; a room for the herbarium and facilities for work in connection therewith; work rooms for the preparation of specimens and material; storage rooms for apparatus, utensils, reagents, and materials; dark room for photography; rooms for offices—all in convenient association and provided with the necessary materials and apparatus for ordinary class work and for advanced research.

Special attention has been given to parasitic fungi; and the collections of specimens and of the literature upon the subject are ample for various lines of original investigation.

#### GEOLOGY AND MINERALOGY

In this department four courses are offered in geology, two in mineralogy and one in paleontology.

For students who wish more than a general acquaintance with these subjects, a course covering thirty-six weeks of class room and laboratory instruction has been arranged in geology, a like course in mineralogy, and one of twenty-two weeks in paleontology. A supplementary course of twenty-two to thirty-six weeks is offered those who select a geological subject for a thesis.

Engineers who wish an acquaintance with those portions only of geology which bear most directly on their future work are offered a course of eleven weeks.

To those who desire merely an outline of the most prominent facts and theories of geology, with some idea of the methods by which the geologist arrives at his conclusions, a course of eleven weeks is offered. All these courses are fully described under "Description of Courses," pp. 192, 219, 224.

**EQUIPMENT**

The department occupies three students' laboratories, an instructors' laboratory, a lecture room, two collection rooms, a store room, a dark room for photography, and a private office.

*Apparatus.*—The laboratories contain individual desks for forty-eight students, each of which is furnished with reagent bottles, Bunsen burners, and all the other apparatus now considered necessary to a complete outfit for blowpipe work in a first-class laboratory. They are also provided with a spectroscope; two specific gravity balances; an analytical balance; a trip scale; mortars (diamond, agate, wedgwood, and iron); two chemical hoods, each equipped with sink and a complete set of reagents and apparatus for qualitative analysis; a blast lamp and blower, and a muffle furnace; four contact goniometers and two Fuess reflecting goniometers; one Bausch & Lomb and three Fuess lithological microscopes; crystal models (550); thin sections of minerals and rocks (570); an apparatus for cutting and grinding thin sections of rocks, with a Jenney motor; apparatus for micro-chemical analysis; a self-registering barometer; an aneroid barometer and a telescopic hand level for topographic work.

For the recitation room there is a set of Kiepert's physical maps; Ramsay's orographic map of the British Isles; Haart's Alps; Chauvanne's Asia; geological and soil maps of Illinois; a series of geological maps of the United States, representing land development during the successive periods; a set of charts illustrating orography, erosion, deposition of metals, etc.; a series of relief maps; a complete lantern outfit, with microscopic and solar attachment; four hundred lantern slides; an equipment for photography and the manufacture of lantern slides.

*Materials.*—The collection of fossils comes principally from the paleozoic, but includes a representative series from the higher groups. It contains 43,400 specimens. Six hundred and fifty of the types described in the reports of

the Illinois geological survey are included, and also 200 thin sections of corals and bryozoa.

The collection of minerals contains 7,109 specimens, and that of rocks 2,912 specimens, among which is a large number of polished granites, marbles, and other ornamental building stones.

There is also a collection of Illinois soils containing 76 specimens; and a large collection of Illinois clays with their manufactured products.

### PHYSIOLOGY

The special objects of the courses in physiology are as follows: (1) To give to prospective students of medicine a detailed practical knowledge of the normal histological structure and vital processes of the body, and a working familiarity with the instruments of precision used in the investigation of disease. (2) To give to students of all branches of biology a training in deducing logically necessary conclusions from data obtained by their own observations. (3) To furnish such a knowledge of physiology as will serve as a basis for future studies in hygiene.

The laboratory method of instruction is chiefly followed, supplemented, when desirable, by lectures, demonstrations, references to standard literature, and recitations. The laboratory work predominates in the major and advanced courses; the lectures, demonstrations, and recitations in the minor course.

### EQUIPMENT

The department of physiology occupies four rooms in Natural History Hall; a general laboratory, a lecture room and a private laboratory on the top floor and an animal room in the basement. The general laboratory, thirty-five by fifty-six feet, is fitted at one end with desks of the most approved pattern for chemical and similar work, and at the other end with heavy tables, especially designed for use with the microscope and other apparatus requiring a stable support.

The department is equipped with a full set of apparatus for lecture demonstration and for laboratory work. Much of this apparatus has been recently imported from Europe and is of the latest and best pattern. Much of it is adapted to the most delicate work of demonstration or research, and is not to be found in the average physiological laboratory. Among such apparatus may be mentioned a Zeiss microspectroscope for work with minute quantities of material—as blood stains in medico-legal investigations; a hæmacytometer of Gowers and of Thoma-Zeiss; Fleischl's hæmometer, DuBois Reymond induction coil, latest pattern; DuBois Reymond myographion with tuning fork and Desprez signal for measuring intervals of less than one-thousandth second; ergograph; Zimmermans-Ludwig's drum kymograph, latest pattern; Fick kymograph; sphymograph (Marey); Fleischl's spectro-polarimeter; Knop azotometer; a Kjeldahl apparatus and a complete set of Hempel's apparatus for gas analysis (technical).

The histological equipment includes a Bausch & Lomb microscope with nosepiece and sub-stage illumination for use of each student, and all the accessory apparatus and reagents for class work or research in histology. There is also a cabinet of histological specimens to which the students have access for study or reference, but the subject is taught with all the details of technique, and the student is required to prepare and examine his own material, and the specimens thus prepared remain his own property, and are of considerable value.

## ZOÖLOGY

Zoölogy is taught in eleven courses: Three terms of major work, variously combined to form three courses, primarily for students in the natural science group; a term of embryology for those who have taken one of the preceding courses; five courses in entomology; one to three terms' work in comparative anatomy, zoölogical œcology, or advanced zoölogy for students specializing in that subject, and a year's work in independent investigation (senior) for

those who select a zoölogical subject for the graduating thesis. Only the first term's work is necessarily common to all students in the College who desire to make zoölogical study a prominent feature of their course. At the end of this term three divergent lines are open, one leading mainly toward entomology, a second toward physiology and medical study, and a third toward zoölogical specialties and pedagogical zoölogy.

#### EQUIPMENT

The equipment of the zoölogical department is contained in four students' laboratories, an instructor's laboratory, a lecture room, a private office, a store room, and a dark room for photography. It includes twenty aquaria, forty-eight compound microscopes of the best makes (Zeiss, Reicherts, Leitz, and Bausch & Lomb), Zeiss dissecting microscopes, Abbé camera-lucidas, microtomes of five patterns (Zimmerman's Minot, Cambridge, Beck-Schanze, Bausch & Lomb, and Ryder), and the usual equipment of incubators, paraffin baths, etc. A set of Blaschka glass models of invertebrates, a set of Ziegler's wax models of embryology, two hundred and fifty wall charts, and some hundreds of permanent preparations in alcohol, are examples of the equipment for the illustration of lectures. Advanced and graduate students have the privilege of the free use of the library and equipment of the State Laboratory of Natural History, which occupies rooms in Natural History Hall. They are also admitted to the privileges of the University Biological Station, at Havana, Illinois, and will be given credit for regular work done there. They are thus afforded ample opportunity for prolonged original work in several departments of zoölogical science, especially in those relating to the zoölogy of Illinois. The Bulletin of the State Laboratory is open to graduates for the publication of their papers.

Entomological students have similar access to the collections and resources of the State Entomologist's office, including a well-equipped insectary for experimental investigation.



## THE PHILOSOPHICAL GROUP

## AIMS

The philosophical group includes those sciences which deal both with man as an individual, in the mental and moral spheres, especially as these are connected with his physical being, and also with man in society. The branches of knowledge included in the group occupy a place among the divisions of biological science, and it is intended to carry the spirit of biology, in the commonly accepted sense, into the investigation of these subjects. The general purpose of the group is the study of the character and development of the individual and of society, of the relations of man to external nature, of the influence of natural selection on social development, and, finally, of the possible effect of artificial selection on that development, through both subjective and objective influences.

Under this caption the subjects of psychology, pedagogy, economics, public law and administration, and philosophy are offered in the College of Science as electives to all chemical and natural science students, and to all students who desire to specialize in the philosophical subjects, with studies in the physical and natural sciences as a preparation for them. All the studies of this group are junior and senior subjects.

## CLASSIFICATION OF SUBJECTS

**PRESCRIBED**

The same as in either the natural science or chemical and physical group, pp. 90 and 107.

**ELECTIVE***List A* (Major Courses)

Economics 1 to 18, 101, 102; 1 to 17½ credits.

Pedagogy 1 to 7; ½ to 9½ credits.

Philosophy 1 to 7; 1 to 6 credits.

Public Law and Administration 1 to 9; ½ to 9½ credits.

Psychology 1 to 9; 1 to 9 credits.

*List B (Minor Courses)*

Economics 1; 2 credits.

Philosophy 1; 1 credit.

Public Law and Administration 1; 1½ credits.

Psychology 1; 1 credit.

## REQUIREMENTS FOR GRADUATION

In this group, as in the natural science group, a student may pursue either a specialized or a general course.\*

To graduate from the College of Science in the studies of this group, in a general course, the student must either complete the subjects of the prescribed list in the chemical group,† or must carry those of the corresponding list in the natural science group‡ and earn six full credits additional for major natural science studies, three of which must be biological. He must further do twelve terms' major work, or their equivalent, on subjects in the philosophical group; must take minor courses in all the philosophical subjects (except pedagogy) in which he has not completed a major course.

To graduate from this group in a specialized course the student must meet the general requirements for specialized courses, relating to thesis and amount of work required in the major subject.

Those who specialize in psychology may count all credits gained in that department, and any three earned previous to the senior year in anthropology, botany 1 b, c; physiology 4; philosophy 1, 6, 8, 9, 10; zoölogy 3; economics 6.

## DESCRIPTION OF DEPARTMENTS

**ECONOMICS**

The instruction in this subject is based on the work of the first two years in science. The relation of the study to the biological sciences, commonly so called, is emphasized and kept steadily in view. In the courses in sociology the aim is to trace the evolution of society from primitive forms

\*See pages 54, 55. †See page 90. ‡See page 107.

to its present complex structure, to examine the nature of its environment and its adaptation thereto, its present normal character and operations, and the forces, subjective and objective, which are at work tending to change its structure.

#### **PEDAGOGY**

See same, in the College of Literature and Arts, page 64.

#### **PHILOSOPHY**

The work in this department includes history of philosophy, metaphysics, ethics, and logic. The object of the courses is primarily threefold:

1. To meet the wants of those who desire to specialize.
2. To give those who desire a more general knowledge of these subjects some familiarity with the sphere of philosophical speculation and with the philosophical method as applied to the principles and presuppositions of the various sciences.
3. To show the relation of philosophy to practical life and the value of these studies as means of general culture.

#### **PUBLIC LAW AND ADMINISTRATION**

See same, in the College of Literature and Arts, page 64.

#### **PSYCHOLOGY**

The object of this department is twofold. The aim is, first, to acquaint the student experimentally with psychic phenomena and to make him familiar with recent literature and standard authorities; and, second, to make contributions to the science itself.

For the suitable preparation of the student for higher work, he is from the first required to deal with the subject as an experimenter, and thus given a practical knowledge of the phenomena which he is to handle. The laboratory is well equipped with materials and apparatus for the continuation of this work through a large number of classical experiments upon sensation, which the student is required to conduct himself and of which a careful record is kept.

The higher mental functions are then studied in a similar way, and the experimenter held responsible for the purity of the experimental conditions and the method of procedure. As a preparation for this, scientific methods and the logic of experimentation are made special objects of study. The history of psychology is also taken up. A full line of periodical literature is made accessible by the University, and this serves as the basis of reports in the seminary. In order to give a comprehensive survey of psychic activities, the genesis of mind with its accompanying development of neural structure is traced from the lower forms of life to its culmination in adult man.

For the accomplishment of the second aim of the department, that of original research, the laboratory is well equipped with suitable apparatus and every incentive is given toward a high grade of work. Investigations not immediately connected with the laboratory are also encouraged. The plan of this higher work is formed on a coöperative basis so that each investigator not only receives the assistance of his fellow students, but is also allowed to participate in their work.

# COLLEGE OF AGRICULTURE

---

## FACULTY

- ANDREW S. DRAPER, LL.D., PRESIDENT.  
EUGENE DAVENPORT, M.AGR., DEAN, Animal Husbandry.  
THOMAS J. BURRILL, PH.D., LL.D., Botany and Horticulture.  
STEPHEN A. FORBES, PH.D., Zoölogy.  
CHARLES W. ROLFE, M.S., Geology.  
DONALD McINTOSH, V.S., Veterinary Science.  
ARTHUR W. PALMER, Sc.D., Chemistry.  
FRANK F. FREDERICK, Art and Design.  
SAMUEL W. PARR, M.S., Applied Chemistry.  
DANIEL H. BRUSH, CAPTAIN 17TH INFANTRY, U.S.A.,  
Military Science.  
ALBERT P. CARMAN, Sc.D., Physics.  
EVARTS B. GREENE, PH.D., History.  
GEORGE T. KEMP, PH.D., M.D., Physiology.  
EDGAR J. TOWNSEND, PH.M., Mathematics.  
WILLIAM H. VAN DERVOORT, M.E., Mechanical Engineering.  
HARRY S. GRINDLEY, Sc.D., SECRETARY, Chemistry.  
HERMAN S PIATT, A.M., French.  
ARTHUR HILL DANIELS, PH.D., Philosophy.  
CHARLES W. TOOKE, A.M., Public Law and Administration.  
FRANK SMITH, A.M., Zoölogy.  
PERRY G. HOLDEN, M.S., Agricultural Physics.  
VIOLET D. JAYNE, A.M., English.  
OSCAR QUICK, A.M., Physics.  
EDWARD J. LAKE, B.S., Art and Design.

WILBER J. FRASER, B.S., Dairying.  
JOSEPH C. BLAIR, Horticulture.  
AGNES S. COOK, A.B., Rhetoric.  
ARTHUR C. HOWLAND, PH.D., History.  
CHESTER H. ROWELL, PH.B., German.  
JOHN P. HYLAN, PH.D., Psychology.  
CHARLES F. HOTTES, M.S., Botany.  
M. B. HAMMOND, PH.D., Economics.  
ALBERT R. CURTISS, Woodworking.  
HENRY JONES, Blacksmith.

### AIMS AND SCOPE

The College of Agriculture aims at the higher education of the rural people and their elevation both in a business and in a social sense. It believes that civilization is the fruit of labor as well as of thought; that thought is most healthy in an active body, and that in the future, as in the past, development will come largely through those who intelligently labor.

It believes that every man needs two educations; one that is technical, to fit him for business, another that is cultural, to fit him to live; one to make him efficient and independent as to means of support, the other to develop and to train his better faculties; one to insure comfortable existence, the other to make the most of that existence. This College attempts to secure both of these for the young land owner, believing that neglect of one leads to incompetency and distress, while the want of the other dwarfs the individual and prevents his greatest usefulness. In other words, it seeks to provide that education which shall best serve the needs of a rural people living in a cultured nation and under a free government.

The strictly technical portion is essentially a course in applied science. It constitutes about one-fourth of the course, and the aim is not so much to develop and teach rules of practice as to discover the principles and to establish the laws of agricultural science. Of the remaining

three-fourths of the course more than half is prescribed in the sciences. This is both for their own sake and to fortify the technical work of the course. Because of this and because the subject-matter and the methods of the technical portion lie so fully within the domain of science, the course is essentially scientific rather than literary, and it is believed that the sciences afford a favorable field for the development of the higher faculties of the mind. Yet the College is mindful of the fundamental character of history, literature, and economics as training studies, and reasonable attention to these subjects is required.

To insure breadth of training still further and to afford latitude for individual preference in culture studies, nine full term-credits are left elective. These electives may be used to extend either the technical or the cultural features of the course, but the latter is encouraged and advised. Under this elective privilege almost any University work will be accepted for credit, but as the privilege is continuous in one study after the freshman year, it is desired that electives be chosen by courses, and so far as possible directed to definite ends.

#### METHODS OF INSTRUCTION

Instruction is by laboratory work, supplemented by text-books, lectures, and reference readings, which are almost constantly assigned from standard volumes and periodicals. Laboratory methods of study are regarded as peculiarly suited to the subjects of this course and the needs of its students, and a liberal equipment has been provided for students' use and for purposes of illustration.

#### EQUIPMENT

The equipment for the technical work of the course is increasing rapidly. The department of agricultural physics is fitting out one of the best laboratories in the West for investigation in soil physics and in mechanical analysis of soils. The dairy department is equipped with a plant for laboratory work in testing, pasteurizing, separating,

creaming, and churning; also for investigation in dairy bacteriology.

For illustration and practice in expert judging, the College owns a stud of Morgan horses, herds of Jersey, Shorthorn and Holstein-Friesian cattle and a choice flock of Shropshires.

The department of veterinary science is provided with a model of the horse in *papier maché*, capable of dissection into nearly one hundred parts. There are also natural specimens illustrating nearly every disease of bone to which the horse is subject.

The College makes free use of the extensive fields, orchards, and gardens in which the Agricultural Experiment Station conducts experiments in methods of culture, effect of various practices upon yield and upon fertility, varieties of fruits, vegetables, and forage crops from corresponding latitudes in various parts of the world. The methods employed and the results secured are freely used for instruction. This is the more readily accomplished because for the most part the instructors are also in charge of the experiments.

The ornamental grounds which surround the University buildings contain about twenty acres, and are kept neat and attractive. These, with their trees and flowering shrubs, lawns, beds of flowers and foliage plants, walks and drives of different construction and styles, furnish illustrations for the classes in landscape gardening. A greenhouse contains a collection of plants of value to the classes in floriculture and landscape gardening.

The cabinets contain a series of colored casts of fruits, enlarged models of fruits and flowers, collections of seeds of native and exotic plants, of specimens of native and foreign woods, of beneficial and injurious insects, and of specimens showing their work; numerous dry and alcoholic specimens and preparations; photographs, maps, charts, diagrams, drawings, etc.

The college has a supply of compound microscopes and other apparatus, and students have opportunity to learn



their use and to make practical investigations with them. The herbarium is rich in specimens of useful and noxious plants, including many of the fungous parasites which cause disease to cultivated crops.

Agriculture is beginning to have a literature, and the library contains a large collection of works on agriculture by standard authors in English, French, and German; also reports of agricultural departments of this and other countries, journals of agricultural societies, both in America and abroad, besides nearly all the standard agricultural periodicals of the United States and many from Europe and Australia. The student not only has free access to this literature, but is constantly assigned reference readings as a part of his class work.

In other work than the purely technical, the agricultural student meets the same instructors and enjoys the same privileges as other students of the University, and in all departments the laboratory method is freely employed, in which the student uses apparatus with his own hands and consults the literature of the subject at every step.

## CLASSIFICATION OF SUBJECTS

### PRESCRIBED

- Agriculture 1a, 1b, 2a, 2b, †3, 4, †5, 6, 9; 6 or 8 credits.
- Art and Design 1; 2 credits.
- Botany 1, 2, 8; 5 credits.
- Chemistry 1, 3a, 4; 3 credits.
- English 1; 1½ credits.
- Horticulture 1a, 1b, 1c, \*4, \*5, \*6, \*7, \*8, \*10; 1½ or 6½ credits.
- Military 1, 2; Physical Training 1; 2 credits.
- Physiology †1; 2 credits.
- Rhetoric 2; 2 credits.
- Thesis; 2 credits.
- Veterinary Science †2; 1 credit.
- Zoölogy 3, 8; 3 credits.

---

\*, † Subjects marked with a dagger may be taken instead of those marked with a star, and *vice versa*.

**ELECTIVE**

- Agriculture 7, 8, 11; 3 credits.  
Anthropology 1; 1 credit.  
Astronomy 4; 1 credit.  
Biology, General; 1 credit.  
Botany 3, 4, 5; 6 credits.  
Chemistry 5b, 5c, 13; 5 credits.  
Economics 1 to 18; 1 to 5½ credits.  
English 1, 2; 3 credits.  
French 5; 3 credits.  
Geology 4, 1; 1 or 2 credits.  
German 1, 8, 6; 3 to 6 credits.  
History 1, 2, 3, 4, 7, 10 to 12; 1½ to 9 credits.  
Horticulture 2, 3, 9; 3 credits.  
Mathematics 1, 3; 2 credits.  
Mechanical Engineering 1, 2; 1 to 4½ credits.  
Mineralogy 1; 1 credit.  
Paleontology 1; 2 credits.  
Philosophy 1, 5; 2 credits.  
Physiology 2, 3; 5 credits.  
Physics 1, 3; 1 to 3 credits.  
Public Law and Administration 1, 2, 4 to 8; ½ to 7½ credits.  
Psychology 1, 3, 6; 2 credits.  
Veterinary Science 1, 2, 3; 6 credits.  
Zoölogy 4, 5; 4 credits.

**REQUIREMENTS FOR GRADUATION**

The degree of bachelor of science is conferred upon the presentation of an acceptable thesis after the completion of the prescribed subjects and nine elective full term-studies.

The following scheme affords an outline of the possible courses and exhibits, the years and terms in which the prescribed subjects may be most conveniently taken:

If the student has entered without botany or zoölogy, one or both, he will need to take as an elective botany 6 or zoölogy 10, preparatory to the prescribed work in botany and zoölogy.

**COURSE OF INSTRUCTION BY YEARS AND TERMS****First Year**

1. Agriculture 2a; Horticulture 1a; Art and Design 1; Chemistry 1; Military 1, 2.
2. Agriculture 9; Horticulture 1b; Art and Design 1; Chemistry 3a; Military 1.
3. Agriculture 2b; Agriculture 1a; Horticulture 1c; Chemistry 4; Military 2.

**Second Year**

1. Agriculture 1b; Botany 1; Military 2; Rhetoric 2; Horticulture 2, 9, or Elective.
2. Zoölogy 3; Botany 1; Military 2; Rhetoric 2; Horticulture 3, 9, or Elective.
3. Agriculture 4; Botany 1; Military 2; Rhetoric 2; Horticulture 2, 9, or Elective.

**Third Year**

1. Agriculture 6; Zoölogy 3, or Horticulture 4, 5; English 1; Elective.
2. Botany 8; Physiology 1, or Horticulture 6; English 1; Elective.
3. Zoölogy 8; Physiology 1, or Horticulture 7; English 1; Elective.

**Fourth Year**

1. Agriculture 3, or Horticulture 8, 10; Botany 2; Elective.
2. Veterinary Science 2, or Horticulture 8, 10; Thesis; Elective.
3. Agriculture 5, or Horticulture 8, 10; Thesis; Elective.

**WINTER SCHOOL IN AGRICULTURE**

For the winter term students are admitted without entrance examination to a special short course in which are daily lectures and class exercises on some of the most important practical branches of agriculture, horticulture, and veterinary science. This course is designed for young men already engaged in agricultural pursuits who cannot spend a long time in college, and yet are anxious to make the most of themselves and of their vocation. Such students have

access to the library and museum collections of the University, and have admission to the courses of general lectures.

The details of this course vary from year to year. A special circular giving full information concerning it is issued each year several weeks before the opening of the winter term.

# STATE LIBRARY SCHOOL

---

## FACULTY

ANDREW S. DRAPER, LL. D., PRESIDENT.

KATHARINE L. SHARP, PH. M., B. L. S., DIRECTOR, Library Economy.

MARGARET MANN, Cataloguing.

MAUDE W. STRAIGHT, A. B., Reference and Bibliography.

## AIMS AND SCOPE

The *Library School*, which had been conducted at Armour Institute of Technology, Chicago, since September, 1893, was transferred to the University of Illinois in September, 1897.

The scope of the work of the school has been broadened since the time of the transfer. There is now offered a four years' course of study, leading to the degree of bachelor of library science. Two years of the course are devoted to general university studies, and this is the smallest preparation which will be accepted for entrance upon the technical work. Students are encouraged to complete a four years' college course before applying for admission. This high standard is necessary because conditions in library work are rapidly changing. It is not enough to have a knowledge of books, nor is it enough to have a knowledge of methods. One or two years of training will not take the place of years of experience, but they will make the student more adaptable and general library service more intelligent.

Instruction is given in each department of library administration. Stress is laid upon simplicity and economy, although elaborate methods are taught to enable students

to work in large libraries where bibliographic exactness is required. The higher side of library work is emphasized throughout the course, and students are taught their responsibility to the schools, to the clubs, to the factories, to university extension, and to the people as organized bodies and as individuals.

It is the purpose of the University to graduate librarians who are not only trained, but educated; librarians who are not only equipped in technical details, but filled with an appreciation of their high calling to furnish "the best reading to the greatest number at the least cost."

The school offers a course of twelve lessons, open to all students of the University, on the use of the library and the ordinary reference books.

#### METHODS OF INSTRUCTION

There are so few text-books on library economy that instruction is given almost altogether by lecture and laboratory methods. References to books and periodicals are given for collateral reading, and individual research is encouraged from the start. Lectures are illustrated by the collections of forms and fittings and each student is expected to do a certain amount of practical work in the University library each day. Before completing the course, each student must have had actual experience in every department of the library. Class room work is tested by problems, and examinations take the form of problems wherever practicable.

#### EQUIPMENT

The most valuable equipment is the working library of the University.

The Library School has the complete collection of manuscript notes and problems which have been prepared since the school opened in 1893. As text-books are so few, this collection is invaluable. A collection of library reports and catalogues and of mounted samples, showing methods of administration in all departments, is carefully

classified and is continually increasing. A collection of card catalogues of various forms has been made, including the book forms from Leyden, Holland; Cassel, Germany; and Florence, Italy; the Rudolph indexer and the modern forms approved by the American Library Association. Other forms are represented by photographs.

The school has a collection of printed blanks and forms illustrating methods of administration in different types of libraries, many labor-saving devices, and samples of fittings for all departments. The school received much material from the World's Columbian Exposition in 1893, and is continually receiving additions from librarians and manufacturers throughout the country.

A collection of cataloguing rules and of classification systems is making for comparative study. A number of devices and patents, such as temporary binders, pamphlet cases, newspaper files, etc., have been contributed by inventors and manufacturers.

## REQUIREMENTS FOR GRADUATION

Twenty University credits, which may include military (for men) and physical training (for women), in addition to two years' prescribed technical library work, are required for graduation. The technical work is of junior and senior grade and must be taken at the University, but the work of the first two years covers general university studies and may be taken at any college from which credits are accepted.

## COURSE OF INSTRUCTION

*Required for the degree of B.L.S.*

The work of the first two years may consist of any of the courses offered in the University, the requirements for which students can meet.

### THIRD YEAR

1. Elementary Library Economy (Lib. 1); Elementary Reference (Lib. 2); Elementary Bibliography (Lib. 3); Selection of Books (Lib. 4); Elementary Apprentice Work (Lib. 5).

2. Elementary Library Economy (Lib. 1); Elementary Reference (Lib. 2); Elementary Bibliography (Lib. 3); Selection of Books (Lib. 4); Elementary Apprentice Work (Lib. 5).

3. Elementary Library Economy (Lib. 1); Elementary Reference (Lib. 2); Selection of Books (Lib. 4); Elementary Apprentice Work (Lib. 5).

#### FOURTH YEAR

1. Advanced Library Economy (Lib. 6); Advanced Bibliography (Lib. 7); History of Libraries (Lib. 8); Advanced Reference (Lib. 9); Selection of Books (Lib. 4); Advanced Apprentice Work (Lib. 11).

2. Advanced Library Economy (Lib. 6); Advanced Bibliography (Lib. 7); Advanced Reference (Lib. 9); Book-making (Lib. 10); Selection of Books (Lib. 4); Advanced Apprentice Work (Lib. 11).

3. Advanced Library Economy (Lib. 6); Advanced Bibliography (Lib. 7); History of Libraries (Lib. 8); Thesis (Lib. 12); Selection of Books (Lib. 4); Advanced Apprentice Work (Lib. 11).



# SCHOOL OF MUSIC

---

## FACULTY

ANDREW S. DRAPER, LL. D., PRESIDENT.

WALTER HOWE JONES, DIRECTOR OF SCHOOL, Piano.

ALISON MARION FERNIE, R. A. M. (London), P. A. M.  
(Philadelphia), Voice.

ALICE PUTNAM, Violin.

JESSIE YOUNGE FOX, Piano.

## AIMS AND SCOPE

The School of Music offers courses leading to the degree of bachelor of music.

The courses are widely varied. Regular courses are laid out, although students may spend an indefinite amount of time in the study of an instrument or of the voice.

The course in the history of music, as well as the work in the University Orchestra and the University Oratorio Society, may be taken by regular students in other departments.

A course of artists' concerts is given each season under the management of the School of Music. In these concerts, to which an admission fee is charged, only artists of the best reputation appear.

The instructors in the School of Music give recitals and lectures on musical subjects during the year.

## REQUIREMENTS FOR GRADUATION

Forty full term-credits, including military and physical training, together with an acceptable thesis, are required for graduation with the degree of bachelor of music. Every

student must take the prescribed subjects. The thesis required for graduation must be on a topic related to music.

Students who are not working for a degree in music may receive a certificate of work done by complying with the following conditions:

Students of the piano, organ, or violin must complete the entire course specified for these instruments; must also complete the work offered in harmony, covering four terms, and must take one year's work (3 credits) in either German or French.

Students of the voice must complete the entire course offered in vocal work, the four terms' work in harmony and one year's work on the piano, besides taking one year (3 credits) of German or French, and one year (3 credits) of Italian.

Special and preparatory music students are required, in addition to their practical work in music, to pursue other lines of study sufficient to fill in their spare time.

Students enrolled in the department of music only pay no term fees, but must pay the music fees. (See p. 264.)

## CLASSIFICATION OF SUBJECTS

### PRESCRIBED

Music 1;  $\frac{3}{8}$  credit.

Music 2a; 4 credits.

Music 2b; 1 credit.

Music 2c; 1 credit.

Music 2d; 1 credit.

Music 3b, 4b, 5b or 6b; 17 credits.

French or German; 3 credits.

Italian 1; 3 credits.

Mathematics 4;  $\frac{3}{8}$  credit.

Military 1, 2; Physical Training 1; 2 credits.

Physics 1;  $1\frac{1}{2}$  credits.

Rhetoric 1; 2 credits.

The remaining credits may be obtained in electives offered in the College of Literature and Arts, choice of subjects being left to the individual student.

## MUSICAL ORGANIZATIONS

*The University Glee Club* is an organization for men. Membership is decided by competition and is limited to sixteen in number. The club meets twice a week for rehearsal and is under the direction of the head of the school of music.

*The Young Ladies' Glee Club* is an organization for the young ladies of the University, and is in charge of the vocal department.

*The Mandolin and Guitar Club* is open to young men who play these instruments. Membership is decided by competition, and the club is associated with the Glee Club in its concerts.

*The Military Band* is conducted by the head of the school of music. It furnishes music for important University occasions and appears at battalion drill of the military department, besides giving several concerts during the year.

*The University Orchestra* meets for a two hours' rehearsal once a week, and is open to all students who play any orchestral instrument ordinarily well.

*The University Oratorio Society* meets once a week for rehearsal of choral works, especially oratorio choruses. Membership is free to students. Singers not connected with the University are admitted on the payment of a small fee.

# GRADUATE SCHOOL

---

## ORGANIZATION

The Graduate School is in charge of the Council of Administration of the University. The Dean of the General Faculty is the executive officer of the school, and he should be consulted on all matters pertaining thereto.

## ADMISSION AND REGISTRATION

Graduates of the University of Illinois, and of other colleges and universities of approved standing, may be admitted to membership in the Graduate School upon presentation of their credentials. Other persons suitably qualified may gain admission by special vote of the Council of Administration upon such conditions as may be imposed in each case. Candidates for admission register with the Dean of the General Faculty at the beginning of each academic year, during the registration period preceding the commencement of instruction for the year in the University.

Non-residents may register by securing blanks, which are sent on application, and returning them properly filled out not later than the time specified. Correspondence in this case should be commenced early, that no delay in registration may occur.

Registration may be accepted at other times, but the time-limit required for degrees counts from the date of registration. In all cases one registration covers an academic year or such fractional part thereof as then remains. A graduate student who desires to be absent from the University during any part of the year for which he is registered must obtain from the Dean of the General

Faculty a certificate of permission covering the period of absence.

Admission to the Graduate School is indicated by a certificate issued to each successful candidate by the Dean; this certificate must be presented to the Business Manager for his signature, and, if the holder is not already matriculated in the University, must be accompanied by the required fee. The certificate, properly signed, is to be shown to the head of each department in which instruction is sought.

With the exceptions named below, all members of the Graduate School are required to be in regular attendance at the University, and to do all the work for which they are registered in the departments to which such work belongs. In case of absence on leave, or when absence is necessary to carry on investigations included in approved courses of study, the requirement of continuous residence may be modified by the Council of Administration. Graduates from baccalaureate courses of this University may register as non-resident members of the Graduate School; and all members of the School who have completed the residence period required for advanced degrees may register as non-residents while completing the work required for such degrees.

## STUDIES AND EXAMINATIONS

As far as can be indicated by a statement of time, full work for a graduate student consists in the use of forty-five hours a week in the lecture rooms, laboratories, etc., and in private study. Assignments of work are made upon this basis; but great variations naturally result from the subject-matter in hand, and from the abilities of individuals. Each student must select one principal line of study, called his major subject, and upon this major subject at least one-half of his work must be done; and any greater proportion of his time, up to the whole of it, may be thus devoted if proper approval is had. When work upon the selected major subject is not arranged to require all of the student's attention, he must choose one or two minor subjects, as may be

necessary to complete a full course of study. Usually, at least one minor subject should be taken. Not more than two may be taken at the same time.

The major study must be approved as graduate work for this University. The minor subjects may, under approval, be chosen from the offerings to graduates, or, except in the College of Engineering, from undergraduate courses exclusive of those usually open to freshmen. But all candidates for advanced degrees must direct their selection toward some well-defined end, determined for the most part by the character and purpose of the major study.

In architectural and engineering subjects, at least the major line of study and not less than two-thirds of the entire work must be taken from lists marked "primary,"\* and any remaining amount to complete a full course may be taken from those designated "secondary," under the same head with the primary list.

All courses of study leading to degrees in the Graduate School are subject to approval, first, by the head of the department of the University in which the major subject for each student belongs; second, by the Dean of the College including such department; and, third, by the Dean of the General Faculty. The latter officer reports to the Council of Administration for final action. The signatures of the heads of departments in which chosen minor subjects belong must also be obtained before the list reaches the Dean of the General Faculty. The lists of studies, as finally approved, are deposited with the Registrar of the University. No changes may subsequently be made except under the same line of approvals, but extension of time may be arranged with the professors concerned and with the Dean of the General Faculty.

Examinations are required in all subjects, and reports upon these are made to the Registrar of the University. Graduate students in undergraduate classes are examined with these classes.

---

\*See the courses for graduates in architecture and other engineering courses, in the "General Description of Courses," pp. 166, 182, 189, 216, 221.

The head of the department in which the student does his major work is charged with the direction and supervision of such major work, and, in a general way, with the supervision of the student's entire course of study. He fixes the time and method of all examinations not otherwise provided for, sees that they are properly conducted, and reports results to the Registrar. It is his duty also to keep the Dean of the General Faculty informed concerning all matters affecting the interests of the student, and of the School in connection therewith.

#### DEGREES AND FELLOWSHIPS

A full statement regarding the degrees conferred by the University may be found on later pages of this catalogue, and in the same connection an account of fellowships. (See pp. 241, 245.)

# SCHOOL OF LAW

---

## FACULTY

ANDREW S. DRAPER, LL. D., PRESIDENT OF THE UNIVERSITY, ACTING DEAN.

GEORGE E. GARDNER, A. M., Professor of Law.

CHARLES C. PICKETT, A. B., Professor of Law.

## LECTURERS

Honorable OLIVER A. HARKER, of the Appellate Court of Illinois, Lecturer on Criminal Law, Assignment for the Benefit of Creditors, and Mechanics' Liens.

Honorable CHARLES G. NEELY, of the Circuit Court of Cook County, Lecturer on the Preparation for and Conduct of Trials.

Honorable BENJAMIN R. BURROUGHS, of the Appellate Court of Illinois, Lecturer on the Law of Real Estate.

## METHODS OF INSTRUCTION

The methods of instruction as used in this school are based largely on the study of cases. Text-books are used to some extent and lectures are occasionally resorted to, but the study of the case is regarded as the chief means to the attainment of legal knowledge and proficiency.

## REQUIREMENTS FOR ADMISSION

1. All applicants for admission to the School of Law must be at least 18 years of age and of unquestioned character.

2. Graduates of colleges and scientific schools of approved standing and all persons who present credits for a



year's work at such institutions, are admitted upon diploma or certificate without examination.

3. Graduates of fully accredited high schools are admitted in the same way. A fully accredited high school is one whose graduates are admitted to the University without examination.

#### ADVANCED STANDING

The following persons will be admitted to advanced standing:

1. Persons who produce from another law school in good standing certificates of having satisfactorily pursued courses in law and received credit thereof.

2. Persons who have studied law privately or in an attorney's office and pass examinations prescribed by the faculty of the School.

3. Members of the bar of the State, who will be admitted to the third year class without examination as candidates for the degree of LL.B.

#### SPECIAL STUDENTS

Students who do not desire to be candidates for a degree may take one or more courses as special students upon approval of the faculty of the School under regulations to be prescribed. Such students will receive credit for work satisfactorily done, and may become candidates for graduation at any time by meeting the requirements of the School.

#### LEGAL STUDY AND UNIVERSITY WORK

The Council of Administration will, upon application, in proper cases, apply credits earned in the School of Law upon other University courses.

Students matriculating in the School of Law may take any of the following courses in the College of Literature and Arts, subject to the approval of the instructors having such courses in charge, and of the instructors in the School of Law: Public law and administration; economics and social science, history, and early English legal codes. By special

arrangement other work in the College of Literature and Arts may also be taken.

## COURSE OF INSTRUCTION

### FIRST YEAR

*Contracts* (Law 1).—Fall, winter, and spring terms, four hours, three hours, and two hours respectively. Professor PICKETT.

*Torts* (Law 2).—Fall, winter, and spring terms, three hours, two hours, and three hours respectively. Professor GARDNER.

*Real Property* (Law 3).—Fall, winter, and spring terms, three hours each. Professor GARDNER.

*Domestic Relations* (Law 4).—Winter term, two hours. Professor PICKETT.

*Criminal Law* (Law 5).—Spring term, two hours (supplementing Judge Harker's lectures). Professor PICKETT.

### SECOND YEAR

*Evidence Law* (Law 6).—Fall, winter, and spring terms, three hours each. Professor GARDNER.

*Sales* (Law 7).—Fall and winter terms, two hours each. Professor PICKETT.

*Real Property* (Law 8).—Fall term, two hours (continuing Real Property, Law 3). Professor GARDNER.

*Pleadings* (Law 9).—Fall term, three hours. Professor PICKETT.

*Agency* (Law 10).—Winter term, three hours. Professor PICKETT.

*Damages* (Law 11).—Winter term, two hours. Professor GARDNER.

*Bailments* (Law 12).—Spring term, five hours. Professor PICKETT.

*Guaranty and Suretyship* (Law 13).—Spring term, two hours. Professor GARDNER.

### THIRD YEAR

*Equity* (Law 14).—Fall and winter terms, four hours each. Professor PICKETT.

*Corporations* (Law 15).—Fall and winter terms, four hours and two hours respectively. Professor GARDNER.

*Commercial Paper* (Law 16).—Fall and winter terms, two hours each. Professor PICKETT.

*Wills* (Law 17).—Winter and spring terms, two hours and three hours respectively. Professor GARDNER.

*Partnership* (Law 18).—Spring term, three hours. Professor GARDNER.

*Constitutional Law* (Law 19).—Spring term, three hours. Professor GARDNER.

*Equity Pleading* (Law 20).—Spring term, one hour. Professor PICKETT.

### SEMINARY COURSE IN LEGAL HISTORY

During the fall and winter terms (1898-99) there will be given a seminary course in legal history under the joint direction of Professors Gardner and Pickett of the School of Law, and Professor Greene and Dr. Howland of the department of history. It is proposed to study in detail the Year Books covering a limited period with special reference to land tenures, feudal obligations, and the practice in the courts. This course is for advanced students only, and a reading knowledge of Latin and French is essential.

### DEGREES

#### BACHELOR OF LAWS

The basis for the degree of Bachelor of Law is ninety term-hours of work. A "term-hour" as here used means one hour per day of class-room work for one-third of a year. The degree will be conferred upon the completion of the course above set forth.

Every candidate for the degree of bachelor of laws must present a thesis embodying the results of original research upon a subject approved by the faculty.

#### MASTER OF LAWS

Work leading to the master's degree will be announced later.

All degrees will be conferred by the University at the usual commencement in June.

### ADMISSION TO THE BAR

Under the rules of the Supreme Court of Illinois, all candidates for admission to the bar must have completed a

three years' course of study in a law school or a law office, and must then pass an examination to be given by the state board of bar examiners.

#### LIBRARY FACILITIES

The University spares no effort to make the library of the School of Law complete in every line essential to the best work of the student. It contains all the leading reference works and text-books, including the chief leading periodicals, the United States Reports, the Reports of Illinois, and of several other states. The collection will be supplemented from time to time.

Besides the law library, students have access to the general libraries of the University, aggregating some forty thousand volumes.

#### FEEES

The fee for matriculation is \$10.00, and for diploma is \$5.00. The tuition is \$50.00 per year, of which \$25.00 is payable at the opening of the year, \$15.00 at the opening of the winter term, and \$10.00 at the opening of the spring term.

# THE SCHOOL OF MEDICINE

---

[For Faculty of the School of Medicine, see p. 14.]

## HISTORY

The College of Physicians and Surgeons is located on the corner of Harrison and Honore streets, Chicago, in the very heart of the "Latin Quarter" of the city. It was founded in the year 1882 by a number of representative physicians and surgeons. The College, notwithstanding its excellent educational standing, did not prosper financially during the first ten years of its existence, but in 1892 radical changes in the composition of the Faculty and in methods of instruction and administration were effected, and since that time it has grown with steadiness and rapidity. It was affiliated with the University in April, 1897.

Chicago is already the center of medical study in the United States. In the winter of 1896-97 it contained a larger number of medical students than any other city in the western hemisphere. These students are distributed among fourteen medical colleges, of which the College of Physicians and Surgeons is the second, as to the size of its classes, and is not outranked by any in respect to its facilities, or the scope and thoroughness of its curriculum, or in regard to the place it occupies in the esteem of the medical profession. During the current session there are in attendance 408 students, seventeen of whom are women.

## SESSIONS

The collegiate year is divided into two sessions, the winter session, which begins on the third Tuesday in Sep-

tember and ends on the third Tuesday in April; and the spring session, which begins on the third Wednesday in April and ends on the last week-day in June. The winter session is obligatory. The spring session is a supplementary course designed to furnish students opportunities to do special work and to make up arrearages of study.

### REQUIREMENTS FOR ADMISSION

First, a certificate of good moral character from two reputable physicians.

Second, a diploma from a recognized college, academy, or high school. Students unable to meet this requirement are accepted upon passing a satisfactory examination in the following subjects:

(a) English: The writing of an essay of at least two hundred words on a selected subject. Goldsmith's *Vicar of Wakefield* will furnish the basis of examination in English for this year.

(b) Physics: The principles of mechanics and hydraulics, *Mechanics' Natural Philosophy, Part I*, is recommended in preparation.

(c) Mathematics: The whole of arithmetic; elementary algebra; the metric system of weights and measures. Beginning with the fall of 1899, plane geometry, as given in Wells or Wentworth, will be required.

(d) Latin: The rudiments of Latin grammar and an ability to translate Latin from *Cæsar's Commentaries*. One year's time will be allowed to make up deficiencies in Latin.

Beginning with the fall of 1899, the minimum entrance requirement will be satisfactory evidence of scholarship equivalent to three years' work in an accredited high school, which must include the subjects mentioned above.

The entrance examination will be conducted in writing by a committee outside the Faculty of the School of Medicine appointed by the President of the University, and will be held at the medical college at 10 a. m. on the Monday preceding the opening of the winter and spring terms.

## ADVANCED STANDING

Students who have received the degree of bachelor of arts or bachelor of science, and those who have completed a "medical preparatory course," equivalent to that given by the University of Illinois, and graduates of reputable schools of pharmacy, veterinary science, or dental surgery, may enter the sophomore class and complete their studies upon three years of attendance, provided they fulfill all other requirements for admission and graduation. *Students thus advanced may not complain of any conflict of hours, nor absent themselves from any part of the lower conflicting course; but they may make up deficiencies in the work of the winter session during the spring course in such branches as are represented in that course.*

## COURSE OF STUDY

The curriculum required of all students for graduation extends over four years. During the first two years the work is confined to the sciences fundamental to practical medicine. During the freshman year this consists of work in histology, biology, embryology, chemistry, human anatomy, physiology, and materia medica. During the sophomore year the study of physiology, chemistry, and human anatomy is continued, and in addition the student takes up pathology, bacteriology, and therapeutics. With the junior year the study of the practical branches of medicine is begun. The entire subjects of practice of medicine, surgery, and obstetrics are covered in recitation courses. The student also begins clinical and bedside work and receives instruction in medical and surgical specialties. More advanced work along the same lines is continued in the senior year. Practice of medicine, surgery, and obstetrics are gone over again, this time in lecture courses and with greater minuteness of detail and profuseness of illustration. The various special departments of medicine and surgery are presented with like thoroughness and a large part of the student's time is given to the study of individual sick and injured people.

## EQUIPMENT

The college building is a six-story structure on the corner of two wide streets, with an open space around it on all sides. It is heated by steam and provided with all modern conveniences. It contains three well-lighted and well-ventilated amphitheatres, the smallest of which seats two hundred students. In these amphitheatres the usual lectures are given. Adjacent to the college building on the west is the laboratory building. The laboratories contained therein are among the largest and most complete possessed by any medical college in the United States. They occupy four floors, three of them 25x100 feet each, and one 25x56 feet. Each will accommodate one hundred and twenty students at a time. They are provided with desks and lockers for students' use, and are well adapted for the work for which they are severally intended. Adjoining the laboratories are preparation rooms for the use of demonstrators and professors. There is a bone room, to which students have free access for the study of osteology. In the department of pathology the collections furnish ample material for the macroscopical as well as the microscopical study of diseased tissues. The store rooms are connected with all the laboratories by means of an elevator. In the instrument room there are thirty-one first-class Leitz microscopes and forty-three Bausch and Lomb microscopes of continental patterns, besides twenty-five microscopes of various other manufacturers, all for the daily use of the students. The college has also sixteen Bausch and Lomb microtomes, besides microtomes of large size and special construction for particular kinds of work.

## FREE DISPENSARY

The dispensary occupies the first floor and a portion of the second floor of the main building. Connected with the reception room are fourteen clinic rooms for the accommodation of the various specialties in medicine and surgery. During the past five years there have been treated in these rooms an average of twenty thousand patients each year.



## HOSPITAL FACILITIES

Members of the faculty and other friends of the College have recently purchased the adjoining building of the Post-Graduate Medical School and converted it into a hospital of 125 beds. It is a large, handsome structure, 50x100 feet, five stories high, of modern construction, and elegantly furnished. It is connected with the college amphitheater by a corridor and its clinical resources are thus made easily available for the instruction of students.

Directly opposite the College is Cook County Hospital, the only free hospital in Chicago. It contains almost a thousand patients, and supplies a quantity and variety of disease and injury which no private institution can command. In the amphitheater of the hospital much of the clinical instruction of the college is given. In addition to the foregoing resources members of the faculty are connected with various other hospitals of the city and freely draw upon them for the benefit of students

## METHOD OF INSTRUCTION

During the first two years the time of the students is about equally divided between laboratory and didactic work. The plan of instruction in the College contemplates the freest use of laboratory teaching. Wherever possible practical laboratory work is made to supplement didactic teaching. Students are taught not only by prepared specimens, but they are required to prepare their own specimens from the original material, and are thus made familiar with technical methods, so that they become able independently to carry a technical investigation through all of its stages. During the junior and senior years the time is about equally divided between clinical and didactic work, with, perhaps, a preponderance of clinical instruction in the senior year. This clinical instruction is carried on, as far as possible, with the student at the patient's side. Attendance upon clinics is required in the same way as upon lectures, and the students are graded upon, and given credit for, their work in the

clinical courses just as they are for their work in the didactic and laboratory courses. During the winter sessions the students of the junior and senior years are divided into classes for dispensary work and these classes have instruction in rotation in the various departments of practical medicine. During the spring term the dispensary clinics are thrown open to students of all classes.

### REQUIREMENTS FOR GRADUATION

First, a certificate of good moral character by two reputable physicians.

Second, satisfactory deportment during attendance at college.

Third, satisfactory evidence that the candidate is twenty-one years of age.

Fourth, proof that the candidate has attended at least four full courses of instruction in four separate years, the last of which shall have been in this institution.

Fifth, certificate that the candidate has pursued the study of practical anatomy during two years and to the extent of having dissected at least the lateral half of the human body.

Sixth, certificate that the candidate has attended two full courses of dispensary and hospital clinics.

Seventh, payment of all the college fees in full.

### LIBRARY

The College has for several years had a reference library of several hundred volumes. This library owes its foundation to the gift to the College of the collection of books of the late Prof. A. Reeves Jackson. It has been added to largely from time to time by contributions from members of the faculty and other friends of the College. Its usefulness has recently been greatly augmented by gifts from the Dean of the Faculty, in consideration of which, and of provision made for its permanent maintenance and growth, it has been named by the faculty the Quine Library. It

already contains practically every book of reference required by medical students and the important medical periodicals. It is in charge of a trained librarian and is open daily from nine to five for the use of students.

More detailed information concerning the College may be obtained by application to the Registrar of the University, Urbana, Ill., or to the Secretary of the School of Medicine, 103 State Street, Chicago.

## THE SCHOOL OF PHARMACY

---

[For Faculty of School of Pharmacy, see p. 18.]

### HISTORY

The Chicago College of Pharmacy is a corporation which was founded by prominent pharmacists of Chicago and vicinity in 1859 for the purpose of advancing the practice of pharmacy. One of the first steps taken was the establishment of a school of pharmacy. At that time there was no school of the kind west of the Alleghany Mountains. Members and friends contributed money, books, apparatus, and supplies; teachers were secured and a course of lectures was instituted in November, 1859.

The first class, of but two students, was graduated in 1861. The war caused a suspension of the teaching, and the school was not reopened until 1870. The great fire, in 1871, destroyed the equipment, but pharmacists throughout Europe and America extended help to the institution, furnishing an excellent library and outfit of apparatus, which became the nucleus of the present complete equipment. In 1872 the instruction was resumed for the second time and has since continued without interruption.

"The Pharmacist," a monthly journal published by the College, from 1866 until 1886, did much to advance the interests of pharmacy in the West.

In 1880 the members and graduates of the College took an active part in the formation of the Illinois Pharmaceutical Association, which, in the following year, secured the passage of the pharmacy law.

The twenty-fifth anniversary of the founding of the College was signaled by the completion and occupation of a

building in which ample space for many years' growth was provided. The better accommodations gave an impulse to better work. Up to this time instruction had been given mainly by means of lectures, laboratory work being entirely optional. Laboratory courses in pharmacy, chemistry, and vegetable histology were now made obligatory. A laboratory devoted entirely to prescription compounding was established in 1892. The excellence of the equipment in this department won for the College a medal and diploma at the World's Columbian Exposition.

The College was formally united with the University May 1, 1896, and is now conducted as the technical "School of Pharmacy of the University of Illinois." In the management of the School the Trustees and officers of the University have the assistance of an advisory board of pharmacists elected by the registered pharmacists of the state through the Illinois Pharmaceutical Association.

The school is situated near the business center of Chicago. In addition to the larger amphitheater, known as "Attfield Hall," which has a seating capacity of three hundred and fifty, the building occupied has a smaller hall especially fitted for lectures and demonstrations in chemistry and capable of seating one hundred and fifty persons. The chemical and pharmaceutical laboratories, as well as the microscopical laboratory and the dispensing laboratory, are commodious and well appointed.

The courses of instruction, covering two terms of twenty-six weeks each, extending from October 4th to April 21st, afford opportunities for a thorough technical training such as is necessary for the successful practice of pharmacy. The subjects taught are pharmacy, chemistry, botany, and materia medica.

The system of teaching includes lectures, demonstrations, recitations, written and oral examinations, as well as individual instruction in actual work in operative and dispensing pharmacy, analytical chemistry, use of the compound microscope, etc. Much time is devoted to laboratory practice.

## REQUIREMENTS FOR ADMISSION

Applicants for admission must be at least sixteen years of age and must furnish evidence of their ability to prosecute the work of the course successfully.

The preliminary education should be equivalent to that required for entrance to a good high school.

Students who have pursued courses of study in other colleges of pharmacy will be given credit for such portions of their work as are equivalent to the work required by this college.

## REQUIREMENTS FOR GRADUATION

The candidate for the degree of graduate in pharmacy must be twenty-one years of age, must have had four years' practical experience in pharmacy, including the period of attendance at college, and must have attended two full courses of instruction, the first of which may have been in some other reputable college or school of pharmacy. He must have attended regularly the laboratory and lecture courses of this College, must pass the examinations, and must not have been absent more than five times during the term from either laboratory exercises or lectures in any department.

Candidates may present themselves for examination during the last year of their required experience or of their attainment of legal majority.

To students who complete a third year's work, embracing principally instruction in more advanced pharmaceutical chemistry and in bacteriology, the degree of pharmaceutical chemist is offered. Drug-store experience will not be required for this degree.

Persons competent to fulfill the general requirements of admission to the University may be granted credit upon the University courses for equivalent work satisfactorily completed at the School of Pharmacy.

Further information is given in the special announcement of this school. Address W. B. Day, Actuary, School of Pharmacy, 465-7 State Street, Chicago, Ill.

## GENERAL DESCRIPTION OF COURSES

---

Following the description of each course of instruction will be found the necessary requirements, if any, for admission to that particular course. Careful attention must be given to these requirements and to the sequence of studies thus indicated. For instance, under Architecture 4, for students of the College of Engineering, page 161, there are required "Mathematics 4," "Physics 1 and 3," and "Architecture 2 and 3." Turning now to these subjects, it is found that mathematics 4 is trigonometry, physics 1 and 3 are the major course of one year, architecture 2 is wood construction, and architecture 3 is stone, brick, and metal construction. All these subjects must be satisfactorily passed before admission may be had to the class in astronomy.

In case a course not required for graduation is selected by less than five students, the right to withdraw the same for the term is reserved.

Graduate courses of instruction are described under the various subjects, as a rule after the undergraduate courses. They are numbered upward from 100. Other courses may often be arranged by the professors in charge to meet the special requirements of students. The subjects in which graduate courses are announced for 1898-99 are as follows:

Agriculture, architecture, botany, chemistry, civil engineering, Danish language, economics, electrical engineering, French, geology, Greek, history, Latin, mechanical engineering, municipal and sanitary engineering, pedagogy, philosophy, psychology, theoretical and applied mechanics, zoölogy.

### AGRICULTURE

I. CROP PRODUCTION.—A course of study directed to the principles underlying successful practice in the economic production of crops on fertile lands.

a. The agricultural crops of the United States and their growth elsewhere; varieties and seed; conditions of germination and of

growth, and their influence upon development. *Spring term, at 9, full credit.* Assistant Professor HOLDEN.

b. Origin and classes of soils; conditions and indications of fertility; comparison of successful methods with a view to securing the most favorable conditions of growth on fertile lands by means of cultivation, drainage, irrigation, or other process aside from the use of fertilizers—the manipulation of fertile soils. *Fall term, at 9, full credit.* Assistant Professor HOLDEN.

2. LIVE STOCK.—a. Origin of the breeds of domestic animals and their distinguishing characters; adaptation of breeds for particular purposes and their value for grading, accompanied by critical study and practice in the art of judging both as to breed type and as to constitution and individual merit. Practice on Saturdays. *Fall term, at 11, three-fifths credit.* Professor DAVENPORT.

b. A brief study of the care and management of the live stock of the farm as to housing and feed, particularly directed to the economic sources of feeding stuffs, their equivalency and suitable preparation. *Spring term, at 11, two-fifths credit.* Professor DAVENPORT.

3. STOCK BREEDING.—Variation, its extent and importance, both in nature and under domestication; how far inherent and how far induced by environment. Correlated variation. Selection. Survival of the fittest. Effects of use and disuse. Intercrossing. Hybridism. Grading. Breeding in line and inbreeding. Instinct and intelligence. Acquired characters and their inheritance. The aim is to bring every known principle of reproduction to the assistance of the breeder's art, and to study the methods of successful breeders and their results. *Fall term, at 10, full credit.* Professor DAVENPORT.

*Required:* Botany 1; Zoölogy 3; Physiology 1.

4. FERTILITY.—Influence of fertilizers on the amount, character, and composition of crops. Effects of particular crops upon fertility and upon each other, when grown in succession or together. Nitrogen and leguminous crops. Conservation of fertility by the rotation of crops. Economic sources of the elements of fertility; fertilizers and manures, their valuation and use under both extensive and intensive methods. *Spring term, at 10, full credit.* Assistant Professor HOLDEN.

*Required:* Botany 1; Chemistry 1, 3a, 4.

5. STOCK FEEDING.—Functional activities of the animal body and the end products of their metabolism. Foods are considered,



first chemically, as affording the materials for these activities, whether in construction of body tissues or of animal products, as meat, milk, etc.; second dynamically, as supplying the potential energy for these processes, and for labor, speed, etc. A study of the development of the animal after birth and of the phenomena of animal nutrition from the economic standpoint, in which animal activity is considered as an agent for transformation of energy and the resultant product as a source of profit. *Spring term, at 10, full credit.* Professor DAVENPORT.

*Required:* Botany 2; Physics 2; Physiology 1; Zoölogy 3.

6. SOILS.—A critical study of the processes, chemical, physical, and biological, that are active within the soil; influence of fertilizer and of crop upon the soil; natural sources of fertility, as rain water, leguminous herbage; residues or the fate of fertility, whether natural or applied, as shown by a study of drainage waters; agency of bacteria and the conditions of their activity, and the cumulative effect of manures and of various agricultural practices. The whole is designed to develop the need for, and to fix the character of, such rotations and practices as shall tend to conserve fertility and to insure perpetual productiveness of soils. Lectures and reference readings. *Fall term, at 10, full credit.* Assistant Professor HOLDEN.

*Required:* Botany 1; Chemistry 1, 3a, 4; Zoölogy 3, or Botany 2.

7. COMPARATIVE AGRICULTURE.—Influence of locality, climate, soil, race, customs, laws, religion, etc., upon the agriculture of a country and incidentally upon its people. One crop only and its effect, as rice; Indian corn in American agriculture and affairs. Varying conditions under which the same crop may be produced, as wheat. Statistical agriculture. Influence of machinery and of land titles, whether resting in the government, in landlord, or in occupant. Relation of agriculture to other industries and to the body politic. *Spring term, at 9, full credit.* Professor DAVENPORT.

*Required:* Two years of University work.

8. AGRICULTURAL EXPERIMENTATION.—A systematic study of the work of experiment stations and experimenters in this and other countries, together with a critical study of correct principles and methods of experimentation, especially designed for such students as desire to fit themselves for work in original investigation in experiment stations or elsewhere. *Winter term, at 11.05, full credit.* Professor DAVENPORT.

*Required:* Agriculture 2, 4, 6.

9. **DAIRYING.**—Secretion of milk; its composition as determined by chemical analysis and by microscopic examination. General facts concerning bacteria in their special relation to milk, butter, and cheese. Methods of preventing contamination. Development of acid and the acid test. Pasteurization. Different methods of testing for fat contents, total solids, and adulterations. Variations in milk and their causes. Economic production of milk. Use and care of cream separators. Comparison of different systems of creaming and the making of butter by the most approved methods. *Winter term, at 8.20, full credit.* Mr. FRASER.

10. **INVESTIGATION AND THESIS.**—There are required for graduation two terms of original investigation, the results and methods of which are to be embodied in the form of an acceptable thesis. The student may choose his subject along the line of any of the required studies of the course. The selection should be made before the opening term of the last year.

11. **BUTTER MAKING.**—Operation of, and studies in efficiency of, different separators in comparison with gravity methods of creaming under a variety of conditions. Influence of character of milk and its handling upon the quality of butter. Different methods of ripening cream and the effect upon churning and upon butter, together with extended practice in the manufacture and in scoring of butter. *Spring term, at 8, full credit.* Mr. FRASER.

*Required:* Agriculture 9.

#### COURSES FOR GRADUATES

101. **BREEDING.**—Variation and heredity, their nature and phenomena as influenced by selection, environment, and use, with special reference to improvement of domestic animals.

102. **PHYSIOLOGICAL CHEMISTRY AND THE NATURE OF FOOD.**—A study of the functional activities of the animal body and the end products of their metabolism, as a basis for economical feeding.

103. **COMPARATIVE AGRICULTURE.**—The principles and practices of agriculture as influenced by soil, climate, tradition or the political, social, or religious condition of men.

#### ANTHROPOLOGY

1. This course, in general anthropology, begins with a study of the physical and psychical elements of ethnography. Theories as to the origin of man are discussed, and the various races of mankind are distinguished and described. Special attention is given to the

historical and comparative study of customs, ceremonies, and rights, beliefs, and folklore of primitive peoples, with reference to the common characteristics and fundamental instincts of mankind and to the origin and growth of existing customs and social institutions. *Winter term, at 8.20, full credit.* Assistant Professor DANIELS.

*Required:* A major or minor course in Economics, Geology, Psychology, or Zoölogy.

## ARCHITECTURE

2. WOOD CONSTRUCTION.—Formulæ and data for computing dimensions and strength of columns, beams, girders, etc., of wood or metal, are given and applied in the solution of examples. Wood and its uses in construction and decoration, seasoning, shrinkage, defects, and modes of protection from decay. Construction and design of wooden floors, walls, ceilings, and roofs, and joinery, doors, windows, bays, inside finish, cornices, wainscoting, stairs, etc. *Ricker's Wood, Stone, Brick, and Metal Construction; Jones's Logarithmic Tables.* *Fall term, at 2.20, full credit.* Assistant Professor McLANE.

*Required:* General Engineering Drawing 1, 2, 3, 4.

3. STONE, BRICK, AND METAL CONSTRUCTION.—Foundations of stone, brick, concrete, and piles, materials employed in stone masonry, their uses, defects, qualities, and modes of preparation. Kinds of masonry and external finish. Tools for stone cutting and their use. Preparation of working drawings, with application to the arch, vault, and dome. Brick masonry, its materials and bonds. Manufacture and refining of cast iron, wrought iron, and steel, with processes of pattern-making, molding, casting, refining, rolling, etc., and standard dimensions or sections. Special properties and value of metal in a structure, designing a line of columns in mercantile building, and of beams, girders, and footings, together with the study of joints and connections. Same text-books as in fall term. *Winter term, at 2.10, full credit.* Assistant Professor McLANE.

*Required:* General Engineering Drawing 1, 2, 3, 4.

4. SANITARY CONSTRUCTION.—Daily recitations or lectures, designs for special problems. Study of plumbing, trap ventilation, removal of wastes, construction of water closets, drains, and systems of water supply; sewage disposal. Water supply and fixtures in dwellings. *Gerhard's Drainage and Sewerage of Dwellings;*

*Lectures on Sewage Disposal. Spring term, at 3.20, full credit*  
Assistant Professor McLANE.

*Required:* Math. 4; Physics 1, 3; Arch. 2, 3.

5. ROOFS.—Elements of graphic statics and applications in designing trussed roofs. Forces, equilibrium, reactions, moments, bending moments, and shears on beams, center of gravity and moment of inertia of cross sections. Construction of wooden and of metallic roofs, mode of computing loads on roof trusses, obtaining end reactions, drawing strain diagrams, and determining sectional dimensions of members, with the designing of joint connections. *Ricker's Trussed Roofs. Ricker's Notes on Graphic Statics. Spring term, at 8 and at 9, full credit.* Assistant Professor McLANE.

*Required:* Math. 2, 4, 6; Theoretical and Applied Mechanics 1 and 2 or 4 and 5; Architecture 4 (except for students in civil and municipal engineering).

6. HISTORY OF ARCHITECTURE.—Two terms' work, divided at beginning of Romanesque style. Commencing with Egyptian and ending with modern styles, a careful study is made of more important styles, examining historical conditions, local and inherited influences, structural materials and system, special ornaments, purposes and designs of the buildings, with the most important typical examples of each style. Especial attention given to ideas useful or suggestive in American work, and to tracing gradual evolution of architectural forms. Two recitations and two illustrated lectures per week. References made to Fergusson, Lubke, Durm, Reber, Gailhabaud, etc. *Ricker's Notes on History of Architecture, Fletcher's History of Architecture. Fall term, M., W., Th., F., at 10; winter term, M., W., Th., F., at 1.15, four-fifths credit.* Professor RICKER.

*Required:* Architecture 4, 8, 9.

7. HISTORY OF ARCHITECTURE (Details).—Exercises in drawing at large scale the most important details of the Grecian, Roman, Early Christian, Byzantine, Mohammedan, Romanesque, Gothic, and Renaissance styles. *Notes and Sketches. Spring term, M., W., Th., F., at 1.20, four-fifths credit.* Associate Professor WHITE.

*Required:* Architecture 6, 20.

8. ARCHITECTURAL DRAWING.—The term is devoted to the Five Orders of Architecture, and to architectural Shades and Shadows. A careful study of the proportions and details of the Orders is first made with lectures, recitations, and blackboard sketches from memory. *Ware's Five Orders; Lectures on Shades and Shadows. Spring term, at 8, full credit.* Assistant Professor TEMPLE.

*Required:* Gen. Eng'g Drawing 1, 2, 4; Arch. 20.

9. ARCHITECTURAL DRAWING—(Monthly Problems).—Preliminary instruction in rendering.—An entire day in each month during the sophomore and junior years is devoted to a problem in design, requiring the use of the Orders. Program is made known at beginning of the exercise, and sketches must be completed and rendered during the same day. Credit is given for this study only after the completion of each year. *Once a month, fall, winter, and spring terms, two years, full credit.* Assistant Professor TEMPLE.

*Required:* General Engineering Drawing 1, 2, 3, 4; Architecture 8.

10. ARCHITECTURAL DRAWING—(Office Work).—Instruction in this study will be given in connection with Architectural Designing (Arch. 16).

11. ARCHITECTURAL SEMINARY.—For juniors, reports and discussions of original investigations of assigned topics in History of Architecture; reviews of books, abstracts of current technical journals, and other publications. *Fall term, Tu., at 10; winter and spring terms, Tu., at 1.20, one-fifth credit.* Taken with Arch. 6 and 7. Professor RICKER.

12. SUPERINTENDENCE, ESTIMATES, AND SPECIFICATIONS.—This study comprises several specialties in office work, not otherwise provided for, so far as they can be taught in a professional school.

*Clarke's Building Superintendence* is carefully read with daily recitations; *Lectures on Building Law*; *Bower's Specifications*.

Usual methods of measurements of material and work, arrangement of computations in proper and convenient order, and an acquaintance with approximate prices of materials and labor, which vary in different localities. The methods of squaring, of cubing, of units, and of quantities, are each employed and illustrated by numerous examples.

In specifications, practice is obtained by writing out complete sets for buildings.

*Dietzgen's Specification Blanks* are employed. The standard *Contract of the American Institute of Architects* is used, being first carefully studied, then filled out for buildings. Bids, certificates, and other papers are made out. *Ricker's Lectures on Estimates.* *Winter term, at 1.15, full credit.* Associate Professor WHITE.

*Required:* Architecture 5, 6, 11; Theoretical and Applied Mechanics 1, 2, or 4, 5.

13. HEATING AND VENTILATION.—Scientific theory and practice of warming and ventilating buildings is the object of this study. Commencing with fuels and production of heat, then passing to flow of gases through ajutages and pipes, applying these data to calculation of dimensions of air ducts and chimneys. Different systems of heating by furnaces, hot water, steam, etc., are next examined, with details of each. Sources of impurity in the air and requirements of good ventilation are then considered, with the different methods of ventilation by aspiration, by fans, etc., ending with the study of fans of different types. Numerous problems are given and heating plants designed. *Carpenter's Heating and Ventilating Buildings; Ricker's Notes on Heating and Ventilation.* Fall term, at 10, full credit. Associate Professor WHITE.

*Required:* Mathematics 2, 4, 6; Architecture 2, 3, 4, 9, 15; Physics 1, 3; Chemistry 1; Theoretical and Applied Mechanics 1, 2, or 4, 5.

14. ARCHITECTURAL PERSPECTIVE.—Theory of perspective is taught with labor saving methods of abbreviating work, and designing in perspective itself is made a special aim, being very useful to a draftsman in preparing sketches for clients. Problems in angular, parallel, vertical, and curvilinear perspective, as well as in perspective shades and shadows, are solved, requiring original work as far as possible, so as thoroughly to prepare the student for any kind of work in perspective, instead of restricting him to the study and use of a single system. *Ware's Modern Perspective.* Winter term, at 8.20, full credit. Assistant Professor TEMPLE.

*Required:* General Engineering Drawing 1, 2, 3, 4; Architecture 16, 17.

15. REQUIREMENTS AND PLANNING OF BUILDINGS.—Lectures are fully illustrated by plans sketched on the blackboard, which must be embodied in students' notes. Numerous problems in planning are given. References are made to the University library and the architectural cabinet. Lectures. *Winter term, at 10.10, full credit.* Associate Professor WHITE.

*Required:* Architecture 4, 8, 9, 17.

16. ARCHITECTURAL DESIGNING—(Residences).—Practice in office methods of preparing drawings and in design and study of the requirements for dwellings. The work is limited to residences, since this class of buildings is likely to afford the graduate his first opportunity for independent original work. *Osborne's Notes on Home Planning.* Lectures with blackboard sketches to be copied

in students' notes. Problems in design worked out in rendered drawings. *Fall term, at 10, full credit.* Associate Professor WHITE.

*Required:* Architecture 4, 8, 9, 17, 20.

17. ARCHITECTURAL DESIGNING — (Problems). — Elementary architectural forms are first traced and sketched from memory; simple problems in design are then solved by sketch plans, elevations and sections, rendered in shade or color as required. The object is to obtain as much practice in original design as possible, and to form a collection of suggestive tracings and sketches. *Fall term, at 8, full credit.* Assistant Professor TEMPLE.

*Required:* Architecture 4, 7, 8, 9, 18, 20.

18. ARCHITECTURAL COMPOSITION.—A careful study is made of the laws of architectural design and of the results of experience embodied in the text-book, with numerous references to other authors. Commences with general principles, passing to an examination of proportions employed in most important styles, arrangement of plan, external design in general and detail, ceilings and interiors, arrangement of corridors, stairways, and entrances, of internal courts, and of halls for large assemblages. Frequent problems in design afford practical applications of the principles. *Ricker's Translation of Architektonische Composition* (Handbuch der Architektur). *Spring term, at 10, full credit.* Professor RICKER.

*Required:* Architecture 6, 7, 14, 17, 20.

19. ARCHITECTURAL ENGINEERING.—This continues the study of graphic statics, commenced in "roofs," with applications to metallic roofs of wide span, roof trusses of curved or unusual form, and those supported by abutments and jointed. Spherical and conical trussed domes. Effect of moving loads on girders, the graphical analysis of the arch, vault, and dome, and of the Gothic system of vault and buttress. Construction and details of steel skeleton buildings. Practical applications are made to a series of problems in design for specified cases. *Ricker's Notes on Advanced Graphics; Freitag's Architectural Engineering; Ricker's Translation of Wittman's Arch and Vault.* References to the works of Planat, Landsberg, DuBois, Clarke, Ott, Levy, Muller-Breslau, etc.; on Graphic Statics. *Spring term, at 3.20, full credit.* Associate Professor WHITE.

*Required:* Math. 2, 4, 6; Theoretical and Applied Mechanics 1 and 2, or 4 and 5; Architecture 4, 5.

20. ARCHITECTS' ART COURSE I. Prescribed.

Any three of Art and Design 1, 2, 3, 5, 6, 13. *Fall, winter, and spring terms.* Professor FREDERICK.

## 21. ARCHITECTS' ART COURSE 2. Optional.

Any three of art and design 5, 6, 7, 8, 11, 13. *Fall, winter, and spring terms.* Professor FREDERICK.

*Required:* Architecture 20.

The art and design courses offered as architecture 20 and 21 are varied to meet the special needs of students of architecture.

22. RENAISSANCE DESIGN.—*Fall term, at 1.20, full credit.* Assistant Professor TEMPLE.

23. GOTHIC DESIGN.—*Lecture, M., W., at 9.15; drawing, Tu., Th., F., at 8.20. Winter term, full credit.*

24. ROMANESQUE DESIGN.—*Lecture, Tu., Th., at 10.10; drawing, M., W., F., at 10.10. Winter term, full credit.*

In each of these three courses a prescribed series of tracings of important details is made, and problems in design are worked out as fully as time permits. A course of lectures will be given during each term. These will be fully illustrated by stereopticon views and blackboard drawings. A second term of work in architecture 22 will be accepted in lieu of architecture 23 or 24. Professor RICKER, Associate Professor WHITE, and Assistant Professor TEMPLE.

*Required:* Architecture 11, 15, 18, 20.

25. COMPOSITION OF ORNAMENT.—This term is devoted to the study of historical ornament and to daily exercises in designing architectural ornament to decorate the structural forms usually found in practice. These designs will be charcoal or crayon sketches, drawings rendered in shade or color, or finished drawings. They will be made on as large a scale as possible, usually full size. Lectures. *Meyer's Hand-book of Ornament.* *Spring term, at 1.20, full credit.* Assistant Professor TEMPLE.

*Required:* Architecture 5, 7, 11, 15, 16, 18, 20, 22, 23, 24.

26. VACATION SKETCHES.—At the beginning of the junior and senior years, each student should present a suitable number of vacation sketches for approval by Assistant Professor TEMPLE.

## COURSES FOR GRADUATES

## Primary

101. Construction of Extensive Wooden Buildings, 1, 2, or 3 credits.

102. Recent Uses of Stone, Brick, and Terra Cotta in Architecture, 1 credit.

103. Metallic Skeleton Buildings, 1, 2, or 3 credits.

104. Fire-resisting and Fire-proof Buildings, 1 credit.



105. Sanitation of Public and Semi-public Buildings, 1, 2, or 3 credits.
106. Researches on the Evolution of Architectural Styles, 1 credit.
107. Higher Application of Graphic Statics, 1, 2, or 3 credits.
108. Heating and Ventilation of Large Buildings, 1, 2, or 3 credits.
109. Higher Studies in Architectural Design, 1, 2, or 3 credits.
110. Researches and Experiments in Applied Esthetics, 1 credit.
111. Translation of an Approved Technical Architectural Work from the French or German, 1, 2, or 3 credits.
112. Indexing and Classification of Periodicals, Books, Data, and Technical Information for Architects and Engineers.

#### Secondary

113. Stereotomy Applied to American Problems, 1 credit.
114. Examinations of Heating and Ventilation of Buildings, 1, 2, or 3 credits.
115. Photography for Architects, 1 credit.
116. Methods of Reproducing Drawings, Specifications, etc., for Architects, 1 credit.
117. Higher Problems and Methods in Perspective, 1 or 2 credits.
118. Practice in Estimates, Specifications, etc., for Large Buildings, 1, 2, or 3 credits.
119. Higher Industrial Design, 1 or 2 credits.
120. Advanced Water-color Painting, 1 credit.
121. Study of Office Methods and Arrangements, 1 credit.
122. Any *primary* offered in the College of Engineering, 1 credit.

#### ART AND DESIGN

1. FREE-HAND DRAWING.—Lectures on free-hand perspective and practice in drawing geometric solids. Principles applied by drawing groups of common objects, as books, vases, chairs, etc., casts of ornament; details of the human figure; interiors, as the corner of the room; plants and flowers from nature. *Frederick's Notes on Free-hand Drawing. Fall term, at 8, at 10, and at 1.20; winter and spring terms, at 8, and at 1.20, full credit.* MR. LAKE.

2. CHIAROSCURO.—Study of chiaroscuro in charcoal, crayon, ink, pencil, and water color (monochrome) of geometric solids,

still-life, casts of ornament, details of the human face and animal forms. *Winter and spring terms, at 8.10, at 10, and at 1.20, full credit.* Professor FREDERICK and Mr. LAKE.

*Required:* Art and Design 1.

3. ARTISTIC ANATOMY.—Artistic anatomy of the human figure. Drawing from Rimmer's Art Anatomy and Julien's *Études d'Après l'Antique*. Outline drawing from the antique figure. Study of action. *Duval's Artistic Anatomy.* *Spring term, at 8, at 10, and at 1.20, full credit.* Mr. LAKE.

*Required:* Art and Design 1, 2.

4. THE ANTIQUE.—Shaded drawings in charcoal or oil from the antique figure. Sketching from costumed model. *Spring term, at 10 and at 1.20, full credit.* Professor FREDERICK.

*Required:* Art and Design 1, 2, 3.

5. PEN DRAWING.—Work with pen and ink arranged to suit the needs of students from all departments. *Fall term, at 8, at 10, and at 1.20, full credit.* Professor FREDERICK and Mr. LAKE.

*Required:* Art and Design 1.

6. MODELING.—Modeling in clay (a) details of human face, (b) copy of cast of ornament, (c) ornament from photograph. Casts are made of (a) at least one modeled piece, (b) arm, hand, or foot from nature, (c) foliage, fruit, or vegetable from nature (*Frederick's Plaster Casts and How They are Made*). *Fall term, at 10 and at 1.20, full credit.* Professor FREDERICK.

*Required:* Art and Design 1, 2.

7. ADVANCED MODELING.—Modeling: (a) bas-relief from antique figure, (b) anatomical rendering of an antique figure, (c) bust from the antique, (d) portrait head from nature in the round or relief, (e) antique figure in the round, (f) original design. Casting: (a) piece mold, (b) sulphur mold, (c) gelatine mold. *Fall term, at 10, and at 1.20, full credit.* Professor FREDERICK.

*Required:* Art and Design 1, 2, 6.

8. OIL PAINTING.—This course of painting in oil color is designed for beginners, and consists of two parts: (a) study in monochrome from still-life; (b) group, as a study for composition and color. *Winter term, at 10.10, and at 1.15, full credit.* Professor FREDERICK.

*Required:* Art and Design 1, 2, 3.

9. ADVANCED OIL PAINTING.—This is a continuation of course 8. It comprises a careful study of the methods followed in landscape painting. A number of time sketches of still-life are required.

*Winter term, at 10.10 and at 1.15, full credit.* Professor FREDERICK.

*Required:* Art and Design 1, 2, 3, 8.

10. WATER-COLOR PAINTING.—Painting in water-color: (a) group, as a study for composition and color; (b) sketching from nature; (c) flowers from copy and from nature. *Spring term, at 10 and at 1.20, full credit.* Professor FREDERICK.

*Required:* Art and Design 1, 2.

11. THEORY OF COLOR.—In this course the student takes up the study of color as a means of interior and exterior decoration. Several original problems are required. *Winter term, at 10.10 and at 1.15, full credit.* Professor FREDERICK.

*Required:* Art and Design 1, 2.

12. RELATION OF DESIGN TO MANUFACTURE.—This is primarily a course in industrial design arranged for special students of that subject. *Spring term, at 1.20, full credit.* Professor FREDERICK.

*Required:* Art and Design 1, 2, 3, 10, 11.

13. ARCHITECTURAL SKETCHING.—This course is intended primarily for students of architecture. Perspectives are rendered in water-colors and buildings sketched from nature. *Frederick's Architectural Rendering in Sepia.* *Spring term, at 10, and at 1.20, full credit.* Professor FREDERICK.

*Required:* Art and Design 1, 2.

## ASTRONOMY

4a. DESCRIPTIVE AND GENERAL ASTRONOMY.—Minor course.

The course aims to supply a general knowledge of the facts of astronomy, a clear conception of underlying principles and some acquaintance with the methods of arriving at these facts. Studies in the location of constellations and stars are made. In this course, practical questions are considered, though not made matters of chief importance, the literary and purely scientific features of the science being assigned chief prominence. *Young's Elements of Astronomy*, also *Young's General Astronomy.* *Spring term, at 11 and at 1.20, full credit.* Professor MYERS and Mr. BRENKE.

A line of study, consisting of the three following courses, is offered for students who desire to pursue the study of astronomy as a major subject.

4b. DESCRIPTIVE AND GENERAL ASTRONOMY.—This course is arranged for students who wish to gain a general knowledge of

astronomy, and for those who wish to fit themselves either for instruction in high schools, academies, and colleges, or for a professional vocation. It presupposes Math. 4, and is in some respects, a continuation of course 4a. The course is also well suited to the needs of students of the college of science who contemplate special work in the geological and biological sciences. As much time as the degree of attainment of the student will warrant is given to work in the Observatory. *Young's General Astronomy*. Fall term, at 11, full credit. Professor MYERS and Mr. BRENKE.

*Required:* Math. 4.

5. COSMOGONY.—The chief aim of this course is to acquaint the student with the evidence both for and against the Nebular Theory. The rôle of the tides in cosmogonic development receives special consideration, and the present view, together with the testimony furnished by astronomy relating to the origin and cosmic history of the earth-moon system is recapitulated in detail to the epoch where astronomy yields to geology. A summary of the researches of Darwin and of Lord Kelvin is included. *Clerke's System of the Stars*. Winter term, at 1.15, full credit. Professor MYERS and Mr. BRENKE.

*Required:* Entrance credit in astronomy.

6. PRACTICAL ASTRONOMY.—This course, which is offered both for engineers and special astronomical students, is intended to give the student training in the use of instruments of precision. As a subordinate matter, he is introduced to instruments of a higher grade than those employed in ordinary surveying. A second purpose of the course is to train the student in the art of computing. Model forms of record and reduction for problems are set before him, and the advantage of compact and orderly arrangement of all work is strenuously insisted upon. As a concrete outcome of the above training, the student should acquire the ability to determine latitude, time, and azimuth with such instruments as are used in the ordinary practice of civil engineering. An essential part of the work is the theory of astronomical instruments. *Campbell's Practical Astronomy*. Spring term, at 8, full credit. Professor MYERS and Mr. BRENKE.

*Required:* Astronomy 4a or 4b.

7. THEORY OF ORBITS.—This course embraces the following subjects: The formation and integration of the differential equations of motion of a system of bodies and the derivation of the laws of undisturbed elliptic, parabolic, and hyperbolic motion. The ac-

tual computation of a cometary or planetary orbit is usually made. *Watson's Theoretical Astronomy. Fall term, at 2.20, three-fifths credit.* Professor MYERS.

*Required:* Math. 1, 3, 9, 10; Astronomy 4a or 4b, 6.

8. SPECIAL PERTURBATIONS.—An investigation of the various formulæ and methods for finding the special perturbations of a heavenly body constitutes the chief subject of this course. The methods of Encke, Hansen, and of Variation of Parameters, are developed and studied at length. As a necessary and preliminary adjunct to the course, an explanation and development of the formulæ needed to integrate by the methods of mechanical quadrature is given.

*Watson's Theoretical Astronomy. Winter term, at 2.10, three-fifths credit.* Professor MYERS.

*Required:* Astronomy 7; Math. 14, 16.

9. CELESTIAL MECHANICS.—The laws of motion of a system of bodies are here developed, the usual differential equations being treated. The two and three body problems with allied subjects, are first considered, after which follows a study of absolute perturbations by the method of variation of the canonic elements and other subjects of study such as are treated in *Tisserand's Mécanique Céleste. Spring term, at 2.20, three-fifths credit.* Professor MYERS.

*Required:* Astronomy 8.

11. CALCULUS OF VARIATIONS.—See Mathematics 20.

12. SPHERICAL HARMONICS.—See Mathematics 21.

13. POTENTIAL FUNCTION.—See Mathematics 22.

10. ASTRONOMICAL SEMINARY AND THESIS.—The work of this seminary is on subjects either related to those considered in the senior courses, or connected with questions arising out of thesis investigations. This course is given in conjunction with astronomy 7, 8, and 9, or with mathematics 11, 12, and 13, according as the one or the other is current. *Fall, winter, and spring terms, Tu. and Th., at 2.20, two-fifths credit.* Professor MYERS.

## BOTANY

1. MORPHOLOGY, HISTOLOGY, AND PHYSIOLOGY.—This course extends through the year, but the first term's work is accepted as a minor course for those not making botany a specialty; the second and third terms together can be similarly credited. Laboratory and field work is supplemented and extended by lectures, the study of text, and by reference reading.

(a) The morphology and classification of illustrative groups of plants, beginning with the lowest orders, constitute the work of the first term. Special attention is given to fresh water algæ and to fungi, but mosses, ferns, and flowering plants are included.

(b) During the second and third terms the general histology of plants is studied alternately with experiments in vegetable physiology. Students examine microscopical sections, make microchemical tests, draw figures, and write descriptive notes. In the physiological laboratory the studies include: the extent and causes of movements of fluids in the tissues; the absorption of nutriment materials; respiration; photosynthesis; growth; sensitiveness; variation and heredity, etc. *Fall, winter, and spring terms, at 1.20, full credit.* Professor BURRILL and Mr. HOTTES.

*Required:* Botany 6, or equivalent; Chemistry 1, and Art and Design 1, 2, must be taken with this course, if not had previously.

2. BACTERIOLOGY.—This course is an introduction to existing knowledge upon the subject, and offers instruction in the modern methods of experimentation and research. Only those who can give extra time, when occasion demands, should undertake the work. Lectures and assigned reading accompany the laboratory work. *Fall term, at 8, full credit.* Professor BURRILL and Mr. HOTTES.

*Required:* Botany 1 or 6, or Zoölogy 1 or 10; Chemistry 1.

3. SYSTEMATIC BOTANY.—There is offered in this course an opportunity for advanced work upon selected groups of plants, including the collection and preservation of specimens, the identification and description of species, and studies upon systematic affinities.

The morphology and affinities of selected orders of flowering plants, herbaria and herbarium methods, studies upon the evolution of the vegetable world, are included in the work of the first term. The second term is devoted to cryptogamic plants, and the time is largely occupied in the determination and classification of species, together with studies upon life histories. Students who purpose taking this term's work should arrange with the instructor at the beginning of the year or earlier, and should make collections for themselves. Mostly laboratory work. *Fall and winter terms, at 10, full credit.* Professor BURRILL.

*Required:* Botany 1.

4. REPRODUCTION AND DEVELOPMENT.—Special experimental and research work in vegetable physiology, embryology, and life

histories. Mostly laboratory work. *Spring term, at 10, full credit.*  
**Professor BURRILL and Mr. HOTTES.**

*Required:* Botany 1.

5. INVESTIGATION AND THESIS.—Facilities are offered for original investigations upon selected subjects which may serve as a basis for the thesis required for a degree. Special arrangement should be made with the instructor during the preceding year, or at least not later than the beginning of the year in which the work is to be taken. *Fall, winter, and spring terms, at 1.20, full credit.*  
**Professor BURRILL.**

*Required:* Botany 1, 3, and 4, or an equivalent.

6. MINOR COURSE.—Lectures or recitations and laboratory work. This course is intended to serve as a preparation for courses in botany 1, 2, and 8; also to offer students who do not intend to pursue the subject more than one term, a chance to gain a general knowledge of the vegetable world, including the structure, physiological activities, kinds, and classification of plants, and to acquaint themselves with the methods of study and of instruction followed. *Spring term, at 8 and at 10, full credit.* **Professor BURRILL and Mr. HOTTES.**

8. ECONOMIC BOTANY.—A study of useful and harmful plants, especially those affecting agricultural and horticultural interests and of prominence in the arts. *Winter term, at 10.10, full credit.* **Professor BURRILL.**

*Required:* Botany 6, or an equivalent.

#### COURSES FOR GRADUATES

101. BIOLOGICAL BOTANY.—The preparation and study of material by histological methods, and experiment work with living vegetation in the laboratory and field in working out special problems in the development, physiology, and pathology of plants.

102. SYSTEMATIC BOTANY.—Critical and comparative studies of species included in chosen groups of spermatophytes or sporophytes, or from selected geographic areas, in connection with considerations of genealogic development, geographic distribution, and inter-related association.

103. BACTERIOLOGY.—Investigations upon morphologic and physiologic variation due to treatment; systematic studies upon the number, validity, and relationship of species; researches upon special saprophytic or parasitic kinds of bacteria and upon methods of favoring or combating their activities.

104. EVOLUTION OF PLANTS.—Observations and experiments

upon plants and studies in related literature, in gaining information upon such topics as the following: The influence of environment, effects of self and cross fertilization, tendencies of variation, philosophy of selection, nature and laws of heredity.

## CHEMISTRY

1. MINOR COURSE.—ELEMENTARY AND EXPERIMENTAL CHEMISTRY.—This course deals with the general principles of the science, the few typical elements and compounds which are studied being considered largely for the purpose of illustration.

The laboratory work comprises a series of such experiments, many of them quantitative, as serve best to illustrate the relations between the observed facts and the general principles, and to familiarize the student with the methods of chemistry. *Remsen's Introduction to Chemistry. Fall term, Lecture, M., Tu., W., F., at 1.20.—Laboratory, Sec. A, M., W., F., at 8; Sec. B, M., Th., at 2.20, and Sat., at 8; Sec. C (Engineers only), Tu., F., at 2.20, full credit.* Professor PALMER, Assistant Professor GRINDLEY, and Mr. SAMMIS.

2. DESCRIPTIVE INORGANIC CHEMISTRY.—This course is required of all chemical students. It is mainly devoted to a study of the metallic elements, their classification, compounds, and chemical properties. The work is from lectures and assigned text, without laboratory work. *Remsen's Advanced Course. Winter and spring terms, M., W., F., at 8, three-fifths credit.* Assistant Professor GRINDLEY.

*Required: Chemistry 1.*

2a. INORGANIC PREPARATIONS.—This is a laboratory course designed to accompany the descriptive work of course 2. The work includes the precipitation, crystallization, and purification of various salts, the material being largely obtained from laboratory wastes. *Spring term, at 10, full credit.* Assistant Professor GRINDLEY.

3a. QUALITATIVE ANALYSIS.—This course includes a study of salts, their formation, solubilities, chemical reactions, etc. The periodic classification of the elements is made the basis for developing the principles of analysis. The work in the laboratory, after illustrating these principles, is occupied with the determination of base and acid constituents of a given number of unknown substances. *Winter term, lecture, Tu., and Th., at 3:05; laboratory, at 10.10, and 1.15, full credit.* Assistant Professor GRINDLEY and Mr. SAMMIS.



*Required:* Chemistry 1.

3b. QUALITATIVE ANALYSIS, continued with more complex substances.—A comparative study of methods, difficult separations, problems in synthesis, etc. *Spring term, lecture, Tu., and Th., at 3.20; laboratory, at 1.20, full credit.* Assistant Professor GRINDLEY and Mr. SAMMIS.

*Required:* Chemistry, 1, 2.

3c. QUALITATIVE ANALYSIS, same as 3b, but requiring only half time and constituting a half course. *Spring term, 6 hours per week, half credit.*

*Required:* Chemistry 1, 2, and 3a.

4. ELEMENTS OF ORGANIC CHEMISTRY, MINOR.—A course in organic chemistry, provided more especially for students who are not making a specialty of chemistry. The instruction is directed mainly to the consideration of the general characteristics and the mutual relations of some of the most important classes of carbon compounds, and the course constitutes a general introduction to the principles and the methods of organic chemistry. In the laboratory a few typical substances are prepared. *Remsen's Organic Chemistry. Spring term, lecture, M., W., F., at 10; laboratory, Tu., Th., at 10, full credit.* Professor PALMER.

*Required:* Chemistry 3a, and either 3b, or 3c.

5a. QUANTITATIVE ANALYSIS.—General principles and practice of gravimetric quantitative analysis, beginning with salts of definite composition. Lectures and assigned text from *Fresenius's Quantitative Analysis* accompanying the laboratory work. *Fall term, lecture, M., at 1.20; laboratory, at 2.20, full credit.* Professor PARR and Mr. ROSE.

*Required:* Chemistry 3a, and either 3b, or 3.

5b. QUANTITATIVE ANALYSIS, CONTINUED.—This course includes volumetric analysis and the analysis of silicates, as feldspars, clays, etc. *Winter term, lecture, Tu., Th., at 11.05; laboratory, 10 hours a week, to be arranged, full credit.* Professor PALMER and Mr. ROSE.

*Required:* Chemistry 5a.

5c. EXAMINATION AND ANALYSIS OF FOODSTUFFS, MILK, BUTTER, ETC. SANITARY EXAMINATION OF AIR, OR ANALYSIS OF AGRICULTURAL PRODUCTS, MATERIALS, FERTILIZERS, ETC.—*Spring term, lecture, M., at 11; laboratory, at 9, full credit.* Professor PALMER and Assistant Professor GRINDLEY.

*Required:* Chemistry 5b.

6. **TECHNOLOGICAL CHEMISTRY.**—This is a course of lectures, comprising a study of technological chemistry as illustrated in those industries having a chemical basis for their principal operations and processes. Much use is made of the journals. *Winter term, M., W., F., at 10.10; spring term, M., W., F., at 11, half credit.* Professor PARR.

*Required:* Chemistry, 2, 3b.

7. **PHYSICAL CHEMISTRY.**—A course in physical chemistry, including thermo-chemistry, consisting mainly of laboratory work. It comprises determinations of vapor density, specific heat, depression of freezing point, elevation of boiling point, and calculation of molecular and atomic weights from the data thus obtained, and the use of calorimeter, polariscope, and other instruments, in determining such constants as serve in characterization or for quantitative estimation of chemical substances, or which serve as the basis of theoretical generalizations. *Fall, winter, or spring term, full credit.* Professor PALMER.

*Required:* Chemistry 2, 5b; Physics 1, 3.

8. **IRON AND STEEL ANALYSIS.**—Methods for determination of all the constituents are studied, including both rapid and standard methods, especial attention being given to technical methods for determination of phosphorus and sulphur. *Spring term, lecture, Th., at 11; laboratory, at 9, full credit.* Professor PARR and Mr. ROSE.

*Required:* Chemistry 5b.

9. **ORGANIC CHEMISTRY.**—The work of this course consists in the detailed discussion of the characteristics of several of the more typical and simple organic compounds, followed by the briefer consideration of most of the important classes of the derivatives of carbon. *Bernthsen's Organic Chemistry* is used as reference and text-book. The laboratory work includes the preparation of organic compounds in accordance with the directions given in *Gatterman's Practical Methods of Organic Chemistry*, and the ultimate analysis of the finished products. *Winter and spring terms, at 1.15, full credit.* Professor PALMER and Mr. ROSE.

*Required:* Chemistry 2, 5a.

10. **SANITARY ANALYSIS.**—One term is devoted to the chemical examination of potable and mineral waters. Detection and estimation of some of the most important poisons, organic and inorganic. *Fall term, at 10, one credit.* Professor PALMER and Mr. ROSE.

*Required:* Chemistry 5a.

11. INVESTIGATIONS AND THESIS.—Candidates for graduation from the chemical courses are required to devote at least three hours per day for two terms to the investigation of some selected chemical subject, the results of which are to be embodied in a thesis. The subject must be determined upon by consultation with the professors of chemistry before the first Monday in November. Between that time and the beginning of the winter term an index to the bibliography of the subject must be prepared and presented to the professor in charge of the investigation. *Winter and spring terms, full credit.* Professor PALMER, Professor PARR, Assistant Professor GRINDLEY.

*Required:* Chemistry, 11 credits.

12. THEORETICAL CHEMISTRY.—A course of instruction which includes discussions of the principles and theories of general chemistry. *Ostwald's Outlines of General Chemistry.* *Winter term, three-fifths credit; spring term, two-fifths credit.* Professor PALMER.

*Required:* Chemistry 4, and 5a.

13. AGRICULTURAL CHEMISTRY.—A course of lectures upon the chemical principles and processes involved in agriculture, taken conjointly with laboratory practice in analysis of agricultural products and materials. The work includes the quantitative separation and estimation of the constituents of agricultural products, analysis of fertilizers, soils, rain and drain waters, plants, foods, dairy products, etc. The first term's work is united with Chemistry 5a. *Fall, winter, and spring terms, at 10, full credit.* Assistant Professor GRINDLEY.

*Required:* Chemistry 4.

14. METALLURGY.—Special attention is given to the effect of impurities in ores upon metallurgical processes and finished products. Fuels, refractory materials, and fluxes are described and their value and application explained. A series of lantern slides illustrating actual plants in operation together with specimens of furnace material and products are used in illustration. Much use is made of journals, annuals, and monographs setting forth the best practice. *Fall term, at 11, full credit.* Professor PARR.

*Required:* Chemistry 5b.

15. (a) METALLURGICAL CHEMISTRY.—This course includes the wet assay of copper, lead, zinc, and other ores, arsenical and complex as well as the simpler forms, also the analysis of finished metallurgical products; as, commercial lead, spelter, copper, etc.; during the last half of the term the work is occupied with the fire assay of

lead, gold, and silver ores. Fluxes, reagents, and charges are studied in connection with various typical ores and practice given in use of the crucible and muffle furnaces and in the manipulations connected with fire assaying. *Fall term, lecture, M., Th., at 3.20; laboratory at 1.20, full credit.* Professor PARR and Mr. ROSE.

*Required:* Chemistry 5b.

(b) ELECTRO-METALLURGY.—A study of the methods employed in the electrolytic separation and refining of metals, treatment of ores, etc. The laboratory work involves practice in actual separations, a quantitative check being made on all results. *Winter term, lecture, M., Th., at 3.20; laboratory, at 1.20, full credit.* Professor PARR.

*Required:* Chemistry 5b.

(c) ELECTRO-CHEMICAL ANALYSIS.—A study of methods and practice in quantitative determination by electrolytic separation and deposition of metals and compounds. *Spring term, lecture, M., Th., at 3.20; laboratory, at 1.20, full credit.* Professor PARR and Mr. ROSE.

*Required:* Chemistry 5b.

16. CHEMISTRY FOR ENGINEERS.—This course is arranged particularly for mechanical engineers. It involves the proximate analysis of coals, determination of calorific power, technical analysis of furnace gases, examination of boiler waters, etc. *Winter term, at 10.10, full credit.* Professor PARR and Mr. SAMMIS.

*Required:* Chemistry 1.

17. INDUSTRIAL CHEMISTRY.—A laboratory course in the preparation of chemical products from raw materials. The manufacture and proving of pure chemicals, fractionation, and other processes of the manufacturing chemist. *Winter term, full credit.* Professor PARR.

*Required:* Chemistry 5b.

18. SPECIAL ADVANCED COURSES.—Special laboratory courses as indicated below may be arranged for those competent to pursue them. From one-fifth to three credits will be allowed in the undergraduate courses for such work.

(a) Technical Gas Analysis,  $\frac{1}{5}$  to 1 credit.

(b) Urinalysis,  $\frac{2}{5}$  to 1 credit.

(c) Toxicology,  $\frac{2}{5}$  to 2 credits.

(d) Metallurgical Chemistry, 1 to 3 credits. Professors PALMER and PARR.

19. SEMINARY.—Reports and discussions upon assigned topics from current chemical literature. One session each fortnight during

the junior and senior years. *Two credits.* Professor PALMER and Mr. ROSE.

20. **QUANTITATIVE ANALYSIS.**—An elementary course intended especially for such students of other departments as desire some training in the process of quantitative analysis, but have not the time or the opportunity to enter the regular course in this subject. The work may vary in character, to some extent, according to the need of the individual student. *Spring term, at 10, full credit.* Professor PALMER and Mr. ROSE.

*Required:* Chemistry 3a.

21. **PROXIMATE ORGANIC ANALYSIS.**—One or two terms' work, mainly devoted to proximate analysis of organic compounds and mixtures of natural occurrence or of other origin. The work is both qualitative and quantitative, and includes determinations of the more important alkaloids, carbohydrates, acids, and other essential constituents of organic substances. *Dragendorff's Plant Analysis; Prescott's Organic Analysis; Allen's Commercial Organic Analysis; Lyon's Pharmaceutical Assaying.* *Winter or spring term, full credit.* Professor PALMER.

*Required:* Chemistry 4 and 5b.

22. **PHOTOGRAPHY.**—Courses in photography will be arranged when called for by a sufficient number of students, as follows:

(a) Elementary. (b) Advanced. (c) Micro-photography.

*Spring term, lecture at 8; laboratory, by arrangement; half credit.* Professor PARR.

#### COURSES FOR GRADUATES

101. Research work in organic chemistry.
102. Research work in general inorganic chemistry.
103. Research work in agricultural chemistry.
104. Investigations of heating power of fuels.
105. Research in metallurgical chemistry.
  - (a) Action of solvents in extraction of gold and silver from their ores.
  - (b) Methods of analysis of ores and products.

#### CIVIL ENGINEERING

I. **LAND SURVEYING.**—Areas and distances by chain, compass, and plane table; U. S. public land surveys, including legal points involved in the reestablishment of boundaries; magnetic variation and determination of true meridian. The students solve numerous problems in the field with instruments. To facilitate practice in sur-

veying, an area has been specially prepared in which the difficulties of plane surveying are presented to the beginner as he is able to meet them, and where he is taught practical methods of overcoming them. *Bellows and Hodgman's Surveyor's Manual*. Fall term, at 1.20, full credit. Assistant Professor PENCE.

*Required:* General Engineering Drawing 1, 2, 3, 4; Math. 4.

2. TOPOGRAPHICAL DRAWING AND SURVEYING.—Topographical drawing is given during the bad weather of the winter term. The student spends about half a term making the standard topographical symbols. During the spring term topographical surveying is taught, in which students solve problems with the plane table and the stadia, and make a topographical survey and plot the notes. This and course 3 must be taken together. *Winter and spring terms, at 1.15, full credit.* Assistant Professor PENCE.

*Required:* Civil Engineering 1.

3. TRANSIT SURVEYING AND LEVELING.—Construction, adjustment, and use of the transit and level; angles, inaccessible distances, and areas with the transit; profiles and contours with the level. The department is provided with the instruments necessary for the different branches of engineering field practice. These instruments are in constant use by the students whenever the weather permits. This and course 2 must be taken together. *Baker's Engineers' Surveying Instruments*. *Winter and spring terms, at 1.15, full credit.* Assistant Professor PENCE.

*Required:* Civil Engineering 1.

4. RAILROAD ENGINEERING.—In the field practice the class makes preliminary and location surveys of a line of railroad of sufficient length to secure familiarity with the methods of actual practice. Each student makes a complete set of notes, maps, profiles, calculations, and estimates. *Godwin's Railroad Engineers' Field-Book, and Tratman's Track*. Fall term, at 10.10, full credit; winter term, M., Tu., at 10, half credit. Assistant Professor PENCE.

*Required:* Civil Engineering 1, 2, 3.

5. MASONRY CONSTRUCTION.—The students have experiments in the masonry laboratory, in testing cement, mortar, stone, and brick. *Baker's Masonry Construction*. Fall term, at 8; laboratory, Tu., and Th., at 1.20, full credit. Professor BAKER.

*Required:* Theoretical and Applied Mechanics 1, 2; General Engineering Drawing 1, 2, 3, 4.

6. GEODESY.—Geodesy is taught by lectures and assigned reading. Problems are solved in barometrical, trigonometrical, and pre-

cise leveling, and in reading horizontal angles. *Winter term, at 10.10, half credit.* Professor BAKER.

*Required:* Math. 4; General Engineering Drawing 1, 2, 3, 4; Civil Engineering 1, 3; Descriptive Astronomy 2.

10. SURVEYING.—For students in the courses of architecture, architectural engineering, electrical engineering, and mechanical engineering. Areas with chain and compass, U. S. public land surveys, and principles of reestablishing corners; use of transit in finding distances, areas, and in laying out buildings; use of the level in finding profiles and contours. *Baker's Engineers' Surveying Instruments.* *Spring term, at 8 and at 10, full credit.* Assistant Professor PENCE.

*Required:* Math. 4; General Engineering Drawing 1, 3, 4; Physics 1.

12. BRIDGE ANALYSIS.—Instruction and practice are given in the computation of the stresses in the various forms of bridge trusses, by algebraic and graphical methods, under different conditions of loading. *Johnson's Modern Framed Structures.* *Fall term, at 9, full credit.* Professor BAKER.

*Required:* Theoretical and Applied Mechanics 1, 2; Architecture 6.

13. BRIDGE DETAILS.—The student makes a tracing of a shop drawing of a bridge, and then makes a critical report upon each element of the design and computes the cost. Afterwards a comparative study is made of the several forms of details employed by leading designers. *Winter term, at 8.20, full credit.* Professor BAKER.

*Required:* Civil Eng'g 12 and free-hand sketches with dimensions, showing full details of a bridge measured by the student.

14. BRIDGE DESIGN.—Each student designs a bridge, proportioning the sections and working out the details, and afterwards makes a complete set of drawings. *Spring term, at 10, full credit.* Professor BAKER.

*Required:* Civil Engineering 12, 13.

15. TUNNELING.—This subject is given by lectures and assigned reading. Students are required to make written reports upon the methods employed in particular tunnels. Some time is given to practice in boring wells, dredging, quarrying, and sub-aqueous blasting. *Winter term, at 10.10, half credit.* Professor BAKER.

*Required:* Math. 2, 4, 6; General Engineering Drawing 1, 2, 3, 4; Mechanical Engineering 1, 16, 17; Chemistry 1; Physics 1.

16. ENGINEERING CONTRACTS AND SPECIFICATIONS.—A study is

made of the fundamental principles of the law of contract, and of examples of the general and technical clauses of various kinds used in engineering specifications. *Johnson's Engineering Contracts and Specifications*. *Spring term, at 8, two-fifths credit*. Professor BAKER.

*Required*: Civil Engineering 5, 12, 13; Municipal and Sanitary Engineering 2, 3.

17. RAILROAD STRUCTURES.—Instruction is given by lectures and references to standard authorities. Current practice is studied by the examination of existing structures and by means of a collection of the standard drawings of leading railroads. *Winter term, W., Th., F., at 10.10, three-fifths credit*. Assistant Professor PENCE.

*Required*: Civil Engineering 4.

#### COURSES FOR GRADUATES

All primary unless otherwise stated. Each one credit.

101. Location and Construction.
102. Railway Track and Structures, and their Maintenance.
103. Yards and Terminals.
104. Motive Power and Rolling Stock.
105. Signal Engineering.
106. Railway Operation and Management.
107. Bridge Designing.
108. Cantilever and Swing Bridges.
109. Metallic Arches.
110. Metallic Building Construction.
111. Roof Construction.
112. Stereotomy.
113. History of the Development of Bridge Building—Secondary.
128. Practical Astronomy.
129. Description of Work Done.
130. Critical Description of Engineering Construction.
131. Translation of Technical Engineering Work from French or German.
132. Any Primary in Theoretical and Applied Mechanics or Municipal and Sanitary Engineering.
133. Any Primary in Mathematics, Mechanical Engineering, or Electrical Engineering—Secondary.
134. Indexing of Civil Engineering Periodical Literature—Secondary.



## DRAWING, GENERAL ENGINEERING

1. **ELEMENTS OF DRAFTING.**—This work is designed as a general preparation for drafting in all its branches. The problems are arranged so as to be of practical benefit and are designed to throw the student on his own ingenuity in applying the principles learned. This course includes in all about thirty plates. *Lectures and notes. Fall term, at 8, at 10, and at 1.20, full credit.* Assistant Professor PHILLIPS and Mr. WEBBER.

2. **DESCRIPTIVE GEOMETRY.**—This term's work includes problems relating to the point, line, and plane; the generation and classification of lines and surfaces; planes tangent to surfaces of single and of double curvature; intersections, developments, and revolutions. The application of principles and methods in numerous and varied practical problems is a large part of the work. *Church's Descriptive Geometry. Winter term, at 8.20, at 10.10, and at 1.15, full credit.* Assistant Professor PHILLIPS and Mr. WEBBER.

*Required:* General Engineering Drawing 1.

3. **LETTERING.**—Plain and ornamental alphabets; free-hand and mechanical lettering; titles and title pages. *Lectures and Notes. Spring term, at 8, at 10, and at 1.20, half credit.* Assistant Professor PHILLIPS and Mr. WEBBER.

*Required:* General Engineering Drawing 1.

4. **SKETCHING.**—In perspective and orthographic projections. Architectural sketch plans and details; machines, machine parts, and mechanisms. *Lectures and notes. Spring term, at 8, at 10, and at 1.20, half credit.* Assistant Professor PHILLIPS and Mr. WEBBER.

*Required:* General Engineering Drawing 1, 2.

5. **ADVANCE DESCRIPTIVE GEOMETRY.**—Curved lines of the higher orders; higher single curved, warped and double-curved surfaces. *Church's Descriptive Geometry, with references to Warren's General Problems from the Orthographic Projections of Descriptive Geometry. Spring term, at 8, at 10, and at 1.20, three-fifths credit.* Assistant Professor PHILLIPS.

*Required:* General Engineering Drawing 1, 2.

## ECONOMICS

1. **Introductory Course:** This is a beginners' course, consisting of two parts:

a. **PRINCIPLES OF ECONOMICS.**—This course is intended to give a general survey of the field of the science. *Fall and winter terms, M., W., F., at 11, three-fifths credit.* Dr. HAMMOND.

## b. ECONOMIC HISTORY OF ENGLAND AND THE UNITED STATES.

—This course is intended to sketch the industrial development of these two nations. An effort will be made to show the relations between the facts of history and the economic principles discussed in course 1. This course should accompany course 1 and will be required of all students in the political science group. *Fall and winter terms, Tu., Th., at 11, two-fifths credit.* Dr. HAMMOND.

2a. MONEY AND BANKING.—In this course a study of the history and functions of money is followed by a study of the monetary and banking history of the United States and of such topics as the theory of prices, credit, government paper, etc. *Winter and spring terms, M., W., F., at 11, three-fifths credit.* Professor KINLEY.

*Required:* Economics 1a.

3a. FINANCIAL HISTORY OF THE UNITED STATES.—This course begins with Hamilton's administration of the treasury. It deals with the growth and management of the national debt, and with the industrial expansion and the tariff history of the country. For graduate students the course will be purely investigative. *Fall and winter terms, M., W., F., at 9, three-fifths credit.* Professor KINLEY.

*Required:* Economics 1. (Not given in 1898-99.)

5. THE TRANSPORTATION PROBLEM.—This is a course designed to familiarize the student with the problems of transportation, especially by railways, in their economic and social aspects. A comparative study is made of the development, management, and regulation of railways in Europe and the United States. *Spring term, three-fifths credit.* Dr. HAMMOND.

*Required:* Economics 1. The course is open, without the requirement in economics, to students in the College of Engineering who have taken Civil Engineering 4. (Not given in 1898-99.)

6. SOCIOLOGY.—In this course it is intended to study society in its normal structure. The theories of the nature of society, which have been advanced by various writers, are discussed in the light of the history of social institutions, and an effort is made to formulate some of the laws of social growth. *Fall and winter terms, Tu., Th., at 9, two-fifths credit.* Dr. HAMMOND.

*Required:* Economics 1, or some course in history, philosophy, psychology, or biology. (Not given in 1898-99.)

7. SOCIAL PATHOLOGY.—This is a course in "applied sociology," consisting of as detailed a study of the problems of pauperism and crime as the time will permit, together with a consideration of theories and methods of reform. *Spring term, Tu., Th., at 9, two-fifths credit.* Dr. HAMMOND. (Not given in 1898-99.)

8. **ECONOMIC SEMINARY.**—Advanced students will be formed into a seminary for investigation and for the study of current economic literature. Students who write their theses in economics must do so in connection with the seminary work. The course counts for *two credits*. *Fall, winter, and spring terms, two hours once each week.* Professor KINLEY and Dr. HAMMOND.

9. **ECONOMICS OF AGRICULTURE.**—This is a course especially prepared for the students of the Winter School in Agriculture (p. 129). The first half of the term is devoted to a study of the elements of economics, while the second deals primarily with those portions of theoretical and practical economics which relate to agriculture. *Winter term.* Dr. HAMMOND.

10. **PRINCIPLES OF ECONOMICS.**—This is a one term course in general economics offered primarily to junior and senior engineering students of high standing. Under no circumstances will a student be admitted before his junior year. Stress is laid on the practical side of economic questions. *Fall term, at 2.20, full credit.* Professor KINLEY.

11. **THE MONEY MARKET.**—This is an advanced course in the history and theory of price, credit, and foreign exchange. The theory of international trade, the stock exchange and the produce exchange are among the subjects studied. *Spring term, at 1.20, three-fifths credit.* Professor KINLEY.

*Required:* Economics 1a and 2a.

12. **PUBLIC FINANCE.**—This course consists of a critical and comparative study of financial theories and methods. Especial attention is directed to American conditions. Public expenditure and its relation to the various sources of revenue; taxation, its theory, incidence, and methods; public debts, financial administration, and the financial relations of the various organs of government are discussed at length. *Fall, winter, and spring terms, at 9, three-fifths credit.* Dr. HAMMOND.

*Required:* Economics I.

13. **THE LABOR PROBLEM.**—This course is a study of the condition of labor, past and present. Readings, lectures, and quizzes. *Fall term, M., W., F., at 11, three-fifths credit.* Professor KINLEY.

*Required:* Economics I.

14. **THE MONOPOLY PROBLEM.**—This is a study of the economic aspects of monopoly, the limits of competition, and the relation of monopoly to the public welfare. *Winter term, at 11, three-fifths credit.* Professor KINLEY.

15. **THE TARIFF PROBLEM.**—This course deals briefly with the various protection theories that have been advanced in this country and with the history of the tariffs and their influence upon the social and industrial development of the United States. Lectures, assigned readings, and discussions. *Spring term, at 11, three-fifths credit.* Dr. HAMMOND.

*Required:* Economics I.

16. **STATISTICS.**—A short course open to those who have had economics I and recommended to all who intend to take the advanced courses in economics. It will be of a practical character, intended to furnish a knowledge of the statistical method, its limitations and abuses, and to enable the student to find and make use of government reports, statistical publications, etc. *Spring term, Tu., Th., at 11, two-fifths credit.* Dr. HAMMOND.

17. **THEORIES OF PRODUCTION AND CONSUMPTION.**—This course is a study of the conditions of social prosperity as dependent on production and consumption. The course is open to graduates, and to undergraduates who have had one full year of economic study. *Fall and winter terms, at 11, two-fifths credit.* Professor KINLEY. (Not given in 1898-99.)

18. **DISTRIBUTION.**—This course deals with the problem of distribution of wealth, but on the side of practical measures rather than of pure theory. It includes, therefore, a discussion of private property, of socialism and communism, and of sundry proposals, like the single-tax, for correcting the inequalities of wealth without fundamental changes in the structure of society. *Fall, winter, and spring terms, at 11, two-fifths credit.* Professor KINLEY.

*Required:* 3 credits in economics; or, economics IA and either anthropology I, zoölogy IC, or public law I.

For other work open to those who have had one full year's work in economics see the courses for graduates.

#### COURSES FOR GRADUATES

(These courses are open to students who have had one full year's work in economics.)

101. **THE THEORY OF VALUE.**—This is a historical and critical study of theories of value. Special attention is paid to recent development. *Fall and winter terms, twice a week.* Professor KINLEY. (Not given in 1898-99.)

102. **THE THEORY OF DISTRIBUTION.**—A study of theories of rent, wages, interest and profits. *Fall, winter, and spring terms, twice a week.* Professor KINLEY.

## ELECTRICAL ENGINEERING

1. ELECTRICAL ENGINEERING.—A short course of lectures with laboratory practice, intended for students in mechanical engineering and for others who require only a very general acquaintance with dynamo-electric machinery and its use for lighting and power purposes. *Spring term, lecture, Tu., Th., F., at 2.20; laboratory, Sec. A, M., at 1.30; Sec. B, W., at 1.30, full credit.* Assistant Professor SWENSON.

3a. DYNAMO-ELECTRIC MACHINERY.—Lectures on theory of dynamo-electric machinery, particularly direct-current machines, with experimental study of the same in the dynamo laboratory. The course includes the theory and use of the instruments used in dynamo testing. *Fall term, lecture, M., W., F., at 1.20; laboratory, Tu., Th., Sat., at 9, and M., Th., F., at 2.20, full credit.* Assistant Professor SWENSON.

*Required:* Physics 4 and Electrical Engineering II.

3b. DESIGN OF ELECTRO-MAGNETS AND DIRECT CURRENT MACHINERY.—Drafting, with supplementary lectures on the practical construction of electro-magnetic mechanisms and dynamo-electric machines. Each student designs one or more electro-magnets for specific duty, and a direct-current dynamo machine, and prepares detailed drawings of the same. *Fall term, lecture, Th., at 1.20, and Sat., at 8; drafting, M., Th., F., at 2.20, and Tu., Th., Sat., at 9; three-fifths credit.* Assistant Professor ESTY.

*Required:* Physics 4 and Electrical Engineering II.

4a. ALTERNATING CURRENTS AND ALTERNATING CURRENT MACHINERY.—Lectures on the theory and application of alternating electric currents, with very complete experimental study of alternating current instruments and apparatus. There will be a short course on electro-motive forces of higher frequency and the modern views of electricity. *Winter and spring terms, lecture, M., W., F., at 1.15; laboratory, arrange; full credit.* Professor CARMAN and Assistant Professor SWENSON.

4b. DESIGN OF ALTERNATING CURRENT MACHINERY.—Drafting and lectures. Design and construction of alternating current transformers, alternators, and alternating current motors. Typical examples of alternating current apparatus are designed and detailed drawings made. *Winter and spring terms, lecture, W., at 8.20; drafting, arrange; three-fifths credit.* Assistant Professor ESTY.

*Required:* Electrical Engineering 3b.

5. PHOTOMETRY.—Lectures and laboratory. Study of arc and incandescent lamps in connection with their use in electric lighting. *Winter term, lecture, Th., at 1.15; laboratory, arrange; two-fifths credit.* Assistant Professor SWENSON.

*Required:* Electrical Engineering 3.

6. TELEGRAPHY AND TELEPHONY.—Lectures and practice. This course includes the methods of telegraphy, the theory of the telephone, and telephone engineering with special reference to the construction, testing, and protection of lines. Visits to the local telephone exchanges are made, and reports on the systems required. *Fall term, Tu., Th., at 8, two-fifths credit.* Assistant Professor ESTY.

7. ELECTRO-METALLURGY.—A short course of lectures during the winter term. Assistant Professor ESTY.

*Required:* Chemistry 1 and Electrical Engineering 3.

8. ELECTRIC LIGHTING.—Lectures and drafting. In this course are studied methods of wiring for arc and incandescent lighting; the discussion of fire insurance rules and regulations; the installation, operation, and economical management of central stations; use of accumulators, compensators, and other regulators; consulting engineering. A part of the instruction is to have the student make working plans, specifications, and estimates of a complete installation of a plant for a particular locality whose local conditions are known. *Winter term, lecture, M., F., at 8; drafting, arrange; full credit.* Assistant Professor ESTY.

*Required:* Electrical Engineering, 3, 4, 5.

9. ELECTRICAL TRANSMISSION OF POWER.—Lectures and drafting. The construction, equipment, and operation of electric railways and power stations; the utilization of water power; long distance transmission of electric power; the application of electric motors to general power distribution; consulting engineering. Visits to the plant of the local light and power company form a part of the instruction, and full reports on the installation are required. Plans, specifications, and estimates are prepared by each student for a power plant at some particular location. *Spring term, lecture, M., F., at 8; drafting, arrange; full credit.* Assistant Professor ESTY.

*Required:* Electrical Engineering 8.

10. SEMINARY.—A weekly meeting of instructors and students is held in the department reading room for discussion of topics from the current journals of theoretical and applied electricity. Papers on any original work doing in the department also come up for discussion. *Fall, winter, and spring terms, Tu., at 2.20, one-fifth credit.* Professor CARMAN.

11. **ELEMENTS OF DYNAMO-ELECTRIC MACHINERY.**—A course of lectures introductory to the fuller courses of the fourth year, and required of third year students in electrical engineering. *Spring term, lecture, Tu., Th., at 1.20, half credit.* Assistant Professor SWENSON.

*Required:* Two terms of Physics 4.

### COURSES FOR GRADUATES

#### Primary

101. Mathematical Theory of Electricity and Magnetism, 1, 2, or 3 credits.
102. Absolute Measurements in Electricity and Magnetism, 1, 2, or 3 credits.
103. Dynamo Electric Machinery, 1, 2, or 3 credits.
104. Electrical Transmission of Power, 1, 2, or 3 credits.
105. Electro-Metallurgy, 1, 2, or 3 credits.
106. Photometry, 1, 2, or 3 credits.
107. Calorimetry, 1, 2, or 3 credits.
108. Economy of Production and Utilization of Electrical Energy, 1 credit.
109. Consulting Engineering, 1 credit.

#### Secondary

110. Mathematics, 1, 2, or 3 credits.
111. Physics, 1, 2, or 3 credits.
112. Language, 1, 2, or 3 credits.
113. Chemistry, 1, 2, or 3 credits.
114. Architectural Engineering, 1, 2, or 3 credits.
115. Civil Engineering, 1, 2, or 3 credits.
116. Municipal and Sanitary Engineering, 1, 2, or 3 credits.
117. Mechanical Engineering, 1, 2, or 3 credits.
118. Translation of Technical Engineering Works, 1, 2, or 3 credits.

### ENGLISH LANGUAGE AND LITERATURE

1. **GENERAL SURVEY OF ENGLISH LITERATURE.**—*Fall, winter, and spring terms, at 9, at 11, and at 2.20; two-fifths credit.* Professor DODGE.

2. **PROSE WRITERS OF THE EIGHTEENTH AND NINETEENTH CENTURIES.**—*Fall, winter, and spring terms, M., W., F., at 9 and at 2.20; three-fifths credit.* Assistant Professor JAYNE.

*Required:* English 1, except for engineers.

3. NINETEENTH CENTURY POETRY.—*Fall, winter, and spring terms, M., W., F., at 10; three-fifths credit.* Assistant Professor JAYNE.

*Required:* English 1 and 2.

4. PROSE WRITERS OF THE SIXTEENTH AND SEVENTEENTH CENTURIES.—*Fall, winter, and spring terms, Tu., Th., at 10; two-fifths credit.* Professor DODGE.

4a. NON-DRAMATIC POETRY OF THE SIXTEENTH AND SEVENTEENTH CENTURIES. This course alternates with 4. *Fall, winter, and spring terms, Tu., Th., at 10; two-fifths credit.* Professor DODGE. [Not given in 1898-99.]

5. SHAKSPERE AND HISTORY OF THE DRAMA.—Primarily for graduates. *Fall, winter, and spring terms, M., W., F., at 9; three-fifths credit.* Professor DODGE.

*Required:* English 1, 2, 3, 4.

6. HISTORY OF ENGLISH CRITICISM.—Primarily for graduates. *Fall, winter, and spring terms, Tu., Th., at 11; two-fifths credit.* Professor DODGE.

*Required:* English 1, 2, 3, 4.

7. SEMINARY: COMPARATIVE MODERN FICTION.—Open only to senior and graduate students. *Fall, winter, and spring terms, one-fifth credit.* Assistant Professor JAYNE.

8. OLD ENGLISH (ANGLO-SAXON) GRAMMAR AND PROSE.—*Fall, winter, and spring terms, three-fifths credit.* Professor DODGE.

9. EARLY ENGLISH.—*Fall, winter, and spring terms, two-fifths credit.* Professor DODGE.

10. OLD ENGLISH POETRY.—*Fall, winter, and spring terms, three-fifths credit.*—Professor DODGE.

*Required:* English 8.

11. FOURTEENTH AND FIFTEENTH CENTURY LITERATURE.—*Fall, winter, and spring terms, two-fifths credit.* Professor DODGE.

*Required:* English 8 and 9.

12. HISTORY OF THE ENGLISH LANGUAGE.—One hour a week. *Fall, winter, and spring terms, two-fifths credit.* Professor DODGE.

*Required:* English 8 and 9.

13. ICELANDIC.—*Fall, winter, and spring terms, full credit.* Professor DODGE.

*Required:* English 8 and 9, or German 1.

14. OLD ENGLISH LEGAL CODES.—Special course for students of politics, economics, and history. As an introduction to the course Old English Grammar is studied so far as is necessary for a proper



understanding of early phraseology. Primarily for graduates, but open to under-graduates having sufficient preparation. *Fall, winter, and spring terms, two-fifths credit.* Professor DODGE.

*Required:* One year of history, economics, sociology, or English literature.

15. SEMINARY: METHODS OF ENGLISH TEACHING.—Open to senior and graduate students. *Fall, winter, and spring terms, one-fifth credit.* Professor DODGE and Assistant Professor JAYNE.

## FRENCH

1. ELEMENTARY COURSE.—The course embraces grammatical study, pronunciation, exercises in composition, and conversation. Reading of representative works of modern authors, such as Halévy, Labiche, Daudet, Jules Verne, and others. *Fall, winter, and spring terms, at 8 and at 10, full credit.* Assistant Professor PIATT and Mr. CARNAHAN.

2. NINETEENTH CENTURY.—(1) The class will read works of Mérimée, George Sand, Balzac, Sandeau, Bourget, Hugo, and others. (2) Outlines of French literature. (3) Assigned readings and reports thereon. *Fall, winter, and spring terms, at 8, full credit.* Assistant Professor FAIRFIELD.

*Required:* French 1 or 5.

3. SEVENTEENTH CENTURY.—(1) Readings from Molière, Corneille, Racine, Lafontaine, Boileau, de Sévigné, and others. (2) Study of French literature and civilization of the century. (3) Advanced composition. (4) Assigned readings. *Fall, winter, and spring terms, at 1.20, full credit.* Assistant Professor FAIRFIELD.

*Required:* French 2.

4. EIGHTEENTH CENTURY.—(1) The course will consist of lectures in French, themes, and collateral reading. Reading of selected works of Voltaire, Montesquieu, Rousseau, Chénier, and Beaumarchais. (2) Assigned readings. (3) Themes in French upon subjects connected with the course. *Fall, winter, and spring terms, at 10, full credit.* Assistant Professor FAIRFIELD.

*Required:* French 3.

5. SCIENTIFIC AND TECHNICAL FRENCH.—Similar to course 1 for first two terms. In the spring term this class will be divided into sections for the study of scientific and technical French, suited to the demands of the several colleges, each student working in his own special line. Particular attention will be given to acquir-

ing a technical vocabulary and to rapid reading. *Fall, winter, and spring terms, at 9 and at 2.20, full credit.* Assistant Professor PIATT.

### COURSES FOR GRADUATES

101. (a) OLD FRENCH READINGS.—Clédat, *Les Auteurs Français du Moyen Age*; Suchier, *Aucassin et Nicolette*; Gautier, *La Chanson de Roland*. Translation and comparison with the modern idiom. Study of the laws of phonetic changes. Lectures upon Old French philology.

(b) A SYSTEMATIC STUDY OF SPECIAL TOPICS.—French poets of the sixteenth century. Malherbe; his school and his influence. Sacred eloquence of the seventeenth century.

### GEOLOGY

I. GEOLOGY, MAJOR COURSE.—(a) Dynamic Geology. The instruction given under this head is intended to familiarize the student with the forces now at work upon and within the earth's crust, modeling its reliefs, producing changes in the structure and composition of its rock masses and making deposits of minerals and ores. A series of localities is studied in which great surface changes have recently taken place, with a view to ascertaining the character of the forces producing such changes, and the physical evidence of the action of like forces in the past. The subject is taught by lectures, and is abundantly illustrated by maps, models, charts, and views. (11 weeks, 5 hours per week.)

(b) Petrographic Geology. The instruction under this topic is given by lectures and laboratory work. The subjects included are the classification of rocks, the methods used in their determination, the conditions governing the formation of each species, the decompositions to which they are liable, and the products of these decompositions. Each student is supplied with a set of blowpipe tools and reagents, and a series of hand specimens covering all the common species of rocks. (11 weeks, 5 hours per week.)

(c) Historical Geology. The work on this subject is substantially an introduction to the history of geology as a science. So far as may be done with the data in hand, an attempt is also made to trace the history of each geological period. (10 weeks, 5 hours per week.)

(d) Paleontology. The scheme of instruction in this subject places before the student the classification adopted for those organic forms occurring as fossils, together with the succession of the vari-

ous groups that occur in the strata, with the cause, as far as known, for their appearance and disappearance. The student is required to familiarize himself with selected groups of paleozoic fossils, abundant illustrations of which are placed in his hands. The subject is presented in lectures and demonstrations, each group being considered in connection with its nearest living representative. (10 weeks, 5 hours per week.)

(e) Economic Geology. The final term of this course is devoted to a study of the uses man may make of geologic materials, the conditions under which these materials occur, and the qualities which render them valuable. The instruction is given by text and readings from the various state and government reports, transactions of societies, and monographs in which these subjects are treated, as well as by demonstrations with materials from the collections of the University. (14 weeks, 10 hours per week.)

In dynamic and historical geology Dana's manual is used as a reference book, and in economic geology Tarr's Economic Geology of the United States. Petrography is pursued by means of a laboratory guide adapted from Rosenbusch, Zirkel, Roth, Teall, and others. In economic geology the manuals of Kemp and Tarr are used as texts. In paleontology Nicholson, Bernard, and Zittel are used for descriptions of the larger groups, Miller for general distribution, and the various state surveys for species. *Winter term, (a and b), at 8; spring term, (c and d), at 8; and fall term, (e), at 1.20, full credit.* Professor ROLFE, and Mr. HUBBARD.

*Required:* Chemistry 3b; Mineralogy 1.

2. INVESTIGATIONS AND THESIS.—For students who select a geological thesis guidance, and facilities will be offered for individual investigations in the field and laboratory. *Fall, winter, and spring terms, full credit.* Professor ROLFE.

*Required:* Geology 1.

3. ENGINEERING GEOLOGY (for engineers only).—This course treats of those parts of geology which are of practical benefit to an engineer. The course deals mainly with subjects connected with the origin, classification, and transformation of rocks; with the principles which govern the deposition and structure of rock masses; with the conditions under which the useful rocks and minerals occur, and the conditions which make them more or less valuable. The instruction is given by lectures and by demonstrations in the laboratory. *LeConte's Elements of Geology. Spring term, at 1.20; full credit.* Professor ROLFE and Mr. HUBBARD.

4. **GENERAL GEOLOGY, MINOR COURSE.**—This course includes a selection of such geological facts and theories as should be known to every intelligent person, with such discussion of them as the time will permit. The subjects treated will be fully illustrated, and opportunity will be afforded for some study of rocks and fossils. *LeConte's Elements of Geology. Winter term, at 1.15, full credit.* Professor ROLFE and Mr. HUBBARD.

NOTE.—Geology 1a and b may be taken as a minor instead of geology 4, by students who have had mineralogy 1; or geology 1a and c may be so taken by students who have had majors in botany and zoölogy.

#### COURSES FOR GRADUATES

101. **PALEONTOLOGY.**—A critical and comparative study of the fossils found in the rocks of Illinois.

102. **ECONOMIC GEOLOGY.**—The effects which variations in the chemical composition and physical constitution of inorganic substances used in the arts have on the qualities of the manufactured product, and should have on methods of manufacture. A critical examination of the tests now employed in determining the qualities of building stones.

103. **ILLINOIS GEOLOGY.**—Glacial geology in relation to water supply of drift-covered regions. Dynamic and stratigraphic geology of the Ozark uplift in Illinois.

#### GERMAN

1. **ELEMENTARY COURSE.**—Thomas's Practical German Grammar; Super's German Reader; Storm's Immensee, with Hatfield's Composition, based on Immensee; Heyse's L'Arrabiata, or other easy narrative prose. *Fall and winter terms, at 9, at 10, at 11, and at 2.20, full credit.* Mr. ROWELL and Mr. MEYER.

2. **READING AND COMPOSITION.**—During the fall term narrative and descriptive or historical prose is translated and work in composition is based upon Jagemann's Prose and Syntax. In the winter and spring terms the works read are selected from the German classics. Exercises in reading at sight and in composition, based upon the texts translated, are required. *Fall, winter, and spring terms, at 8 and at 1.20, full credit.* Associate Professor RHOADES and Mr. MEYER.

*Required:* German 1 and 8, or two years of high school work.

3. **CRITICAL STUDY OF CLASSICAL AUTHORS.**—Translation and collateral reading. In 1898-99 this course may be elected as 3b;

Study of Schiller's Life and Works; in 1899-1900, Study of Lessing's Works, designated as 3a. *Fall, winter, and spring terms, M., W., F., at 1.15, three-fifths credit.* Associate Professor RHOADES.

*Required:* German two, or three years of high school work.

4. STUDY OF GOETHE.—Translation and discussion of the works selected; lectures on Goethe's Life and Works. In 1898-99 this course may be elected as 4b; study of Faust and the Faust problem; in 1899-1900, study of Goethe's lyrics, prose writings, and dramas, especially those of his classical period, designated as 4a. *Fall, winter, and spring terms, M., W., F., at 2.10, three-fifths credit.* Associate Professor RHOADES.

*Required:* German 3.

4c. In connection with course 4 collateral reading and investigation may be taken. *Fall, winter, and spring terms, Tu., Th., at 2.10; two-fifths credit.* Professor RHOADES.

6. PROSE AND SCIENTIFIC READING.—Required course for students in the College of Science. The fall term is devoted to reading standard works in general prose, together with exercises in composition. During this term the work is not essentially different from that in course 2, with which it may be interchanged if necessary. In the winter term physico-mathematical reading is required. The class has constant drill in reading at sight. In the spring term three sections are formed, reading respectively in biological, chemical, and physical science. *Fall and winter terms, at 8, and spring term, at 8 and at 11, full credit.* Mr. ROWELL.

*Required:* German 1 and 8, or two years of high school work.

7. ENGINEERING COURSE.—For students in the College of Engineering. Translation of articles dealing with physics, or the history of architecture. *Spring term, at 9 and at 2.20, full credit.* Mr. ROWELL.

*Required:* German 1, or entrance requirement in German.

8. PROSE, NARRATIVE, AND MODERN DIALOGUE.—For students in the College of Literature and Arts, and in the College of Science. Bernhardt's *Novelletten Bibliothek*; Freytag's *Journalisten*, or other works of similar character. Harris's *Prose Composition*. *Spring term, at 9, at 11, and at 2.20, full credit.* Mr. MEYER.

*Required:* German 1.

9. HISTORY OF GERMAN LITERATURE.—Lectures and assigned collateral reading. *Fall and winter terms, Tu., Th., at 1.15, two-fifths credit.* Associate Professor RHOADES.

10. LECTURES ON LESSING OR SCHILLER.—Planned to supplement course 3, and to be taken in connection with it. This course may be elected as 10a or 10b, the author read in course 3 determining the designation. *Spring term, Tu., Th., at 1.15, two-fifths credit.* Associate Professor RHOADES.

### GREEK

1. SELECTIONS FROM HERODOTUS, with readings from Thucydides for comparison of style and historic method. Studies in Ionic etymology. Greek Prose once a week, with particular reference to the syntax of the verb. *Fall term, at 11, full credit.* Professor MOSS.

2. ANDOCIDES DE MYSTERIIS, DEMOSTHENES ON THE CROWN. The development of oratory among the Greeks, by lectures and library references. *Winter term, at 11.05, full credit.* Professor MOSS.

*Required:* Greek 1.

3. DEMOSTHENES ON THE CROWN, AESCHINES AGAINST CTESIPHON. Continuation of winter term's work. *Spring term, at 11, full credit.* Professor MOSS.

*Required:* Greek 2.

4. XENOPHON'S MEMORABILIA.—Lectures upon the work and influence of Socrates as a public teacher, with collateral readings upon assigned topics. *Fall term, at 8, full credit.* Professor MOSS.

*Required:* Greek 3.

5. PLATO.—One entire dialogue and selections from others. Studies in the rhetoric and idiom of the author. Discussion of his philosophical views, so far as illustrated in the pieces read. *Winter term, at 8.20, full credit.* Professor MOSS.

*Required:* Greek 4.

6. SOPHOCLES' ELECTRA, EURIPIDES' IPHIGENIA IN TAURIS. History of the Greek drama. The literary structure and technics of the plays named. *Spring term, at 8, full credit.* Professor MOSS.

*Required:* Greek 5.

7. HOMER.—Two or three books of the Odyssey will be read by the class in common, and made the basis for some preliminary studies, when special readings in the text will be assigned to each student, and papers prepared by them upon suitable topics. Such papers will be read before the class and discussed. *Fall term, at 3.20, full credit.* Professor MOSS.

*Required:* Greek 6.

8. HOMER.—Continuation of course 7. *Winter term, at 3.05, full credit.* Professor MOSS.

*Required:* Greek 7.

9. OLD GREEK LIFE.—Course of semi-weekly lectures upon old Greek life, political, social, etc. For those who take the lectures and minimum reading, half credit; for others, full credit. *Spring term, at 3.20.* Professor MOSS.

#### COURSES FOR GRADUATES

101. Herodotus.

102. Plato.

#### HISTORY

1. MEDIAEVAL AND MODERN EUROPEAN HISTORY.—Elementary, introductory course. *Fall, winter, and spring terms, M., W., F., at 2.30, three-fifths credit.* Professor GREENE and Dr. HOWLAND.

2. HISTORICAL INTRODUCTION TO CONTEMPORARY POLITICS.—The political history of the nineteenth century. *Fall and winter terms, Tu., Th., at 2.20, two-fifths credit.* Professor GREENE.

3. AMERICAN HISTORY.—The origin and growth of the nation from the beginning of English colonization in America to the close of the Reconstruction period. *Fall, winter, and spring terms, at 8, one credit. Students may, however, enter the course at the beginning of the winter term, omitting the colonial era.* Professor GREENE.

*Required:* History I or 2.

4. ENGLISH CONSTITUTIONAL HISTORY.—Designed especially for those who are intending to take the course in Law. *Fall, winter, and spring terms, M., W., F., at 10, three-fifths credit.* Dr. HOWLAND.

*Required:* History I.

5. THE HISTORY OF GREECE AND ROME.—This course is intended particularly to meet the needs of students who intend to teach the classics and ancient history in secondary schools. *Fall, winter, and spring terms, three-fifths credit.* Dr. HOWLAND. [Omitted in 1898-99.]

6. HISTORY OF ROME.—The aim of this course, which is intended to be introductory to History I, will be to give a general survey of the ancient world before the appearance of the Germans, rather than to trace the economic and political history of the city. *Spring term, at 2.20, full credit.* Dr. HOWLAND.

7. MODERN EUROPEAN HISTORY.—Europe from the age of Louis XIV. to the present time. *Fall, winter, and spring terms,*

*M., W., F., at 1.20, three-fifths credit.* [Alternates with 12.] Professor GREENE.

*Required:* History 1.

8. SEMINARY IN AMERICAN HISTORY.—Training in the use of the sources. *Fall, winter, and spring terms, two-fifths credit. Arrange hours.* Professor GREENE. Course 8 is open to graduates and also to seniors of high standing who take or have taken history 3.

9. SEMINARY IN MEDIAEVAL HISTORY.—Topics to be arranged. Students who take this course will be expected to take history 10 also. *Fall, winter, and spring terms, two-fifths credit. Arrange hours.* Dr. HOWLAND.

10. EUROPEAN HISTORY FROM 800 TO 1300.—A study of the period most fitly termed “mediæval,” and of its characteristic institutions. *Fall and winter terms, M., W., F., at 9, three-fifths credit.* Dr. HOWLAND.

*Required:* History 1.

11. EUROPE IN THE FOURTEENTH AND FIFTEENTH CENTURIES.—The transition from the middle ages to the modern world. *Spring term, M., W., F., at 9, three-fifths credit.* Dr. HOWLAND.

*Required:* History 1.

12. THE BEGINNING OF MODERN EUROPE.—The Protestant Reformation and the religious wars. The Puritan Revolution in England. The rise of the Bourbon monarchy in France. *Fall, winter, and spring terms, three-fifths credit.* Professor GREENE. [Omitted in 1898-99.]

#### COURSES FOR GRADUATES

101. Seminary in American History.

102. Seminary in Mediæval History. [See the announcement of courses in Law for the Seminary in Legal History.]

#### HORTICULTURE

1. INTRODUCTORY COURSE.—This course is intended to give a general idea of horticultural work, such as all students in the College of Agriculture should have, and at the same time to prepare those who wish it for more advanced work. It is prefaced by a discussion of some of the essentials and difficulties of fruit growing.

(a) ORCHARDING.—1st. Pomaceous fruits: Apple, pear, quince. 2d. Drupaceous or stone fruits: Plum, cherry, peach and nectarine, apricot.



Each fruit is studied with reference to the following: Botanical matter, history, importance and extent of cultivation, soil, locations, fertilizers propagation, planting pruning and training, spraying, harvesting, storing and marketing, varieties, insect enemies, diseases, and profits. The grape and persimmon will also be briefly treated under this heading. Lectures, required readings, and practical exercises. *Fall term, Tu., Th., at 11, two-fifths credit.* Mr. BLAIR.

(b) PLANT PROPAGATION.—Methods of securing and perpetuating desirable varieties by self- and cross-fertilization, or hybridization, and selection. Propagation of plants by seed, cuttings, layering, grafting, budding, etc. Lectures, required readings, and laboratory work. *Winter term, Tu., Th., at 11.05, two-fifths credit.* Mr. BLAIR.

(c) SMALL FRUITS.—The strawberry, raspberry, blackberry, dewberry, currant, gooseberry, cranberry, and juneberry.

Each fruit is studied with reference to the points enumerated under (a) above. The grape is also again touched upon under this topic. Lectures, reference readings, and practical work. *Spring term, Tu., Th., at 11, three-fifths credit.* Mr. BLAIR.

2. VITICULTURE.—A comprehensive study of grape culture covering fully the points enumerated above under course 1, (a). Lectures, readings, and field exercises. *Fall and spring terms, Tu., Th., at 10, two-fifths credit.* Mr. BLAIR.

3. PLANT HOUSES.—Greenhouses, their construction and management. Lectures and practical demonstrations. *Winter term, M., F., at 10.10, two-fifths credit.* Mr. BLAIR.

4. FORESTRY.—This course embraces a study of forest trees and their natural uses, their distribution, and their artificial production. The relations of forest and climate are studied, and the general topics of forestry legislation and economy are discussed. Lectures. *Fall term, Tu., Th., at 10, two-fifths credit.* Professor BURRILL.

5. LANDSCAPE GARDENING.—Ornamental and landscape gardening, with special reference to the beautifying of home surroundings. The subject is treated as a fine art, and will be illustrated. *Fall term, M., W., F., at 9, three-fifths credit.* Professor BURRILL and Mr. BLAIR.

6. ECONOMIC BOTANY.—See Botany 8 for description of this course (p. 173). *Winter term, at 10.10; full credit.* Professor BURRILL.

7. VEGETABLE GARDENING.—Kitchen and market gardening, embracing a study of the following: Asparagus, beans, beet, brus-

sells sprouts, cabbage, cauliflower, broccolli, celery, cress or pepper grass, cucumbers, egg plant, lettuce, mushroom, musk melon, onion, parsley, peas, pepper, pumpkin, radish, rhubarb, spinach, squash, sweet potato, tomato, and water melon; each studied with reference to the points enumerated under course 1, (a). Lectures, required readings, practical work. *Spring term, at 9, full credit.* Mr. BLAIR.

8. FLORICULTURE.—The study and management of conservatory and house plants. *Fall, winter, and spring terms, Tu., Th., at 1.20, two-fifths credit.* Mr. BLAIR.

9. PRACTICAL HORTICULTURE.—A course giving a practical training for those students intending to follow horticulture as a business. *Fall, winter, and spring terms, S., at 9, two-fifths credit.* (Six hours a week required.) Mr. BLAIR.

10. SPECIAL INVESTIGATIONS AND THESIS WORK.—For graduates and advanced students. *Fall, winter, and spring terms, two-fifths credit.* Professor BURRILL.

## ITALIAN

1. GRAMMAR AND READING.—Grandgent's Italian Grammar, reading of modern authors; Dante's *Divina Commedia*, outlines of Italian literature. *Fall, winter, and spring terms, full credit.* *Arrange hours.* Assistant Professor FAIRFIELD.

## LATIN

1. LIVY.—Selections from the XXI. and XXII. books. Latin composition based on the text. The main object of this course is to secure accuracy in pronunciation and facility in reading easy Latin. *Fall term, at 8, full credit.* Professor BARTON.

2. PLINY THE YOUNGER.—Selected Letters. The Life of a Roman gentleman under the early empire. Outlines of Roman Literature. *Winter term, at 8.20, full credit.* Professor BARTON.

*Required:* Latin 1.

3. TERENCE.—*Phormio* and *Adelphi*. Roman comedy, lectures. Hayley's introduction to the verse of Terence. Scenic antiquities. *Spring term, at 8, full credit.* Professor BARTON.

*Required:* Latin 2.

4. HORACE.—Odes. Roman lyric poetry. The art of Horace as a contribution to the world's best literature. *Fall term, at 1.20, full credit.* Professor BARTON. [Not given in 1898-99.]

*Required:* Latin 3.

This course will be given in alternate years with course 5.

[Not given in 1898-99.]

5. HORACE.—Satires and Epistles. Especial reference to the private life of the Romans in the time of Augustus. *Fall term, at 1.20, full credit.* Professor BARTON.

*Required:* Latin 3.

6. TACITUS.—Agricola and Germania. The Agricola will be considered both from the standpoint of biography and also as an introduction to the constructions and style of Tacitus. The Germania, in connection with Cæsar's account of the customs of the Germans. *Winter term, at 1.15, full credit.* Professor BARTON.

*Required:* Latin 3.

7. PLAUTUS.—The Captivi and Trinummus. Comedy as an exponent of social life. Themes. *Spring term, at 1.20, full credit.* Professor BARTON.

*Required:* Latin 3.

8. THE ROMAN HISTORIANS.—Readings from Cæsar, Sallust, Livy, Tacitus, and Suetonius. The aim of the course is partly grammatical and partly is devoted to a study of differences in style and method of treating historical themes. *Fall term, at 10, full credit.* Professor BARTON.

*Required:* Latin 3.

9. JUVENAL AND MARTIAL.—Roman Satire and Epigram. Society in the first century. Lectures and themes. *Winter term, at 10.10, full credit.* Professor BARTON.

*Required:* Latin 3.

10. TEACHER'S COURSE.—A study and discussion of the aims and essentials of preparatory Latin teaching, methods of presentation, and the condition of Latin study in the high schools. Students will do the work of a preparatory class and at intervals take charge of the recitation. *Spring term, at 10, full credit.* Professor BARTON.

#### COURSES FOR GRADUATES

101. CATULLUS.—Selected readings. The position of Catullus and Horace in Roman lyric poetry. The indebtedness of Horace and Vergil to Catullus.

102. THE ELEGIAIC POETS.—Selections from Ovid, Propertius, and Tibullus.

103. VERGIL.—The Aeneid. Reading and interpretation.

## LAW

1. **CONTRACTS.**—Fall term, M., Tu., W., Th., at 11; winter term, M., Tu., Th., at 11.05; spring term, M., W., at 11. Professor PICKETT.

2. **TORTS.**—Fall term, M., W., F., at 9; winter term, Tu., Th., at 9.15; spring term, Tu., Th., F., at 9.

3. **REAL PROPERTY.**—Fall term, Tu., Th., F., at 10; winter and spring terms, M., W., F., at 10. Professor GARDNER.

4. **DOMESTIC RELATIONS.**—Winter term, W., F., at 9.15.

5. **CRIMINAL LAW.**—Spring term, Tu., Th., at 11. Professor PICKETT.

6. **EVIDENCE.**—Fall term, M., T., W., at 11; winter term, M., Tu., Th., at 11.05; spring term, Tu., Th., F., at 11. Professor GARDNER.

7. **SALES.**—Fall and winter terms, W., F., at 9. Professor PICKETT.

8. **REAL PROPERTY.**—Fall term, Th., F., at 11. Professor GARDNER.

9. **PLEADINGS.**—Fall term, M., T., Th., at 10.

10. **AGENCY.**—Winter term, M., Tu., Th., at 10.10.

11. **DAMAGES.**—Winter term, W., F., at 10.10.

12. **BAILMENTS.**—Spring term, at 10. Professor PICKETT.

13. **GUARANTY AND SURETYSHIP.**—Spring term, M., W., at 9.

14. **EQUITY.**—Fall and winter terms, M., Tu., Th., F., at 10. Professor PICKETT.

15. **PRIVATE CORPORATIONS.**—Fall term, M., Tu., W., F., at 9. Professor GARDNER.

16. **COMMERCIAL PAPER.**—Fall term, W., Th., at 11; winter term, M., W., at 11.05.

17. **WILLS.**—Winter term, Tu., Th., at 9.15; spring term, M., Tu., Th., at 9. Professor GARDNER.

18. **PARTNERSHIP.**—Spring term, M., W., F., at 11.

19. **CONSTITUTIONAL LAW.**—Same as *Public Law and Administration* 9.

20. **EQUITY PLEADINGS.**—Spring term, F., at 9. Professor PICKETT.

## LIBRARY SCIENCE

1. **ELEMENTARY LIBRARY ECONOMY.**—Cataloguing is taught according to Dewey's Library School Rules, and Cutter's Rules for a Dictionary Catalogue. After each lecture students are required to catalogue independently a number of books. The class is taught to modify the rules to suit different types of libraries. Lectures are given on forms of card catalogues and mechanical accessories. Library hand-writing is taught in connection with cataloguing.

The work of the order department is taught by lectures and practice. Instruction in the accession department is according to Dewey's Library School Rules. Lectures are given upon duplicates, exchanges, gifts, importing, copyright, and allied topics.

In the shelf department Dewey's Library School Rules is used and supplemented by lectures. The Dewey decimal classification is taught, as are also the principles of single and double entry loan systems in preparation for inspection visits. Lectures on binding are followed by visits to binderies. Instruction in mending books is also given. Visits of inspection to Chicago libraries are made in the spring term, when the students have become familiar with library methods. Each student is appointed to make a special study of some one department and report to the class at a general discussion which follows the visit. Problems are given in buying supplies, in organizing and reorganizing libraries, and in preparing printed finding lists. Single lectures are given on library associations, library schools, library commissions, traveling libraries, home libraries, library economy publications, government and service, library legislation, regulations for readers, library architecture, libraries and schools, and other general subjects, to acquaint students with current general library topics. *Fall and winter terms, at 9, one credit; spring term, at 8, one and one-fifth credits.* Professor SHARP and Miss MANN.

2. **ELEMENTARY REFERENCE.**—Lectures are given on reference books considered in groups, such as indexes, dictionaries, encyclopædias, atlases, hand-books of history, hand-books of general information, quotations, statistics, etc. Reference lists are prepared for special classes and for literary societies, and the students have practical work in the reference department of the library. *Fall, winter, and spring terms, Tu., at 8, once in two weeks, two-fifths credit.* Miss STRAIGHT.

3. **ELEMENTARY BIBLIOGRAPHY.**—American, English, French, and German trade bibliography is taught by lectures and problems in the fall term. In the winter term special bibliographies and reading lists are made, based upon instruction in reference also. *Fall term, Tu., at 8, two-fifths credit; winter term, once in two weeks, Tu., at 8, three-fifths credit.* MISS STRAIGHT.

4. **SELECTION OF BOOKS.**—Study is based upon the Publishers' Weekly. Each student checks desired books each week, examines them if possible, and studies reviews in order to make a final choice of five or ten books each month. These books are carefully reviewed in class with regard to author, subject, edition, and series. Especially interesting publications, and current library topics are called to the attention of the students at this time. *Fall, winter, and spring terms, F., at 8, two years, one-fifth credit.* MISS STRAIGHT.

5. **ELEMENTARY APPRENTICE WORK.**—A laboratory for the mechanical preparation of books for the shelves is fitted up in the stack room, and here each student is given practical work each week. Each student acts as assistant to each member of the library staff in turn, thus learning many points which cannot be given in the class room. Each student has regular hours at the loan desk. Orders in outside work in cataloguing, organizing, bibliography, and writing are taken and given to the class for experience. *Fall and winter terms, at 10, two-fifths credit; spring term, at 10 and at 1.20, one and one-fifth credits.* MISS MANN.

*Required:* Library 1, 2, 3.

6. **ADVANCED LIBRARY ECONOMIC.**—In a comparative study of classification are discussed the systems of Dewey, Cutter, Edwards, Fletcher, Perkins, Smith, and Schwartz. A comparative study of cataloguing considers the rules of British Museum, Jewett, Library Association of the United Kingdom, Bodleian library, American library association, Wheatly, Perkins, Cutter, and Dewey. Students revise junior cataloguing as a review, and catalogue new books for the library. A comparative study is made of loan systems used in different types of libraries, with careful discussion of the principles of guarantee, age limit, fines, renewals, reserves, etc. The class forms a seminary for the discussion of questions affecting the founding and government of libraries, library legislation, library architecture, library administration, and current problems in public and college library work. *Fall, winter, and spring terms, M., Tu., W., at 10, three-fifths credit.* Professor SHARP and Miss MANN.

*Required:* Library, 5.

7. **ADVANCED BIBLIOGRAPHY.**—Lectures on subject bibliography are given by professors at the University. Students are given many practical problems. The greater part of the time is devoted to work on the original bibliography which is required of each student for graduation. *Fall and winter terms, once a week, one credit; spring term, one-fifth credit. Arrange hours.* Professor SHARP.

*Required:* Library, 3.

8. **HISTORY OF LIBRARIES.**—Libraries are studied by types and by countries. Special attention is given to libraries in the United States, their reports being used as text-books. *Fall and spring terms, Th., at 11, two-fifths credit.* Miss STRAIGHT.

9. **ADVANCED REFERENCE.**—The fall term is devoted to a study of public documents; the winter term takes up transactions of societies, advanced reference books, and indexing. *Fall and winter terms, Th., at 8, two-fifths credit.* Professor SHARP and Miss STRAIGHT.

*Required:* Library 1, 2, 3.

10. **BOOK-MAKING.**—Lectures on the history of printing, printers' marks, book-plates, and the history and art of binding. *Winter term, Th., at 10.10, two-fifths credit.* Professor SHARP.

11. **ADVANCED APPRENTICE WORK.**—Students are allowed a certain time each day for practical library work of an advanced grade, and gain experience in every department of the library. *Fall, winter, and spring terms, M., Tu., W., Th., at 8; F., at 10, three-fifths credit.* Miss MANN.

*Required:* Library, 5.

12. **THESIS.**—Each student is required to present a thesis for graduation. This must be on some library topic, and must represent original research. *Fall and winter terms, one-fifth credit; spring term, one and one-fifth credits. Arrange hours.* Professor SHARP.

*Required:* Library 1-11.

13. **GENERAL REFERENCE.**—This course is offered to all students of the University who wish to become familiar with the ordinary reference books. It will comprise twelve lectures on the catalogue, classification, the reference room, the reading room, and groups of books, such as indexes, dictionaries, encyclopædias, atlases, handbooks of general information, handbooks of history, statistics, quotations, etc. *Fall term, one-fifth credit.* The hour will be arranged at convenience of instructor and students. Professor SHARP.

## MATHEMATICS

1. **ADVANCED ALGEBRA.**—For students in courses requiring spherical trigonometry. This course presupposes a thorough knowledge of elementary algebra through simultaneous quadratics and proportion. Students, who for any reason have not had this elementary work recently, would find it to their advantage to review it thoroughly before commencing this course. The work will cover the following topics: Progressions, indeterminate equations, binomial theorem for fractional and negative exponents, undetermined coefficients, decompositions of fractions, theory of limits, convergency and divergency of series, reversion of series, summation of series, logarithms, continued fractions, permutations and combinations, probability, and the loci of equations. *Winter term, at 9.15 and at 11.05, full credit. Bowser's College Algebra. Mr. BRENKE.*

2. **ADVANCED ALGEBRA.**—For students in courses not requiring spherical trigonometry, to be taken with course 4. This course will cover all the work given in course 1, and in addition will include a short introduction to the general theory of equations, with applications to the solution of numerical equations. *Winter term, at 8, at 9, at 10, at 11, and at 1.20, two-fifths credit; winter term, at 8, at 9, at 10, at 11, and at 1.20, full credit. Bowser's College Algebra. Mr. BURNHAM.*

3. **PLANE AND SPHERICAL TRIGONOMETRY.**—This course covers the same ground in plane trigonometry as course 4. In addition to the work outlined there, about two-fifths of the term will be given to developing the general principles and applications of spherical trigonometry. It is intended that this course shall be followed by course 1 in advanced algebra. *Fall term, at 9 and at 11, full credit. Bowser's Trigonometry. Mr. BRENKE.*

*Required: Math. 19.*

4. **PLANE TRIGONOMETRY.**—The following topics will be taken up, viz.: Measurement of angles, trigonometric functions and their fundamental relations, functions of the sum and the difference of two angles, functions of twice an angle and of half an angle, the construction and use of logarithmic tables, solution of trigonometric equations, the relations between the sides of a triangle and the functions of its angles, the solution of triangles, Demoirve's theorem and trigonometric series. This course taken with that portion of course 2 in advanced algebra given in the fall term makes a full



credit. *Fall term, at 8, at 9, at 10, at 11, and at 1.20, three-fifths credit. Bowser's Trigonometry.* Mr. BURNHAM.

5. CONIC SECTIONS (Geometrical Method).—Definitions and general properties of the ellipse, hyperbola, and parabola, curvature of the conic sections; elements of analytical geometry. Properties and relations of the point and right line in a plane, and of the conic sections. *Cockshott & Walters's Geometrical Conics.* *Spring term, full credit.* Mr. BRENKE.

*Required:* Math. 1, 3.

6. ANALYTICAL GEOMETRY.—The aim is to acquaint the student with analytical methods of investigation and to familiarize him with some of the most recent developments in synthetic geometry; to make him more skillful in the use of algebraic processes, especially as a means of demonstrating geometric properties of loci. Subjects considered are the elementary theory of the point and right line in a plane; use of abbreviated notation; elementary theory of the conic sections, their equations and properties developed analytically; poles and polars; synthetic geometry of the circle, and the discussion of the general equation of the second degree. *Wood's Coordinate Geometry.* *Spring term, at 8, at 10, and at 1.20, full credit.* Mr. BURNHAM.

*Required:* Math. 2, 4.

7. DIFFERENTIAL CALCULUS.—Variables and functions; limits and infinitesimals; differentials and derivatives; differentiation of explicit functions, implicit functions, and functions of several variables; derivatives of higher orders; successive derivatives, developments in series; maxima and minima of functions; indeterminate forms; plane curves, tangents, and normals; asymptotes, singular points, and curve tracing; theory of envelopes, of curvature, of evolutes, and of involutes. *Byerly's Differential Calculus.* *Fall term, at 8 and at 9, full credit.* Professor SHATTUCK.

*Required:* Math. 6.

8. ADVANCED ANALYTICAL GEOMETRY.—Position and direction in space; direction and angles; projections and lines, direction cosines; transformation of coördinates; the general and normal equations of the plane; also in terms of the intercepts; the plane satisfying given conditions; relations of planes to one another; perpendicular distance to a plane; bisectors of dihedral angles; symmetrical equations of a straight line; condition that a line shall be parallel to a plane; equation of the common perpendicular to two given lines; condition of intersection; a quadric surface; conjugate axes and

planes; classes of quadrics; tangent and polar lines, and planes to a quadric; surfaces derived from generating curves; the equations of the helix; the conoid. *Wood's Coördinate Geometry*. Winter term, at 8.20 and at 9.15, full credit. Professor SHATTUCK.

*Required:* Math. 7.

9. INTEGRAL CALCULUS.—Elementary forms of integration; integrals immediately reducible to the elementary forms; integration by rational transformations; integration of irrational algebraic differentials; integration of transcendent functions; definite integrals; successive integration; differentiation under the sign of integration; integration by means of differentiating known integrals; double integrals; triple and multiple integrals; product of two definite integrals.

Rectification and quadrature; the parabola, the ellipse, the cycloid, the Archimedean spiral, the logarithmic spiral, the limniscate, the cycloid, quadrature of surfaces of revolution and of surfaces in general; cubature of volumes; the sphere, the pyramid, the ellipsoid, any solid of revolution, and of volumes in general. *Byerly's Integral Calculus*. Spring term, at 8 and at 9, full credit. Professor SHATTUCK.

*Required:* Math. 8.

10. THEORY OF EQUATIONS.—The development of the general properties of equations; relations of the roots and the coefficients of an equation, with applications to symmetric functions; transformation of equations; solution of reciprocal and binomial equations; algebraic solution of cubics and biquadratics; properties of derived functions; the limits and separation of the roots of equations; the solution of numerical equations of the  $n$ th degree. *Burnside and Panton's Theory of Equations*. Fall term, at 8, full credit. Associate Professor TOWNSEND.

*Required:* Math. 2, 4.

11. THEORY OF DETERMINANTS.—The origin and notation of determinants, properties of determinants, determinant minors, multiplication of determinants, determinants of compound systems, determinants of special forms—Jacobians, Hessians, Wronskians—with applications to algebra, including linear transformations, and to analytic geometry. *Hanus's Theory of Determinants*, supplemented by lectures. Winter term, at 9.15, full credit. Associate Professor TOWNSEND.

*Required:* Math. 7, 10.

12. THEORY OF INVARIANTS.—The course will cover the general development of the theory of invariants, both from the geometric

and from the algebraic side. Applications of invariants will be made to systems of conics and to higher plane curves. Lectures with collateral reading. *Fall term, M., W., F., at 9, three-fifths credit.* Associate Professor TOWNSEND.

*Required:* Math. II.

13. THEORY OF FUNCTIONS.—By way of introduction, considerable attention will be given to the geometric representation of the complex variable, including Argand's diagram, conformal representation, and harmonic ratios, and bilinear transformation. This will be followed by the development of the theory of infinite series, algebraic and transcendental functions, integration of uniform functions, Riemann's surfaces, introduction to elliptic functions, etc. *Durege's Theory of Functions and Collateral Reading. Winter and spring terms, M., W., F., at 10, three-fifths credit.* Associate Professor TOWNSEND. [Not given in 1898-99.]

*Required:* Math. 7, 8, 9, 10.

14. METHOD OF LEAST SQUARES.—The object of this course is to present the fundamental principles of the subject, in a manner so plain as to render them intelligible and useful to students of astronomy and engineering. The following subjects will be studied: Law of probability and error, adjustment of observations, precision of observations, independent and conditioned observations, etc. *Merriman's Least Squares. Fall term, Tu., Th., at 1.20, two-fifths credit.* Associate Professor MYERS.

*Required:* Mathematics 9.

15. SEMINARY AND THESIS.—*Fall term, Tu., Th., at 9; winter and spring terms, Tu., Th., at 10, two-fifths credit.* Associate Professor TOWNSEND.

16. DIFFERENTIAL EQUATIONS.—This subject is designed for students in the courses of engineering and of mathematics and astronomy. It will embrace the following topics: General linear equations with constant coefficients, special forms of differential equations of higher order, integration of series, etc. *Johnson's Differential Equations. Winter term, Tu., Th., at 11.05, three-fifths credit. Spring term, Tu., Th., at 1.20, two-fifths credit.* Associate Professor MYERS.

*Required:* Math. 9.

17. ANALYTICAL GEOMETRY OF SPACE.—A general review will be given of the position of the plane and the right line in space and the more general properties of surfaces of the second degree. To this will be added the classification and special properties of

quadrics, and a brief introduction to the theory of surfaces in general. *Chas. Smith's Solid Geometry. Spring term, at 8, full credit.* Associate Professor TOWNSEND.

*Required:* Math 9, 11.

18. HIGHER PLANE CURVES.—This course is designed to cover the general theory of algebraic curves, together with the application of the theory of invariants to higher plane curves. Special study will be made of curves of the third and fourth order. *Lectures with collateral reading. Winter term, M., W., F., at 10, three-fifths credit.* Associate Professor TOWNSEND.

*Required:* Math. 12.

19. SOLID AND SPHERICAL GEOMETRY.—This is a course prescribed for the students in the College of Literature and Arts. *Spring term, at 1.20, one credit.* Mr. BRENKE.

20. CALCULUS OF VARIATIONS.—This course has for its aim merely to acquaint the student with those elements of the science which are most needed in the study of the higher subjects of mathematical astronomy and physics. *Carll's Calculus of Variations. Fall term, M., W., F., at 2.20, three-fifths credit.* Associate Professor MYERS.

*Required:* Math. 11, 16. [Not given in 1898-99.]

21. SPHERICAL HARMONICS.—In this course, a thorough study is made of so much of this subject as is of interest to an astronomer. It is introduced by a short course of lectures and study of certain trigonometric series. Fourier's Theorem for developing any function of a variable in a series proceeding in sines and cosines of multiples of the variable is derived and the limitations of its validity investigated. This is followed by the study of Lagrange's, Laplace's and Lamé's functions and their applications to astronomical and physical problems. *Byerley's Fourier's Series and Spherical Harmonics. Winter term, M., W., F., at 2.10, three-fifths credit.* Associate Professor MYERS.

*Required:* Math. 11, 14, 16. [Not given in 1898-99.]

22. POTENTIAL FUNCTION.—The potential function is defined and its properties derived and discussed. The potential of various bodies; such as of a wire, a spherical shell, a sphere, ellipsoid of revolution, etc., is computed. Poisson's and Laplace's Equations are derived and discussed. Green's Propositions with kindred and similar subjects are handled. *Pierce's Newtonian Potential Function. Spring term, M., W., F., at 2.20, three-fifths credit.* Associate Professor MYERS.

*Required:* Math. 21; Astronomy 6. [Not given in 1898-99.]

23. MODERN GEOMETRY.—This course will include in general a consideration of homogeneous co-ordinates duality, descriptive and metrical properties of curves, anharmonic ratios, homography, involution, projection theory of correspondence, etc. *Scott's Modern Analytic Geometry. Fall term, M., W., F., at 9, three-fifths credit.* Associate Professor TOWNSEND.

*Required:* Math. 8, 11. [Not given in 1898-99.]

24. ALGEBRAIC SURFACES.—In this course will be considered the application of homogeneous co-ordinates and the theory of invariants to geometry of three dimensions, and also the general theory of surfaces, together with the special properties of surfaces of the third and fourth order. *Lectures with collateral reading. Spring term, M., W., F., at 10, three-fifths credit.* Associate Professor TOWNSEND.

*Required:* Math. 17, 18.

## COURSES FOR GRADUATES

Courses 10 to 24, inclusive, are open to graduate students.

## MECHANICAL ENGINEERING

1. SHOP PRACTICE.—In the shops the work, as far as possible, is carried along the same lines as are practiced in our leading commercial shops. The exercises are, in general, chosen from parts of machines under construction, and carefully graded to the skill of the student. Beginning with the care and use of the tools with which he is to work, the student is carried through the various operations of machine-shop practice. Following is an outline of the work, that of the several terms being subject to transposition.

First Term, Wood Shop.—Primary exercises relating to the use and care of tools, and the construction of a series of exercises in joint work and turning, preparatory to pattern making.

Second Term, Wood Shop.—The work of this term is devoted largely to the making of patterns and core boxes, particular attention being given to the principles of molding.

Third Term, Foundry.—The student here receives instruction in the management of the cupola and molding, including green and dry sand core making. *Fall, winter, and spring terms, at 8, at 10, and at 1.20, full credit.* Mr. CURTISS and Mr. WILSON.

2. SHOP PRACTICE.—First Term, Forge Shop.—Instruction is given in the forging and welding of iron and steel, special attention

being given to the forging and tempering of lathe and planer tools, annealing, and case hardening.

Second Term, Machine Shop.—During this term the student receives instruction in chipping, filing, and elementary lathe and planer work.

Third Term, Machine Shop.—Lathe, planer, drill, shaper, or bench work. *Fall, winter, and spring terms, Lecture, M., Th., at 1.20; Shop, Tu., W., F., at 1.20, M., Th., at 2.20, half credit.* Mr. CLARK and Mr. JONES.

3. POWER MEASUREMENTS.—This is the beginning of the work in the mechanical engineering laboratory, and is intended for students taking the mechanical engineering course. A study is made of the use and construction of the steam engine indicator. The measurement of power developed by the steam engine under different conditions is made a prominent part of the work. The method of applying friction brakes and measuring transmitted power is also taken up. *Fall, winter, and spring terms, at 1.20, arrange hours; S., at 8, half credit.* Mr. McKEE.

*Required:* Mechanical Engineering 1, 2; Math. 9.

4. ELEMENTS OF MACHINE DESIGN.—The basis of this work is found in *Klein's Elements of Machine Design*. A series of plates 26x40 inches is constructed, covering a wide range of machine parts. There are 334 formulas, empirical and rational, the use and derivation of which are explained. By means of a large number of practical examples, sufficient drill is obtained in using them to enable the student to make the calculations required when designing various parts of machines. Theoretical and practical problems relating to gearing are taken up and worked out in detail. *Kent's Mechanical Engineers' Pocket-book; Low and Bevis's Machine Design; also Unwin's Machine Design.* *Fall, winter, and spring terms, at 1.20, half credit.* Mr. KAVANAUGH.

*Required:* General Engineering Drawing 2, 3, 4.

5. MECHANISM.—A study of nature and equivalence of mechanisms. Determination of centrodes. Graphical diagrams of the paths, speeds, and accelerations of important points of familiar mechanisms. Laying out of cams. Analysis of difficult mechanisms. Determination of velocity ratios. Particular attention is paid to problems relating to motions of gearing, steam-engine mechanisms, parallel motions of indicators, governors, link motions, valve gears, and indicator riggings. *Fall term, at 9, full credit.* Mr. KAVANAUGH.

*Required:* Math. 2, 4, 6; Mechanical Engineering 1, 2, 4.

7. THERMODYNAMICS.—The fundamental principles underlying the transformation of heat into work, more especially as exemplified in the steam engine, are carefully studied. Considerable attention is paid to the solution of numerous examples, such as will arise in steam, air, or gas engineering. Drill is given in the rapid and accurate use of standard steam tables. *Fall term, at 8, full credit.* Professor BRECKENRIDGE.

*Required:* Math. 9; Theoretical and Applied Mechanics 1; Physics 1, 3.

8. MECHANICS OF MACHINERY.—This is a study of the theoretical principles involved in the construction of such machinery as comes under the head of hoisting apparatus, pumping engines, air compressors, fans, blowers, machinery for transmitting power, locomotives, pile drivers. *Winter term, Tu., W., Th., at 8.20, three-fifths credit, and spring term, at 8, full credit.* Professor BRECKENRIDGE.

*Required:* Theoretical and Applied Mechanics 1, 2, 3; Mechanical Engineering 5, 7, 14, 15.

9. ADVANCED DESIGNING.—This work follows the design of a high-speed steam engine, and comes under two heads.

**Advanced Design:** Under this head the work begins with simple machines and extends to more difficult designs as the student progresses. The design of attachments to existing machines, or the complete design of some machine that can be built in the shops, is often a part of this work. Such designs as hoists, pumps, drills, lathes, etc., are undertaken.

**Original Design:** In this work the student's previous training in designing is combined with his inventive ability, and often valuable and ingenious work is done. The machines are to be designed for accomplishing a certain prescribed work. Often but a single piece is handed the student, and a machine is required which will produce a given number of these pieces per hour.

A large amount of study of existing machines is required. The student is taught to consult the standard works on designing, such as *Unwin, Reuleaux, Klein, Marks, Richards*, and to use such books as *Kent, Nyström, Haswell, Taschenbuch der Hütte*, etc. *Winter term, Tu., W., Th., at 9.15; spring term, Tu., W., Th., at 1.20, and F., at 9, full credit.* Assistant Professor VANDERVOORT and Professor BRECKENRIDGE.

*Required:* Theoretical and Applied Mechanics 1, 2, 3; Mechanical Engineering 1 to 8, and 14.

10. ESTIMATES, SPECIFICATIONS, AND SUPERINTENDENCE.—Calculations and estimates are made as to the cost of machinery, power plants, boilers, chimneys, systems of piping, engines and their foundations, different methods of power transmission.

Also forms of contracts and specifications are studied. *Spring term, M., Tu., W., Th., at 9, full credit.* Professor BRECKENRIDGE.

*Required:* Theoretical and Applied Mechanics 1, 2, 3; Mechanical Engineering 1 to 6, 9, 12.

12. ADVANCED MECHANICAL ENGINEERING LABORATORY.—This work is a continuation of the work begun in the junior year. Experiments are made with engines, pumps, motors, injectors, and boilers to determine under what conditions they may be expected to give a maximum efficiency. Tests of plants in the vicinity are made, of which carefully prepared reports are always required. Through the kindness of Mr. W. Renshaw, Superintendent of Machinery of the Illinois Central Railroad, opportunities will be afforded to do practical work in locomotive testing, and considerable apparatus has been constructed for this important work. Advanced constructive work in the shops is assigned to groups of students, in order to impress upon them the intimate relation existing between the designing room and the shop. *Carpenter's Experimental Engineering. Fall term, Tu., Th., at 9; winter term, F., at 8.20, and at 1.15, full credit.* Professor BRECKENRIDGE, Assistant Professor VANDERVOORT, and Mr. MCKEE.

*Required:* Theoretical and Applied mechanics 1, 2, 3; Mechanical Engineering 1 to 7, 14, 15.

13. MECHANICAL ENGINEERING LABORATORY.—This is a laboratory course in which the student is taught to apply the indicator to different engines and to make the usual calculations of horse power and steam consumption as given by the diagrams. Correct forms of reducing motions are explained. How to read indicator diagrams and valve setting is also taught. *Indicator Practice and Steam Engine Economy—F. F. Hemenway. Spring term, S., at 8, half credit.* Mr. MCKEE.

*Required:* Mechanical Engineering 1, 2; Math. 7, 8, 9.

14. HIGH SPEED STEAM ENGINE DESIGN.—Under this head the steam engine is carefully studied. Each part of a complete engine is designed, and detailed drawings made and traced, so that each member of the class may have a complete set of blue prints. *Klein's High Speed Steam Engine. Fall term, M., W., F., at 9, three-fifths credit.* Assistant Professor VANDERVOORT.



*Required:* Theoretical and Applied Mechanics 1, 2, Mechanical Engineering 1 to 7, 16, 17.

15. VALVE GEARS.—Recitations and drawing room work. The application of graphical diagrams as an aid in the study and design of valves for steam distribution in the engine cylinder is carefully brought out. Determination of the dimensions of steam passages, single valve gears, double valve gears, equalization of steam distribution, application of diagrams to existing types of engines. *Klein's High Speed Steam Engine. Fall term, W., F., at 1.20, two-fifths credit.* Assistant Professor VANDERVOORT.

*Required:* Mechanical Engineering 1 to 7, 16, 17; Theoretical and Applied Mechanics 1, 2.

16. STEAM ENGINES.—A study of the details of steam engines. Elementary principles of transformation of heat into work. Laws of expansion of steam. The mechanics of the steam engine. Valves and valve gears. The indicator diagram, condensers, steam jackets, super-heaters, and compound engines. *The Steam Engine, Holmes. Winter term, M., W., F., at 8.20, three-fifths credit.* Assistant Professor VANDERVOORT.

*Required:* Theoretical and Applied Mechanics 1; Physics 1, 3.

17. STEAM BOILERS.—Materials used in the construction of boilers. Proportions and strength of riveted joints. Methods of setting boilers for maximum efficiency. Incrustation, explosions, combustion, safety appliances, feed apparatus, boiler trials. *A Treatise on Steam Boilers, Wilson-Flather. Winter term, Tu., Th., at 8.20, two-fifths credit.* Mr. SWENEY.

*Required:* Mechanical Engineering 1; Physics 1, 3; Mathematics 2, 4, 6.

18. GRAPHICAL STATICS OF MECHANISM.—Graphical determination of the forces acting at different points in machines used for hoisting, crushing, punching, and transmitting motion, taking into account the resistances offered to motion by frictional resistances. Effort of sliding, rolling, and journal friction, chain friction, tooth friction, stiffness of ropes and belts. Graphical determination of the efficiency for the forward and reverse motion. *Graphical Statics of Mechanism, Herrmann-Smith. Winter term, M., at 8.20, two-fifths credit.* Mr. KAVANAUGH.

*Required:* Theoretical and Applied Mechanics 1, 2.

19. SEMINARY.—Work supplementary to other studies of the senior year. Presentation of papers on assigned subjects. Contributed papers on current topics. Discussion and criticisms on

new inventions. *Fall, winter, and spring terms, M., at 1.20, one-fifth credit.* Professor BRECKENRIDGE.

20. SHOP PRACTICE FOR SPECIAL STUDENTS.—This course is open to those entering as special students, as defined elsewhere under "Admission." The work will be arranged after consultation. The work done does not count for a credit for graduation in any of the technical courses. *Fall, winter, and spring terms.* Assistant Professor VANDERVOORT.

21. FORGE SHOP PRACTICE.—This course is designed for students taking the winter course in Agriculture. The work covers instruction in forging, such as will be of use to the practical farmer. *Winter term.* Mr. JONES.

### COURSES FOR GRADUATES

#### Primary

- 101. Advanced Machine Design, 1, 2, or 3 credits.
- 102. Graphics and Kinematics, 1 credit.
- 103. Mill Engineering, 1 credit.
- 104. Steam Engineering, 1, 2, or 3 credits.
- 105. Experimental Engineering, 1, 2, or 3 credits.
- 106. Thermodynamics, 1 credit.
- 107. Pneumatics, 1 credit.
- 108. Hydraulic Machinery, 1 credit.
- 109. Mechanical Technology, 1 credit.
- 110. Translation of Technical Engineering Work, 1, 2 or 3 credits.

#### Secondary

- 111. Any primary offered in the College of Engineering, 1 credit. Primary subjects may be taken as secondary in any course for the master's degree in the College of Engineering.
- 112. Indexing and Classification of Engineering Literature, 1 credit.

### MECHANICS, THEORETICAL AND APPLIED

1. ANALYTICAL MECHANICS.—The mechanics of engineering, rather than that of astronomy and physics, is here considered. In addition to fixing the fundamental concepts and demonstrating the general principles of equilibrium and motion, application of principles and methods is made to numerous and varied engineering problems in such a way that the student must discriminate in the use of data and in the statement of conditions. As mathematical processes and forms express most readily and quickly the rules and

methods for the solution of such problems, this training is important. This subject requires a thorough working knowledge of the mathematics preceding it in the course. The methods of the calculus are used whenever preferable.

Outline of the subject: Nature and measure of force; composition and resolution of forces; moments; conditions of equilibrium; resultant of systems of forces; center of gravity; moment of inertia; rectilinear and curvilinear motion, and the relation between such motion and the constraining and accelerating forces; dynamics of a rigid body; momentum and impact; work, energy, and power; mechanical advantage. *Bowser's Analytical Mechanics. Fall term, at 8, and at 9, full credit.* Professor TALBOT.

*Required:* Math 9.

2. RESISTANCE OF MATERIALS.—In the treatment of this subject it is the aim to give the student a thorough training in the elementary principles of the mechanics of materials, to follow with such experiments and investigations in the testing laboratory as tend to verify the experimental laws, and to add such problems in ordinary engineering practice as will train the student in the use of his knowledge. Attention is also given to the quality and requirements for structural materials.

Outline of the subject: Elasticity of materials; stresses and strains; experimental laws; working strength for different materials; resistance of pipes and riveted joints; bending and resisting moment, shear, and elastic curve of cantilever, simple, restrained, and continuous beams; column formulas; torsion and shafts; maximum internal stresses in beams; fatigue of metals; working strength for repeated stresses; resilience; reliability of the common theory of flexure, as shown by actual experiment; design and strength of rolled and built beams and columns; specifications for materials and methods of testing. *Merriman's Mechanics of Materials. Winter term, at 8.20, and at 9.15, full credit.* Professor TALBOT.

*Required:* Math. 9; Theoretical and Applied Mechanics I

3. HYDRAULICS.—In hydraulics the instruction is by text-book and laboratory work. The laws of the pressure and flow of water and its utilization as motive power are considered. Experimental work in the hydraulic laboratory gives training in the observation and measurement of pressure, velocity, and flow, and in the determination of experimental coefficients.

The subject covers the following: Weight and pressure of water; head; center of pressure; velocity and discharge through

orifices, weirs, tubes, nozzles, pipes, conduits, canals, and rivers; measurement of pressure, velocity, and discharge; meters and measurements; motors, turbines, and water wheels; water power and transmission of power. *Merriman's Hydraulics*. *Spring term, at 8 and at 9, full credit.* Professor TALBOT.

*Required:* Math. 9; Theoretical and Applied Mechanics 2.

4. APPLIED MECHANICS.—To be taken instead of Analytical Mechanics. The course of study and topics studied will be nearly identical. *Wright's Mechanics*. *Fall term, at 1.20, full credit.* Assistant Professor McLANE.

*Required:* Mathematics 6.

5. STRENGTH OF MATERIALS.—To be taken instead of Resistance of Materials. The course of study will be nearly the same, though somewhat simplified. *Merriman's Mechanics of Materials*. *Winter term, at 1.20, full credit.* Assistant Professor McLANE.

*Required:* Mathematics 6; Theoretical and Applied Mechanics 4.

#### COURSES FOR GRADUATES

101. Analytical Mechanics.
102. Resistance of Materials.
103. Hydraulics and Hydraulic Engineering.
104. Laboratory of Applied Mechanics.

#### MILITARY SCIENCE

1. DRILL REGULATIONS.—For all male students. First term: school of soldier; bayonet exercise; second term: school of company, close and extended order. *Fall and winter terms, one-fourth credit.* Professor BRUSH.

2. PRACTICAL INSTRUCTION IN SCHOOL OF SOLDIER.—Company and battalion in close and extended order; school of the cannoneer and of the battery dismounted; target practice. Freshmen and sophomore years; *six terms, counts one and one-half credits.* Professor BRUSH.

3. RECITATIONS AND PRACTICE FOR OFFICERS AND NON-COMMISSIONED OFFICERS.—*Sophomore year:* School of the battalion, close and extended order; ceremonies; review and inspection; military signaling; guard, outpost, and picket duty. *Junior year:* military administration; reports and returns; theory of firearms and target practice; organization of armies; field fortifications; art of war. *Seven terms, recitations one to two hours a week; drill two hours a week.* Professor BRUSH. This course is obligatory upon officers and non-commissioned officers, and open to others.

## MINERALOGY\*

1. ELEMENTS OF MINERALOGY.—The first term's work is a general introduction to the subject. Instruction includes lectures and laboratory practice. In the lectures, which occur on specified days (2 or 3 each week), such subjects as follow are discussed: genesis of minerals; conditions favoring their deposition; origin of the massive and crystalline forms; relationships of minerals and their classification; the physical properties of minerals, as color, luster, hardness, gravity, streak, etc., with the conditions which may cause these properties to vary; elements of crystallography.

In the laboratory the student is first made acquainted with the simplest trustworthy methods for proving the presence or absence of the acids and bases. He is then required to determine a large number of species by their physical and chemical properties only. *Fall term, at 8, full credit.* Professor ROLFE and Mr. HUBBARD.

*Required:* Chemistry I.

2. ADVANCED MINERALOGY.—Crystallographic Mineralogy. During the second term a careful study of the forms of crystals is made, including the measurement of angles and determination of complex forms. The student is also required to identify many species of minerals by their crystalline forms, and to verify his conclusions by the methods in use during the preceding term.

Optical Mineralogy. The work of the third term will be devoted to the microscopic determination of rock forming minerals; to methods for separating the minerals constituents of fine-grained rocks, etc. *Winter and spring terms, at 10, full credit.* Professor ROLFE and Mr. HUBBARD.

*Required:* Mineralogy I.

## MUNICIPAL AND SANITARY ENGINEERING

1. ROAD ENGINEERING.—The value and importance of road improvement in country highways and the best means of securing it are considered, together with the principles and details of construction of earth, gravel, and macadam roads. In city streets, the methods of construction, cost, durability, and desirability of the various kinds of pavement, and the questions of grades, cross-sections, methods of assessment of cost, and methods of maintenance and cleaning are treated. *Lectures and reading. Winter term, at 10.10, with Civil Engineering 4, half credit.* Assistant Professor PENCE.

\*See also under geology, and paleontology.

*Required:* Math. 4; General Engineering Drawing 1, 2; Civil Engineering, 1, 2, 3, 4.

2. WATER SUPPLY ENGINEERING.—This subject is intended to cover the principal features of the construction of water works, including the tests and standards of purity of potable water; the choice of source of supply; the designing of the distribution system, pumps and pumping machinery, reservoirs, and stand-pipes. *Lectures; Fanning's Water Supply Engineering. Fall term, at 10, and M., at 1.20, full credit.* Professor TALBOT.

*Required:* Theoretical and Applied Mechanics 1, 3; Chemistry 1; Mechanical Engineering 16.

3. SEWERAGE.—The design and methods of construction of sewerage systems of cities, including the following: Sanitary necessity of sewerage: water carriage systems, both separate and combined; surveys and general plans; hydraulics of sewers; relation of rainfall to storm water flow, and determination of size and capacity of sewers; house sewage and its removal; form, size, design, and construction of sewers and sewer appurtenances; modern methods of sewage disposal; estimates and specifications. *Lectures; Staley and Pierson's Separate System of Sewerage. Winter term, at 1.15, and M., at 2.10, full credit.* Professor TALBOT.

*Required:* Theoretical and Applied Mechanics 1, 3; Chemistry 1.

5a. BACTERIOLOGY.—For students in Municipal Engineering. This course includes the identification and classification of bacteria, and of allied organisms, their relations to health and to disease, the methods of separation and cultivation, and the methods of air and water analysis. The laboratory is furnished with sterilizers, culture ovens, microscopes, etc., and students have abundant opportunity to do practical work. *Winter term, at 1.15, first of term, two-fifths credit.* Professor BURRILL.

6. WATER PURIFICATION, SEWAGE DISPOSAL, AND GENERAL SANITATION.—This work includes the consideration of impurities in water supplies and the study of the methods and processes of their removal; the modern methods of sewage disposal by filtration, chemical precipitation, irrigation, etc., with a study of representative purification plants; garbage collection and disposal; sanitary restrictions and regulations and general sanitation. *Lectures and seminary work. Spring term, at 10, full credit.* Professor TALBOT.

*Required:* Municipal and Sanitary Engineering 2, 3, 5a; Chemistry 1, 3a.

**COURSES FOR GRADUATES****Water Supply Engineering**

101. Tanks, Stand Pipes, and Reservoirs.
102. Sources and Requirements of Water Supply for a City and Removal of Impurities.
103. Water Works Management and Economics.
104. Pumps and Pumping.
105. General Water Works Construction.
106. Biological and Chemical Examination of Potable Water.
107. Description of Water Supply Systems.

**Sewerage**

111. Sewage Purification.
112. Sewage Disposal Works.
113. General Sewerage Design and Construction.
114. City Sanitation.
115. Description of Sewerage Systems.

**Road Engineering**

118. Economic Aspect of Good Roads and Pavements.
119. Construction of Roads and Pavements.

**Miscellaneous Subjects**

121. Critical Description of Engineering Construction.
122. Translation of Technical Engineering Work from French or German.
123. Any Primary in Civil Engineering.
124. Any Primary in Theoretical and Applied Mechanics.
125. Any Primary in Mathematics, Mechanical Engineering, or Electrical Engineering—Secondary.
126. Indexing of Municipal and Sanitary Engineering Literature in Engineering Periodicals.

## MUSIC

Course 1 will be counted for credit towards the regular degree for students in the College of Literature and Arts. It is open only to students who are enrolled *in the department of music*. Courses 7 and 8 are counted for credit for all students who take them.

1. HISTORY OF MUSIC.—Lectures on the development of music from its beginning among the Greeks to the present day, including the rise of dramatic music, the origin and progress of the oratorio, the evolution and development of instrumental forms, and studies

in the lives of the composers. Assigned collateral readings. *Fall, winter, and spring terms, three-fifths credit.* Miss PUTNAM.

2. THEORY OF MUSIC.—a. A course in harmony, two hours a week, in class, through four terms. *Emery's Harmony* with additional exercises. *Weitzman's Theory of Music.* Four credits.

b. A course in counterpoint, two hours a week in class through two terms. *Richter's Counterpoint.* One credit.

c. A course in fugue, two hours a week in class through two terms. *Richter's Fugue.* One credit.

d. A course in musical analysis which may be taken at the same time with the studies in counterpoint and fugue. The second, third, and fourth parts of this course are open only to advanced students showing special aptitude. One credit. Miss PUTNAM.

3. COURSE FOR THE PIANO.—(a) *Preparatory.* This course is equivalent to three years' work. It includes formation and position of fingers, hands, wrists, and arms, properties of touch, principles of technique, thorough drill in scale and arpeggio playing, and exercises in accent, rhythm, and expression. Music used: Herz, Scales and Exercises; Loeschhorn, Op. 65, 66; Lemoine, Op. 37; Heller, Op. 45; Bertini, Op. 29, 32; Czerny, Op. 299, Bks. 1, 2; Bach's Little Preludes; also sonatinas and easier sonatas and compositions by Clementi, Kuhlau, Haydn, Mozart, Mendelssohn, Merkel, Dussek, Diabelli, Grieg, Bargiel, and others. Miss FOX.

(b) *Collegiate.* First year. Studies in development of technique: Czerny, Op. 299, Bks. 3, 4; Czerny, Octave Studies; Cramer, Études; Jensen, Études; Bach, Two-Voice Inventions and French Suites; sonatas of Haydn and Mozart; easier Sonatas of Beethoven; Songs Without Words, Mendelssohn; compositions (smaller works) of Beethoven, Chopin, Schubert, Raff, Grieg, Chaminade, Moszkowski, and others. Professor JONES and Miss FOX.

Second Year. Daily technique; Czerny, Op. 740; Bach, Three-Voice Inventions and English suites; sonatas and other compositions of Scarlatti, Beethoven, Schubert, Schumann, Mendelssohn, Weber, Raff, Rubinstein, St. Saens, Godard, MacDowell, and others. Professor JONES and Miss FOX.

Third Year. Selections: Clementi, *Gradus ad Parnassum*; Moscheles, Op. 70; Kullak, Seven-Octave Studies, Bk. 2; Bach, Well-Tempered Clavichord; sonatas and concertos by Mendelssohn, Weber, Beethoven, Hummel, Brahms, etc.; selections from works of Bach, Chopin, Schubert, Schumann, Brassin, Rubinstein, Liszt, Moszkowski, Scharwenka, and other modern composers. Professor JONES.



Fourth Year. Selections: Octave Studies; Clementi, Gradus, continued; Bach, Well-Tempered Clavichord, continued; Chopin, Études; Henselt, Études; Rubinstein, Études; sonatas by Beethoven, and concertos and other compositions by the great masters, classic and romantic, both of the older and the more modern schools. Professor JONES.

4. a and b. COURSE FOR THE ORGAN.—Similar preparatory and collegiate courses for the organ will be offered for anyone caring to make this the principal instrument. Professor JONES.

5. COURSE FOR THE VOICE.—(a) *Preparatory*. The placing of the voice and proper position of the mouth and throat. Randegger's Singing. The first fifteen of the Fifty Conçone Studies. Simple songs for rhythm, accent, and proper pronunciation of words.

(b) *Collegiate*. First Year: Voice production, Randegger's Singing continued. All the Fifty Conçone Studies. Songs of Mendelssohn, Schubert, and those of good modern composers.

Second Year: Voice production. Viardot-Garcia's Hour of Study. Book I for technical work. Twenty-five and Fifteen Conçone Studies for soprano and tenor and the Forty Conçone for alto and bass. Songs of German, French and English composers, and simple selections from operas and oratorios.

Third Year: Voice production. Viardot-Garcia's Hour of Study, Book II. Bordigni's Thirty-six Studies for soprano or tenor, its equivalent, Sieber or Bordese for alto or bass. Selections from oratorios and from French, German and Italian operas. Songs of considerable difficulty by German, English, French, and Italian composers.

Fourth Year: Voice production. The Twenty-four Panofra Studies. Lütgen's Operavocalisen, Book II. Italian, French, German, and English songs of all standard composers. Solos and concerted work from the modern as well as the standard operas and oratorios. Miss FERNIE.

6. COURSE FOR THE VIOLIN.—(a) *Preparatory*. Violin methods by Hermann, Kayser, Sitt, Mazas, etc. Schradieck's Technical Studies. Études by DeBeriot, Murts. Easy solos.

(b) *Collegiate*. First Year: Etudes by Kreutzer, Mazas, Fiorillo, etc. Concertos by Viotti, Rode, Kreutzer, DeBeriot. Sonatas by Mozart, Beethoven, Handel, Gade.

Second Year. Etudes by Rode, Gavinies and Campagnoli. Concertos by Spohr, Bruch, Vieuxtemps, Molique, etc. Sonatas by Beethoven and Grieg.

Third Year: Caprices by Paganini. Concertos by Bruch, Mendelssohn, Saint Saens, Joachim. Ensemble work.

Fourth Year: Bach sonatas. Concertos by Beethoven, Bruch, Brahms, Tschaikowsky, Dvorak, Saint Saens. Ensemble work. Miss PUTNAM.

7. University Orchestra. *Two hours' rehearsal once a week throughout the year. Two-fifths credit.* Professor JONES.

8. University Oratorio Society. *One hour rehearsal once a week throughout the year. One-fifth credit.* Miss FERNIE.

### PALEONTOLOGY\*

1. ADVANCED PALEONTOLOGY.—The work outlined under geology id can do little more than introduce the general subject. To those who desire a better acquaintance with paleontology a course of two terms is offered.

This course will include: (a) Discussion of the biological relations to fossil forms along the lines indicated in Williams's Geological Biology; (b) a discussion of the principles of classification as applied to fossils, together with the characteristics which distinguish the larger groups, using Nicholson and Zittel as guides; (c) a study of the distribution and variations of the genera and species of one or more of the more important groups as illustrated by the collections of the University, using the various state reports and Miller's Handbook as aids. Ten hours per week. *Winter and spring terms, at 10, full credit.* Professor ROLFE and Mr. HUBBARD. A major in botany and zoölogy would aid the student greatly in this work, but neither is "required."

*Required:* Geology 1.

### PEDAGOGY.

1. THE PSYCHOLOGY OF THE TEACHING PROCESS.—(a) The nature and organic elements of the process deduced, and exemplified in various subjects. (b) The science of the recitation deduced from the foregoing, including the central principles of school organization and management. *Fall term, at 1.20, full credit.* Professor TOMPKINS and Assistant Professor MCGILVREY.

*Required:* Two years of University work.

2. THE UNIVERSAL AIM AND METHOD OF EDUCATION, as determined by the nature of spiritual life.—(a) In its twofold ethical

\*See also under geology and mineralogy

tension between ideal and real, and subject and object; (b) In its logical processes of unity with the objective world. *Winter term, at 1.15, full credit.* Professor TOMPKINS.

*Required:* Two years of University work.

3. THE BEAUTIFUL AS A FACTOR IN EDUCATION, in relation to the ethical and logical aspects already developed.—(a) The esthetic interpretation of the world—the process and educational value. (b) The interpretation of literature and art, with consideration of a course of reading and literature for schools. *Spring term, at 1.20, full credit.* Professor TOMPKINS and Assistant Professor MCGILVREY.

*Required:* Pedagogy 2.

4. THE PSYCHOLOGICAL FACTOR IN EDUCATIONAL METHOD.—(a) The course and law of the pupil's unfolding from infancy to full maturity—educational psychology. (b) The course of study as determined by the psychological factor, and the problem of graduation. *Fall term, at 10, full credit.* Professor TOMPKINS.

*Required:* Pedagogy 2, 3.

5. SPECIAL METHODS IN SUBJECTS, as determined by the logic of the subject and by the learning mind.—(a) The logical constitution of the subject under consideration ascertained. (b) The psychological unfolding of the subject in the process of learning. *Winter term, at 10.10, full credit.* Professor TOMPKINS.

*Required:* Pedagogy 1, 2, 4.

6. SPECIAL METHODS IN SUBJECTS, continued as above, with special emphasis on lesson planning, involving pedagogy 1, 2, 4. *Spring term, at 10, full credit.* Professor TOMPKINS and Assistant Professor MCGILVREY.

#### COURSES FOR GRADUATES

101. THE NATURE AND PURPOSE OF EDUCATION, as revealed in the nature and purpose of life, as interpreted in literature and philosophy. This requires an educational interpretation of the leading systems of philosophy from Socrates to Spencer, and also of the leading literary writers, such as Browning, Carlyle, and Emerson.

102. UNIVERSAL METHOD IN EDUCATION, as determined by the three organic phases of life—logical, ethical, and esthetical; educational psychology and the theory of cognition; the course of the complete development of the being to be educated.

103. THE PHILOSOPHY OF METHOD, illustrated in the teaching of various subjects.

104. THE PHILOSOPHY OF SCHOOL ORGANIZATION, MANAGEMENT, AND SUPERVISION, in the light of the nature of social organization, and the purpose and process of education, involving an interpretation of institutional life and sociological theories.

105. EDUCATIONAL IDEALS AND METHODS: (a) Their historical development; (b) present condition, problems, and theories of education.

106. SCHOOL SYSTEMS.—These are studied as determined by their historical setting and the prevailing philosophical theories of the times.

## PHILOSOPHY

1. OUTLINES OF PHILOSOPHY.—This course is offered for the benefit of students who can give only a single term to the study of philosophy. The most important problems in philosophy and metaphysics are presented. *Fall term, at 8, full credit.* Assistant Professor DANIELS.

2. ANCIENT AND MEDIÆVAL PHILOSOPHY.—A rapid survey is taken of the development of speculative thought, beginning with the early Greek philosophers and continuing through the mediæval period. *Fall term, M., W., F., at 10, three-fifths credit.* Assistant Professor DANIELS.

3. MODERN PHILOSOPHY.—This course considers the formation and development of the problems and conceptions in philosophy from Descartes to the present time. Selections from the philosophical masterpieces of this period are carefully studied. Special emphasis is laid upon the philosophy of Kant. *Winter and spring terms, M., W., F., at 10, three-fifths credit.* Assistant Professor DANIELS.

4. METAPHYSICS.—This course consists of a somewhat critical and thorough study of subjects of special prominence in philosophy; *e. g.*, realism, idealism, and the theory of knowledge. No text-book is used. Topics are assigned and papers, prepared by the students, are read and discussed in the class. To promote acquaintance with current philosophical thought various articles on different aspects or problems of modern philosophy are read and criticised. *Winter term, Tu., Th., at 10.10, two-fifths credit.* Assistant Professor DANIELS.

5. ADVANCED PHILOSOPHY.—The work consists in a critical study of *Lotze's Microcosmus*, together with supplementary readings and discussions upon suggested topics. The course is designed for

somewhat advanced students, and is open to those who have received at least two credits in philosophy. *Fall and winter terms, at 2.20, full credit.* Assistant Professor DANIELS. [Not given in 1898-99.]

*Required:* Philosophy 2, 3, 4.

6. PRACTICAL ETHICS.—In this course those questions which bear the closest relation to life and conduct are raised and discussed. The duties of the individual, the family, and the state are among the subjects considered. Special subjects in social ethics may be taken up. *Spring term, Tu., Th., at 8, two-fifths credit.* Assistant Professor DANIELS.

7. HISTORY AND CRITICISM OF ETHICAL THEORIES.—A careful and historical examination of the various types of ethical theory, including rational, hedonistic, eudemonistic, esthetic, and evolutionary ethics. It is designed to make the student as familiar as the time allows with the writings of representative men of the various schools. *Spring term, M., W., F., at 8, three-fifths credit.* Assistant Professor DANIELS.

8. LOGIC.—For the required credit in philosophy, students may select either of the following courses:

a. This course considers the nature of judgment and inference. Emphasis is laid upon practice in division, definition, forms of syllogism, deductive and inductive fallacies. This course is recommended to students who are interested in psychology or philosophy. *Fall and winter terms, Tu., Th., at 9, half credit.* Assistant Professor DANIELS.

b. Special attention is given to fallacies and to the problems, grounds, and principles of induction. The study is designed not only to direct the student in practical reasoning and correct thinking, but also to familiarize him with the principles and methods of scientific investigation. *Spring term, at 1.20, full credit.* Assistant Professor DANIELS.

9. CONTEMPORARY PHILOSOPHICAL THOUGHT.—The aim of this course is to present the philosophical views of several thinkers of the present time. Special attention is given to the philosophy of Herbert Spencer. Lectures and prescribed reading. *Fall term, at 2.20, full credit.* Assistant Professor DANIELS.

*Required:* Philosophy 1, 2, 3.

10. ESTHETICS.—A brief history and a critical study of the various theories of the beautiful. Lectures and assigned readings. *Fall term, M., W., Th., at 11, three-fifths credit.* Assistant Professor DANIELS. [Open to juniors and seniors.]

**COURSE FOR GRADUATES**

## 101. The Philosophy of Kant.

**PHYSICAL TRAINING**

1. **GYMNASIUM PRACTICE.**—All members of the freshman class are required to present themselves for physical examination upon registration and as often thereafter as directed by the professor in charge. Class work in gymnastics is required of the members of this class on two days of the week.

**FOR MEN**

2. **LECTURES AND PRACTICAL DEMONSTRATIONS.**—This course is offered to students who wish to gain a better comprehension of the value of physical exercise, and how to train properly for athletic contests, so as to avoid the ill-effects which too often follow a course of athletic training.

During the fall term the subject of applied anatomy receives attention—the muscles and their action, with the various methods of developing their power; first aid to the injured; how to prevent and correct physical deformities; specific exercises and their effects on the organs of the body, etc.

During the winter term, instruction is given on such topics as the following: The effects of exercise and training on the action of the vital organs; diseases from overwork, their prevention and cure; personal hygiene, sleep, diet, tobacco, alcohol, etc. *Fall and winter terms, at 3.20, once a week, one-fifth credit.* Associate Professor EVERETT.

**FOR WOMEN**

3. **GYMNASIUM AND FIELD PRACTICE** three hours a week for two years. This includes the two hours of course 1.

This course taken with course 4 counts for two credits. The first year of work with course 4 counts for one credit.

**FOR MEN AND WOMEN**

4. **HYGIENE.**—This course is the same as physiology 6, which see, p. 232.

**PHYSICS**

1. **GENERAL PHYSICS.**—A course of experimental lectures. The subjects treated are mechanics and heat, fall term; electricity and magnetism, winter term; sound and light, spring term. The course is required of students in the College of Engineering, and

students of physics, chemistry, and mathematics in the College of Science. The course is to be taken in connection with the laboratory course, physics 3. Lectures three times a week with a quiz hour. *Fall, winter, and spring terms, Lecture, M., W., F., at 11; Quiz, Tu., Th., at 10, three-fifths credit.* Professor CARMAN and Mr. CARPENTER.

*Required:* Math. 3 or 4.

2. See Physics 1 and 3 for fall term.

3. INTRODUCTION TO PHYSICAL MEASUREMENTS.—A laboratory course running parallel with physics 1, and required of the same students. The course consists of a list of quantitative experiments, illustrative of the lectures in general physics, and introductory to more advanced laboratory work. One period of three hours each week. *Fall, winter, and spring terms, two-fifths credit. Arrange hours.* Mr. QUICK and Mr. CARPENTER.

*Required:* Math. 3 or 4.

4. ELECTRICAL AND MAGNETIC MEASUREMENTS.—An advanced lecture and laboratory course in the theory and use of electrical and magnetic measuring instruments. Required of students in electrical engineering, and open to others. *Fall term, Lecture, 1.20; Laboratory, arrange hours, half credit; winter and spring terms, Lecture, 1.20; Laboratory, arrange hours, one credit.* This course may be taken for *one and one-half credits in the winter term, and a half credit in the spring term.* Assistant Professor SAGER.

*Required:* Physics 1 and 3; Math. 9.

5. ADVANCED PHYSICAL MEASUREMENTS.—A laboratory course supplemented by recitations and lectures. This course presupposes physics 1 and 3 or equivalents. It gives practice in exact physical measurements, and an experimental acquaintance with the more accurate methods of determining various physical constants. *Fall, winter, and spring terms, three times a week, three-fifths credit. Arrange hours. This course can also be taken for a full credit.* Professor CARMAN and Assistant Professor SAGER.

*Required:* Physics 1 and 3. Math. 9 desired.

6. INTRODUCTION TO THEORETICAL PHYSICS.—A course of lectures and recitations, taking up dynamics, fall term; theory of electricity and magnetism, or optics, winter term; and thermodynamics or optics, spring term. Each term is made independent as far as possible. *Fall and winter terms, M., W., F., at 1.20; spring term, M., Th., F., at 1.20, two-fifths credit.* Professor CARMAN and Assistant Professor SAGER.

*Required:* Physics 1 and 3; Math. 9.

7. INVESTIGATION OF SPECIAL PROBLEMS.—An advanced laboratory course in continuation of physics 5. The student is given one or more special subjects of investigation to be conducted throughout the year under the direction of the professors of the department, and special facilities will be provided for the work, either by buying special apparatus or by making it in the machine shop of the department. *Fall, winter, and spring terms, full credit. Arrange hours.* Professor CARMAN and Assistant Professor SAGER.

*Required:* Physics 5 or equivalent.

8. MATHEMATICAL PHYSICS.—A course of lectures and recitations. The subjects treated are changed each year, and are arranged to cover the general subject in two consecutive years, each year being complete in itself. The subjects for 1898-99 are theory of electrical and magnetic potential, and Maxwell's Theory of Electricity and Optics, using in the latter course Boltzmann's and Poincaré's lectures as references. Three times a week through the year. *Fall, winter, and spring terms, three-fifths credit. Arrange hours.* Professor CARMAN.

*Required:* Physics 4, and 5 or 6; Math. 9 (16 desired).

9. ADVANCED ELECTRICAL MEASUREMENTS.—A course in the theory and practice of the calibration of electrical measuring instruments, using the potentiometer and other standard methods. *Spring term, Tu., Th., at 1.20, two-fifths study.* Assistant Professor SAGER.

*Required:* Physics 4.

#### GRADUATE COURSES

101. Advanced Physical Measurements and Investigation. One to three credits.

102. Mathematical Physics. One to three credits.

#### PHYSIOLOGY

1. MAJOR COURSE.—This course is founded on the previous thorough training of the student in Physics, Chemistry, and Zoölogy. The course is designed primarily to prepare those taking it to enter upon the study of medicine. The work begins with a comprehensive study of the microscopic structure of the tissues in general, and later includes the structure of the organs in particular, with special relation to their functions. The course includes a very complete study of physiological chemistry, so far as it relates to the



normal composition and functions of the organs and excretions. Frequent demonstrations in experimental physiology are given before the class, and the student is required to perform a number of such experiments under the immediate direction of the instructor. In addition, the students, working in small groups, will be required to perform assigned experiments, and to submit their records and data for examination and criticism. Practical laboratory work is insisted on throughout. *Fall, winter, and spring terms, at 10, full credit.* Professor KEMP.

*Required:* Physics 1, 3; Chemistry 1, 2, 3a, 5a, 9; Zoölogy 3.

2. **ADVANCED COURSE.**—Continuation of physiology 1, through a second year. Students are not advised to take physiology 1 unless they contemplate taking physiology 2, but if they should be unable to do this they will be given credit for physiology 1, although it will leave some parts of the field uncovered. *Fall, winter, and spring terms, at 10, full credit.* Professor KEMP.

3. **INVESTIGATION AND THESIS.**—The laboratory of the physiological department is well equipped with instruments of precision for research in histology, physiological chemistry, experimental physiology, and pharmacology. Every facility and encouragement, so far as the resources of the laboratory permit, are offered to those prepared to avail themselves of these for researches leading to theses for the bachelor's, master's, or doctor's degree, or for carrying on original work for publication.

4. **MINOR COURSE.**—This course is planned for literary students and for students of natural science specializing in other lines. Especial emphasis is laid upon those facts that serve as a basis for practical hygiene. *Winter term, at 2.10, full credit.* Professor KEMP.

*Required:* Chemistry 1; Zoölogy 10.

4a. Selected laboratory work to supplement physiology 4. *Spring term, full credit. Arrange hours.* Professor KEMP.

*Required:* Physiology 4.

5. **ADVANCED PHYSIOLOGY.**—There are here included the following lines of laboratory work, any one or more of which may be pursued independently of the others. (a) The physiology of foods, and digestion; (b) the blood, circulation, and respiration; (c) the excretions, especially urine-analysis; (d) general physiology of nerve and muscle; (e) advanced vertebrate, especially human, histology. Work to be arranged after consultation with Professor KEMP.

6. **HYGIENE.**—This course is offered to both men and women, and must be taken by young women who take physical training for credit. It is designed to impart a knowledge of the conditions of bodily health and activity. The course deals with those practical hygienic problems of everyday life that are wholly or in large part under the control of each individual. *Fall and winter terms, Tu., at 3.20, one-fifth credit.* Professor KEMP.

## PSYCHOLOGY

1. **GENERAL ELEMENTARY PSYCHOLOGY.**—This course is designed for those who have not before studied psychology. The whole field of psychology is covered as thoroughly as the time will permit, and a substantial basis is given for later studies in psychology, philosophy, and pedagogy. *Fall term, at 8, and at 2.20, full credit.* Dr. HYLAN.

*Required:* At least one year of University work.

2. **EXPERIMENTAL PSYCHOLOGY.**—The object of this course is to give the student an acquaintance with normal psychological phenomena, and training in laboratory methods and the use of apparatus. The first term will be devoted largely to experiments in sensation, and a development into the higher psychic functions. In the second term, attention, memory, association, habit, emotion, and volition are among the subjects treated. Each student is required to keep a careful record, in notes and drawings, of the experiments performed, and to become familiar with the literature. *Winter and spring terms, Tu., Th., at 8, and 7 hours of laboratory, to be arranged, full credit.* Dr. HYLAN.

*Required:* Psychology I.

3. **COMPARATIVE PSYCHOLOGY.**—In this course the development of mind is traced through the animal scale, beginning with the lowest animal forms. The higher forms of mental development are correlated with the mental activities of the child and the savage. A special laboratory is accessible for the study of the psychic powers of chicks, frogs, protozoa, etc., and experimental work will form a prominent feature of the course. *Romanes and Lloyd-Morgan, with studies in anthropology and child life. Winter and spring terms, M., W., at 2.20, and 3 hours of laboratory to be arranged, three-fifths credit.* Dr. HYLAN.

*Required:* Psychology I.

4. **GENETIC PSYCHOLOGY.**—It is the plan of this course to take up in their natural order the various developmental stages of the

human mind from the earliest days of infancy. The more substantial results of child study serve as a basis for the first part of the course, while the latter part is devoted to the phenomena of adolescence and the intellectual problems confronting the youth. The development of the nervous system and growth of the body are traced in connection with the mental development, and the critical periods of both are given careful attention. The aim of the course is to serve as a basis for pedagogy, and to assist the student in solving intelligently, and from the standpoint of psychology, the ethical and social problems of his own life. *Saturday, at 10, throughout the year, three-fifths credit.* Dr. HYLAN.

*Required:* Psychology 1.

8. **PSYCHOLOGICAL SEMINARY.**—In this course, for the coming year, the history of psychology will be taken up, beginning with Locke and continuing down through its experimental development, including the recent aspects of the subject. During the latter part of the year periodical literature will serve as the basis of reports. *Once a week; two credits for the year.* Dr. HYLAN.

*Required:* Psychology 1, 2, and Philosophy 3.

10. **THE SENSE ORGANS AND CENTRAL NERVOUS SYSTEM.**—In this course the structure and physiology of the sense organs and central nervous system are taken up. Each student is required to mount about twenty sections of the sense organs, spinal cord, and different cortical areas of the brain, and to study them by means of the microscope. The object of the course is to furnish a satisfactory basis for experimental and advanced psychology. *Fall term, M., W., at 3.20; laboratory 4 hours, to be arranged; three-fifths credit.* Dr. HYLAN.

*Required:* Zoölogy 1a, or its equivalent in laboratory practice.

#### COURSE FOR GRADUATES

101. **RESEARCH COURSE.**—Though primarily for graduates, this course may be taken by seniors who give evidence of suitable preparation. If laboratory work, it must be preceded by Psychology 1, 2, and 10. For other than a laboratory subject the required preparation will depend upon the subject. It is intended that work in this course shall result in contributions to science. Dr. HYLAN.

#### PUBLIC LAW AND ADMINISTRATION

1. **POLITICAL INSTITUTIONS.**—Comparative study of modern political systems, their historical development and practical operation. Lectures, assigned readings, reports, and discussions. The

fall term is devoted to the leading features of national and state government of the United States; in the winter term the governments of the leading European states are studied; in the spring term topics in political methods are considered, such as the primary, the nominating convention, Australian ballot, proportional representation, etc. *Fall, winter, and spring terms, M., W., F., at 9, three-fifths credit.* Assistant Professor TOOKE.

2. JURISPRUDENCE.—Elementary course in the origin, development, and classification of law, followed by an introduction to the fundamental principles of the English Common Law. *Fall, winter, and spring terms, Tu., Th., at 10, two-fifths credit.* Assistant Professor TOOKE.

3. ROMAN LAW.—Early history. The classical jurisprudence. Legislation of Justinian. Influence of the Roman system. Readings and lectures. *Winter and spring terms, Tu., Th., at 10, two-fifths credit.* Assistant Professor TOOKE.

*Required:* A reading knowledge of Latin.

4. INTERNATIONAL LAW.—Sources and historical development. Essential powers of states, their rights and their obligations. Laws and usage in time of war. History of American diplomacy. *Winter and spring terms, M., W., F., at 8, three-fifths credit.* Assistant Professor TOOKE.

*Required:* Public Law and Administration 1.

5. COMPARATIVE ADMINISTRATIVE LAW.—General principles of administrative law of the United States (national and commonwealth), England, France, and Germany. The appointment, tenure, and duties of officers. Historical and comparative study of local government. *Fall, winter, and spring terms, M., W., F., at 10, three-fifths credit.* Assistant Professor TOOKE.

*Required:* Public Law and Administration 1 and 2.

6. COMPARATIVE CONSTITUTIONAL LAW.—A comparison of the leading states of Europe, and of North and South America, special attention being paid to the constitutional law of the United States, England, Germany, and France. The work of the fall term is American constitutional law, text-book and assigned cases; that of the winter term is a comparative study from original sources of constitutions of the leading European states. In the spring term, the theory and practice of the South American constitutions are considered. *Fall, winter, and spring terms, M., W., F., at 10, three-fifths credit.* Assistant Professor TOOKE.

*Required:* Public Law and Administration 1, 2. [Not given in 1898-99.]

7. MUNICIPAL CORPORATIONS.—History and legal status of the American municipality. To supplement course 5. *Fall and winter terms, Tu., Th., at 3.20, two-fifths credit.* Assistant Professor TOOKE.

9. SEMINARY IN MUNICIPAL INSTITUTIONS.—Open to graduates and seniors taking courses 5 and 7. *Fall, winter, and spring terms, two-fifths credit.* Assistant Professor TOOKE.

## RHETORIC

1. RHETORIC AND THEMES.—Required for students in the College of Literature and Arts. *Three hours a week; fall, winter, and spring terms. M., W., F., at 8, at 10, and M., Tu., Th., at 2.20.* The course counts for two credits. Assistant Professor T. A. CLARK and Miss COOK.

2. RHETORIC AND THEMES.—Required for students in the Colleges of Agriculture, Science, and Engineering. *Three hours a week; fall, winter, and spring terms, M., W., F., at 8, at 9, and at 10.* The course counts for two credits. Assistant Professor T. A. CLARK and Miss COOK.

3. DAILY THEMES.—Higher English Composition. *Two hours a week; fall, winter, and spring terms, Tu., Th., at 9, and at 11, full credit.* Assistant Professor T. A. CLARK.

*Required:* Rhetoric 1 or 2.

4. ARGUMENT.—This course is devoted to lectures and textbook work on the principles of argumentative discourse. Weekly practice in the writing of arguments is required. *Winter term, M., W., F., at 9.15, full credit.* Assistant Professor T. A. CLARK.

*Required:* Rhetoric 1 or 2.

## SOCIOLOGY

[See under Anthropology and Economics.]

## SPANISH

1. GRAMMAR AND READING.—Edgren's Spanish Grammar; Knapp's Spanish Readings; Cervantes' Don Quijote; outlines of Spanish literature. *Fall, winter, and spring terms, arrange hours, full study.* Assistant Professor FAIRFIELD.

## THEORETICAL AND APPLIED MECHANICS

[See Mechanics, p. 216.]

## VETERINARY SCIENCE

1. ANATOMY AND PHYSIOLOGY.—The anatomy and physiology of the domestic animals constitute the subjects of instruction for one term. The instruction is given by lectures aided by demonstrations with use of skeletons, and of other apparatus as follows: Dr. Auzoux's complete model of the horse, which is in ninety-seven pieces and exhibits three thousand details of structure; papier-maché model of the horse's foot; the teeth of the horse; and dissections of animals. This work is supplemented with the study of text books. *Strangeways's Veterinary Anatomy and Mill's Animal Physiology*. Fall term, at 11, full credit. Professor McINTOSH.

2. PRINCIPLES AND PRACTICE OF VETERINARY MEDICINE.—This subject is taught by lectures and text-books on the diseases of domestic animals, and is illustrated with specimens of morbid anatomy and by observations and practice at the clinics. The latter are held at the veterinary infirmary once a week. The students assist in the operations, and thus obtain a practical knowledge of the subject. Dissections and post-mortems are made as cases present themselves. Text-books: *Diseases of Horses and Cattle*, by D. McIntosh, and *Williams's Practice of Veterinary Medicine and Surgery*. Winter and spring terms, at 11, full credit. Professor McINTOSH.

3. VETERINARY MATERIA MEDICA.—This subject, which treats of the agents for the cure of disease or injury, or for the preservation of health among domestic animals, is taught by lectures and text-books, illustrated by specimens of the drugs used in veterinary practice. The compounding of medicines also receives attention. Fall, winter, and spring terms, at 9, full credit. Professor McINTOSH.

## ZOOLOGY

1. GENERAL ZOOLOGY, MAJOR COURSE.—The work here described forms a continuous course, beginning in the winter term of the freshman year and ending with the fall term of the sophomore year. It is devoted especially to a series of laboratory studies of animal types, and to lectures on the morphology, physiology, and relations to nature of this selected series. It is divided into three sub-divisions consisting of one term each. The first term's work may be taken separately as a minor by students not in the natural science group.

a. The laboratory work of the first term includes dissections of the earthworm, serial sections of this form and of Hydra, and

numerous studies and preparations of the Protozoa. Lectures on the structure, physiology, and classification of the Protozoa, their relations to plants and to the organization, embryological development, and history of the higher animals are made to elucidate and illustrate the general theory of zoölogy. The general zoölogy of the remaining lower invertebrate forms, including Vermes, finishes the work of the term.

b. The second term is devoted to the morphology, physiology, and general classification of the remaining invertebrates, principal attention being given to the Arthropoda. It is directed especially towards the entomological courses of this department. The laboratory work includes a special study of the crayfish, and of the embryology of the potato beetle, followed by a considerable amount of semi-independent work upon the invertebrate fresh water fauna of the region.

c. The third term's work is on vertebrates, and in the laboratory principal attention is given to the anatomy of necturus, and anatomical and systematic studies of fishes and birds, supplemented by work in the museum on the osteology of mammals and examination of mounted specimens. The general method is that of comparative anatomy, with special reference to the anatomy of man, this part of the course being directed particularly towards the physiological courses of the University which follow upon it. Philosophical zoölogy takes the form in this term of a course of lectures on the general theory of organic development, illustrated by a systematic study, by lectures and reading, of the modern doctrine of the descent of man. *Winter and spring terms, at 8, and at 10; fall term, at 1.20, full credit.* Assistant Professor SMITH.

*Required:* An entrance credit in chemistry, or chemistry I, an entrance credit in zoölogy, or zoölogy 10 or 11. Art and design I must be taken with this course if it has not been taken previously.

2. This course consists of the first and second terms' work of zoölogy 1. It is intended especially to serve as a thorough zoölogical preparation for general entomology (zoölogy 6). It will be accepted as a minor instead of zoölogy 10. *Winter and spring terms, full credit.*

*Required:* Same subjects as for course 1.

3. This course consists of the first and third terms' work of course 1. It is intended to serve as a thorough zoölogical preparation for physiology 1, and is especially commended to students contemplating the study of medicine. *Winter and fall terms, full credit.*

*Required:* Same subjects as for course 1.

4. EMBRYOLOGY.—Lectures, laboratory, and reference work. This course begins with a study of the germ cells, and the process of maturation, fertilization, cleavage, and gastrulation from preparations furnished to the student. The study of the development of the vertebrate form in the chick and the pig is then taken up, with preparations of the amphibian embryo for comparison. Opportunity is offered for instruction in methods of preparing embryological material, and of making graphic and plastic reconstructions from serial sections. *Hertwig-Marks' Embryology of Man and Mammals and Marshall's Vertebrate Embryology.* Winter term, at 1.15, full credit. Assistant Professor KOFOID.

*Required:* Zoölogy 1 or 3.

5. ADVANCED ZOÖLOGY.—To students who have had course 1, 2, or 3, an opportunity is offered for advanced work in zoölogy. It may be closely adapted to the bent and ability of the student. Three main lines of work will, however, be especially provided for: (a) Systematic reading of general zoölogy, together with lectures on the history of zoölogy and on the morphology, physiology, and œcology of special groups. (b) Seminary work, consisting of the collating, indexing, and abstracting of a scattered literature on assigned or selected subjects, and the preparation of papers based on these bibliographical and literary studies. These papers will be criticised as a means of education in the preparation of scientific manuscript for the press. Regular instruction in natural history drawing sufficient to enable the student to prepare illustrations for reproduction by the ordinary methods will be made a part of this course. (c) Zoölogical research work, which will usually take the form of an investigation of a limited subject, carried forward with whatever guidance and instruction, the nature of the subject and the ability of the student may require. Students so desiring may pursue a research course at the University Biological Station on the Illinois River during the summer vacation months, and will receive credit therefor.

Seminary and research work will be required of all students purposing to graduate with a zoölogical thesis. *Fall, winter, and spring terms, at 1.20, full credit.* Professor FORBES.

*Required:* Zoölogy 1, 2, or 3.

6. GENERAL ENTOMOLOGY.—This course of two terms should be taken by preference in the sophomore year. It is practically a sequel to course 2 in general zoölogy, the work of the second term of that course being directed especially towards entomology.



Presuming upon a general knowledge of the Arthropoda, the instruction begins with more detailed work on Insecta. The greater part of the course consists of laboratory studies of the structure and classification of insects; practice in the determination of species and the description and illustration of species and structures; field work and observation, including the collection of specimens of all orders and stages, aquatic and terrestrial; office work in the preparation, labeling, and arrangement of collections; a systematic independent study of life histories of selected species, with full records, descriptions, and drawings; experimental insecticide work, and library practice in collecting, collating, indexing, and abstracting the literature of the species principally studied, concluding with a thesis on a single species studied both biologically and experimentally. Special instruction is given in this course in the art of entomological illustration, under the supervision of an expert zoölogical artist. *Winter term, lecture, Tu., Th., at 9.15; spring term, lecture, Tu., Th., at 10. Arrange for 8 hours of laboratory each term, full credit.* Professor FORBES.

*Required:* Zoölogy 1, 2, 8, 10, or 11.

7. **ADVANCED ENTOMOLOGY.**—Special courses will be arranged in either technical or practical entomology for students wishing to specialize extensively in this direction, and to such students the facilities of the State Laboratory of Natural History and of the State Entomologist's office will be freely open. *Fall, winter, and spring terms, full credit.* Professor FORBES.

*Required:* Zoölogy 5.

8. **PRACTICAL ENTOMOLOGY.**—This is a single term's work open, without conditions precedent, to University students, but offered for the special benefit of students in agriculture. By means of laboratory studies and lectures and field and insectary observations, students will be made familiar with the commonest and most important injurious insects, and with means of preventing or arresting their injuries. *Spring term, lecture, M., W., F., at 10. Arrange for 8 hours of laboratory work, full credit.* Professor FORBES.

9. **THESIS INVESTIGATION.**—Candidates for graduation in the College of Science who select a zoölogical subject as a thesis are required to spend at least three hours a day during their senior year in making an investigation of some selected zoölogical subject. While this work is done under the general supervision of an instructor, it is in its methods and responsibilities essentially original work. *Fall, winter, and spring terms, full credit.* Professor FORBES.

*Required:* Two years' major work in zoölogical courses, including Zoölogy 5b and 5c.

10. **ELEMENTARY ZOÖLOGY.**—This is a laboratory and lecture course on the morphology, physiology, and oecology of types selected from the animal kingdom. The work is so directed as to lead to a general acquaintance with zoölogical science, and to serve as a preparation for the more extensive and thorough work of zoölogy 1. It is offered as a minor to students in the College of Science not specializing in zoölogy, and as an unconditioned elective to members of other colleges. *Fall term, at 8, full credit.* Assistant Professor SMITH.

11. **ELEMENTARY ENTOMOLOGY.**—This is a laboratory and lecture course in general entomology, open to all University students, pursued without especial reference to economic ends, complete in itself, but leading to the major course in entomology (zoölogy 6). The laboratory work is strictly entomological, but the lecture course is in great measure a course in general biology, with entomological illustrations. *Fall term, at 10, full credit.* Professor FORBES.

#### COURSES FOR GRADUATES

101. **SYSTEMATIC AND FAUNISTIC ZOOLOGY.**—This course consists of studies of invertebrate animals (including insects), and of aquatic vertebrates, so directed as to give as nearly as possible an exhaustive knowledge of a taxonomic group or of a selected geographic assemblage. If a suitable taxonomic group is chosen, its space and number relations within a definite area will be thoroughly worked out by the precise methods of modern faunistic zoölogy, including quantitative collections made by uniform methods at regular periods, and the comparative measurement or enumeration of such collections. If a geographic assemblage be selected, critical determinative work will be followed by both qualitative and quantitative studies of the various groups associated, with a view to accumulating data for an examination of the interactions of the assemblage.

102. **ADVANCED ECONOMIC ENTOMOLOGY.**—This is a research course in systematic and experimental entomology which involves the application to insects injurious to agriculture and horticulture of the methods and general ideas of the preceding course. It is intended to prepare students in a thorough-going manner for first-class investigation work in this field, and for the direction of entomological operations in agricultural experiment stations.

## DEGREES

---

### BACHELORS' DEGREES

The usual bachelors' degrees are conferred upon those who satisfactorily complete the courses of study described under the different colleges and schools. A candidate for a bachelor's degree must pass in the subjects marked *prescribed* in his chosen course, and must conform to the directions given in connection with that course in regard to electives. In the colleges of Literature and Arts, of Science, and of Agriculture, 40 term-credits are required for graduation. In the College of Engineering and in the schools the candidate must complete the course of study as laid down. The number of credits required includes two for military science for men, and for women *may* include the same number for physical training. Men excused from the military requirements, and women who do not take courses in physical training, must elect in lieu thereof two extra terms' work in other subjects.

In all cases in which a thesis is required,\* the subject must be announced not later than the first Monday in November, and the completed thesis must be submitted to the dean of the proper college by June 1st. The work must be done under the direction of the professor in whose department the subject naturally belongs, and must be in the line of the course of study for which a degree is expected. The thesis must be presented upon regulation paper, and will be deposited in the library of the University.

---

\*See requirements for graduation in the different colleges.

1. The degree of Bachelor of Arts is conferred on those who complete a course in the College of Literature and Arts.

2. The degree of Bachelor of Science is given to those who complete a course in the College of Engineering, of Science, or of Agriculture. The name of the course will be inserted in the diploma.

3. The degree of Bachelor of Law is conferred on those who complete the course in the School of Law.

4. The degree of Doctor of Medicine is conferred on those who complete the course in the School of Medicine.

5. The degree of Bachelor of Library Science is conferred on those who complete the course in the School of Library Science.

6. The degree of Bachelor of Music is conferred on those who complete one of the courses in the School of Music.

7. The degree of Graduate in Pharmacy is conferred upon those who have satisfied the requirements therefor in the School of Pharmacy.

#### ADVANCED DEGREES

No degrees are given for study *in absentia*, except that graduates of this University, who become members of the Graduate School and reside elsewhere, may receive a second degree, upon the completion of their courses of study within not less than three years of the date of registration. For a graduate of this University who has won recognized distinction in a special line of investigation, and who otherwise fulfils the conditions for a doctor's degree, the requirement of residence for that degree will be such as may be imposed by the General Faculty of the University, on presentation of the case by the Council of Administration. Advanced degrees are conferred by the Trustees of the University only upon recommendation of the General Faculty, based upon information furnished by the Council of Administration.

## SECOND DEGREES

The second degrees conferred by this University are as follows:

*Master of Arts*, after Bachelor of Arts.

*Master of Science*, after Bachelor of Science in courses of the Colleges of Agriculture and Science.

*Master of Architecture*, after Bachelor of Science in courses in Architecture and Architectural Engineering.

*Master of Laws*, after Bachelor of Laws in the School of Law.

*Master of Library Science*, after Bachelor of Library Science.

*Civil Engineer*, after Bachelor of Science in the course in Civil Engineering.

*Electrical Engineer*, after Bachelor of Science in the course in Electrical Engineering.

*Mechanical Engineer*, after Bachelor of Science in the course in Mechanical Engineering.

*Pharmaceutical Chemist*, after Graduate in Pharmacy.

Graduates of other colleges and universities having equivalent requirements for baccalaureate degrees may be given second degrees determined in kind by comparison with the usage described above.

All candidates for second degrees are required to register in the Graduate School; to conform to the conditions outlined under "Admission," "Registration," and "Examinations" [pp. 35, 43, 47]; to pursue an approved course of study for one academic year in residence, or, in the case of graduates of this University, for three years *in absentia*; and to pass satisfactory examinations upon all the studies of the approved course.

Each candidate for a second degree must present an acceptable thesis in the line of his major subject of study. The subject of this thesis must be announced to the Dean of the General Faculty not later than the first Monday in November of the academic year in which the course is to be completed. The completed thesis, upon regulation

paper must be presented, with the certified approval of the professor in charge, to the Council of Administration not later than June 1st.

*The period of required study begins from the date of registration in the Graduate School.*

#### DOCTOR'S DEGREE

The degree of Doctor of Philosophy, or Doctor of Science, may be conferred upon any member of the Graduate School of not less than three years' standing who shall have reached high attainments in scholarship, including a sufficient knowledge of the Latin, French, and German languages to serve the purposes of research in his principal specialty, who shall have shown marked ability in some line of literary or scientific investigation, and shall have presented a thesis giving clear indications of such scholarship and of such power of research. At least the first two, or the last one, of the three years of study must be in residence at the University, and the entire course of study must be in accordance with the regulations of the Graduate School.

The time and study required for a master's degree may be included in the three years required, but approval of a course of study for a doctor's degree must be upon the condition that the candidate is prepared through his baccalaureate work, or otherwise, to enter at once upon advanced studies in the line of his major subject, and that work on this major subject be continued through the three years.

The final examination of a candidate for the doctor's degree is conducted by a committee consisting of the head of the department under which the major subject has been pursued, as chairman, and of not less than two additional members of the General Faculty of the University, appointed for the purpose by the Council of Administration. This examination covers the subjects of the course approved for the degree, but is specially searching upon that on which the major work has been done. This examina-

tion occurs in the week preceding that upon which commencement day occurs.

Each candidate for a doctor's degree must announce to the Dean of the General Faculty a thesis subject not later than the first Monday in November of the academic year at the close of which the award of the degree is expected. A fair copy of the thesis must be submitted, with a certified approval of the committee on examinations, to the Council of Administration not later than the first day of June. If the thesis is approved by the Council the candidate must have it printed and must deposit not less than one hundred copies with the librarian of the University.

## FELLOWSHIPS

The Trustees of the University have established eight fellowships, each with a stipend of three hundred dollars, payable in ten monthly installments.

The rules governing appointments to these fellowships are as follows:

1. The purpose of these fellowships shall be to promote advanced scholarship and original research in the University.

2. The fellowships shall be open to graduates of this and similar institutions. Those who are to complete an under-graduate course previous to the academic year for which appointments are made shall be eligible, with others, as candidates.

3. Nominations to fellowships, accompanied by assignments to special departments of the University for instructional work, shall be made by the Council of Administration to the Trustees of the University, upon applications received by the President of the University each year, not later than the twenty-fifth day of April. These nominations shall be made at a meeting of the Council called for that purpose within the month of May. The appoint-

ments by the Trustees are made at their regular meeting in June, and shall take effect the first day of the following September. Vacancies may be filled by similar nominations and appointments at other times.

4. Nominations to fellowships shall be made upon the grounds of worthiness of character, scholastic attainments, and promise of success in the principal line of study or research to which the candidate proposes to devote himself. Consideration shall also be given to the probable value or usefulness of the services of the candidate as an assistant in instruction, but this shall not be deemed the primary object of the appointment. Other things being equal, preference shall be given to those graduates of this University who have pursued a specialized course.\*

5. Candidates must present, with their applications, full information concerning themselves and their qualifications for advanced study and research work, including any written or printed essays or results of investigation, and must name the subject in which they wish to do their major work.

6. Fellowships shall be good for one year. Appointments may not be usually renewed to the same persons, and in no case for more than one additional year; but an appointment as *honorary fellow*, without stipend, may be made as specified for paid fellowships in the case of any one who has held a regular fellowship and has shown distinguished merit in his work.

7. Fellows shall be constituted members of the Graduate School, shall have all of the privileges and bear all of the responsibilities of such membership. Each regular fellow may be called upon to render service in instruction throughout the year in the department in which his major subject lies, equal to one hour daily of class instruction or to two hours daily of laboratory supervision. Such service

\*See pp. 55, 109. All members of the Colleges of Engineering and of Agriculture and of the chemical and mathematical groups in the College of Science shall be considered as pursuing specialized courses.



may receive such credit as the Council of Administration may determine in each case. Blank forms for applications may be obtained by addressing the Registrar.

## SCHOLARSHIPS

### STATE\*

A law passed by the General Assembly of the State of Illinois at the session of 1895 provides that there shall be awarded annually to each county of the state one state scholarship, which shall entitle the holder thereof, who shall be a resident of the senatorial district to which he is accredited, to instruction in any or all departments of the University of Illinois for a term of four years, free from any charge for tuition or any incidental charge, unless such incidental charges shall have been made for materials used or for damages needlessly done to property of the University; *Provided*, that in counties having two or more senatorial districts there shall be awarded annually one additional scholarship for each of said senatorial districts.

A competitive examination under the direction of the Superintendent of Public Instruction shall be held at the county courthouse in each county of the state upon the first Saturday of June in each and every year by the county superintendent of schools upon such branches of study as said Superintendent of Public Instruction and the President of said University may deem best.

Questions for such examinations shall be prepared and furnished by the President of the University to the Superintendent of Public Instruction, who shall attend to the printing and distribution thereof to the several county superintendents of schools prior to such examinations.

The law also provides that in case the scholarship in any county is not claimed by a resident of that county, the Superintendent of Public Instruction may fill the same by

---

\*These scholarships replace the honorary scholarships and the accredited school scholarships heretofore given.

appointing some candidate first entitled to a vacancy in some other county.

Candidates to be eligible to a state scholarship must be at least sixteen years of age, and must have been residents of their respective counties for the year preceding the examination.

A student holding a state scholarship who shall make it appear to the satisfaction of the President of the University that he requires leave of absence for the purpose of earning funds to defray his expenses while in attendance may, in the discretion of the President, be granted such a leave of absence, and may be allowed a period not exceeding six years from the commencement thereof for the completion of his course at said University.

The law contemplates that the candidate who passes this competitive examination should afterwards pass the regular entrance examination to the University. It has been thought best to combine these examinations so that the successful candidate may be admitted to the University without further examination. To this end the examination will be held on the first Saturday in June and the Friday preceding (June 3 and 4, 1898, and June 2 and 3, 1899). The subjects for examination will be the same as stated under the head of "Admission by Examination," pp. 29-35.

Any person, whether a candidate for a scholarship or not, may be examined for admission to the University at these state scholarship examinations.

#### MILITARY

Students who have gained six term-credits in classroom military instruction and six such credits in drill practice, are eligible for appointment as commissioned officers of the battalion. Those attaining this rank may be awarded special scholarships, good for one year, and equal in value to the University term fees for the same length of time.

## PRIZES

## THE HAZLETON PRIZE MEDAL

Capt. W. C. Hazleton provided in 1890 a medal, of beautiful and artistic design, which is to be awarded, at a competitive drill to be held near the close of the year, to the best drilled student. Each competitor must have been in attendance at the University at least sixteen weeks of the current college year; must not have had more than four unexcused absences from drill; and must present himself for competition in full uniform.

The award is made for excellence in these particulars:

1. Erectness of carriage, military appearance, and neatness.

2. Execution of the school of the soldier, without arms.

3. Manual of arms, with and without numbers.

The successful competitor will receive a certificate setting forth the facts, and may wear the medal until the 15th day of May following, when it will be returned for the next competition.

## IN ORATORY

The Trustees of the University appropriate every year the sum of one hundred dollars for prizes in debate. The amount is divided into three prizes, of fifty, thirty, and twenty dollars, respectively, and these are awarded to the three participants whose work is adjudged best.

The debate is held some time in the month of February. A preliminary contest takes place in December, and is open to all members of the three upper classes. From the list of contestants in the preliminary debate six are selected to take part in the final competition.

## INTERSCHOLASTIC ORATORICAL CONTEST

A medal of the value of twenty dollars is offered annually by the University to the high schools of the state for the best oration delivered in a competitive contest between

their representatives. This contest takes place in the spring at the time of the interscholastic athletic meet.

## BENEFICIARY AID

### CHICAGO CLUB LOAN FUND

The CHICAGO CLUB OF THE UNIVERSITY OF ILLINOIS offers two loans of \$250.00 each, payable to the beneficiary, \$100.00 the first year, \$75.00 the second year, \$50.00 the third year, and \$25.00 the fourth year. The loans are offered to residents of Cook County, Illinois, only, and are to be awarded upon competitive examination to those obtaining the highest average grades. The loans are due six years after matriculation. They bear no interest while the student is in the University, but six per cent. after graduation. The examination questions are prepared at the University and cover the same subjects as those for the state scholarships.

The beneficiaries of this fund also have their incidental fees, amounting to \$22.50 a year, remitted by the trustees.

### CLASS OF 1895 LOAN FUND

This is a fund of \$250.00, established by the class of 1895, to be loaned to needy and deserving students. According to the conditions of the gift, one-fifth of the amount is to be loaned annually, and is open to members of the freshmen class only. No person may receive the benefit of the fund more than four years. The loan bears interest at the legal rate from the time the recipient leaves the University, and is due, one-half in five years, and one-half in six years, after matriculation. The management of the fund is in charge of the Council of Administration.

## SOCIETIES AND CLUBS

### LITERARY SOCIETIES

The ADELPHIC and PHILOMATHEAN societies for men, and the ALETHENAI for women, occupy spacious halls,

which the members have furnished and decorated with taste and elegance. Meetings are held Friday evenings throughout term time.

### THE CHRISTIAN ASSOCIATIONS

The YOUNG MEN'S and YOUNG WOMEN'S CHRISTIAN ASSOCIATIONS are active and useful organizations, and have a large membership.

Subscriptions have been made by students and graduates, amounting to \$23,000.00, toward a new building for these organizations. A canvass has been started outside with the hope of raising the sum to \$32,000.00. If this is successful the building will be begun at once. An excellent site has been purchased.

### CLUBS AUXILIARY TO COURSES OF STUDY

#### AGRICULTURAL CLUB

This club meets semi-monthly. It is devoted to the discussion of topics of theoretical and practical interest to students of agriculture. All students in the College of Agriculture are eligible to membership.

#### ARCHITECTS' CLUB

This club meets once in two weeks for the consideration of current topics of architectural interest and subjects connected with the study of architectural history. All students pursuing architectural studies are eligible to membership.

#### CIVIL ENGINEERING CLUB

This club meets the second and fourth Saturday evenings of each month for the reading and discussion of papers relating to civil engineering. All students pursuing the civil engineering course may become members.

#### THE ENGLISH CLUB

The English Club is composed of members of the Faculty, and of students who have done especially good work in English. The work of the club is confined to the study of recent writers of fiction and of poetry. The mem-

bership is limited to thirty. Meetings are held on the second Monday of each month.

#### FRENCH CLUB

*Le Cercle Français* includes students who have had at least one year's work in French. The club meets once a week throughout the year. Its proceedings are conducted in French, the object being to supplement the work of the class room by the practical handling and understanding of the language.

#### THE LATIN CLUB

This is an organization for the purpose of promoting interest in the language and institutions of the Roman world. It meets once in two weeks.

#### LIBRARY CLUB

The library staff and the Library School have organized a Library Club which meets once in three weeks throughout the college year. The club considers literary topics which are allied to the library work, but does not deal with the technical subjects which are included in the library school course.

#### MECHANICAL AND ELECTRICAL ENGINEERING SOCIETY

This club meets on the first and third Saturday evenings of each month. All students pursuing mechanical and electrical engineering studies are eligible to membership. Papers relating to subjects of interest to members are presented and discussed at each meeting.

#### MEDICAL CLUB

The Medical Club is composed of students, irrespective of courses and departments, who are preparing for medical study, or who are for any reason interested in medical subjects. Its programs consist of lectures by members of the biological faculty and by physicians, and of papers prepared by members of the club. It meets weekly.

**MUSICAL CLUBS**

These are described under the School of Music.

**ZOÖLOGICAL CLUB**

The University Zoölogical Club is composed of advanced students and instructors in the zoölogical and physiological departments, together with such other biological instructors and advanced students as are interested in its subjects. Its sessions are devoted to the presentation and discussion of abstracts of recent biological literature and of the results of investigation by the members of the club. It meets weekly in Natural History Hall.

**SPECIAL ADVANTAGES FOR WOMEN****HOUSEHOLD ECONOMICS**

No course of study is specifically outlined in household economics, but there are certain courses offered regularly, a combination of which affords the student a fair training in some branches of the subject. Such credit is given in each course as the work done justifies. The following courses may be mentioned.

1. Bacteriology (Botany 2).
2. Chemistry of foodstuffs (Chem. 5c and 18).
3. Physiology.
4. Household Decoration. Architecture 18.
5. Designing of Residences. Architecture 15.

**THE FINE ARTS**

Drawing and Painting.—Four years' work is offered in drawing, modeling, and painting.

Music.—Full courses in vocal and instrumental music, including piano, organ, and violin, are offered. As in the case of drawing and painting, students may pursue the study of music by itself.

Physical Training.—A special gymnasium is set apart for the young women, and physical training, under a competent instructor, is a part of the regularly accredited work of the University.

Social Advantages.—Educational training in the conventionalities is provided for in a practical way by the numerous social gatherings.



## ACCREDITED HIGH SCHOOL WORK

---

When a high school does approved work in some or all of the subjects required for admission to the University its graduates are excused from entrance examinations in such subjects, and the school is said to be accredited in those subjects. The University employs a high school visitor, whose business it is to inspect the high schools of the state. When his report on a school is favorable, and is approved by the accredited school committee and the Faculty, the school is accredited for the subjects which he recommends. The University bears the expense of such inspection, but does not send the visitor to any school whose report does not make it evident that the school is doing work, in quantity and quality, worthy of the time and attention of the University. The University accredits *all work which is sufficiently well done. The following schools are, therefore, not accredited for the same amount and kind of work.* In all subjects other than those for which his school is accredited, which are required for admission to the department of the University that he desires to enter, the student must pass an examination, or take the work in the Preparatory School of the University.

### LIST OF ACCREDITED SCHOOLS

SCHOOL.	SUPERINTENDENT	PRINCIPAL
Aledo	P. J. Kuntz	F. M. Hollembaek
Alton	R. A. Haight	J. E. Turner
Amboy	F. W. Dunlap	F. W. Dunlap
Arcola	G. W. Smith	Maud E. Bristol
Atlanta	Henry H. Edmunds	Fay M. Hopkins
Augusta	H. M. Anderson	H. M. Anderson
Aurora (East)	C. M. Bardwell	Wm. J. Pringle

SCHOOL	SUPERINTENDENT	PRINCIPAL
Aurora (West)	A. V. Greenman	Katherine Reynolds
Austin	N. D. Gilbert	B. F. Buck
Batavia (East)	W. E. King	Ruth Wardall
Batavia (West)	T. C. Frye	I. B. Hunter
Beardstown	S. Sterrett Beggs	H. J. Jockisch
Belleville	H. D. Updike	H. W. Brua
Belvidere (North)	Arthur J. Snyder	Flora Fellows
Belvidere (South)	Montgomery Moore	Carrie A. Longley
Bement	Charles McIntosh	Willard N. Tobie
Bloomington	E. M. VanPetten	E. L. Boyer
Blue Island (Township High School)		J. E. Lemon
Burlington, Ia.	Charles E. Shelton	E. Boppe
Cairo	T. C. Clendenen	John Snyder
Camp Point	C. P. Beale	C. P. Beale
Canton	Charles S. Aldrich	Charles S. Aldrich
Carlinville	Edwin H. Owen	Edwin H. Owen
Carrollton	Clyde Slone	Clyde Slone
Carthage	W. K. Hill	W. K. Hill
Centralia	Irwin F. Mather	Ellen Sherman
Champaign	Joseph Carter	Lottie Switzer
Charleston	W. T. Gooden	William Wallis
Chicago—		
Calumet	Albert G. Lane	A. S. Hall
Englewood	"	J. E. Armstrong
English High and Manual Training	"	A. R. Robinson
Hyde Park	"	C. W. French
Jefferson	"	Charles A. Cook
Lake	"	Edward F. Stearns
Lake View	"	James H. Norton
Marshall	"	Louis J. Block
Medill	"	S. B. Sabin
North Division	"	O. S. Wescott
Northwest Div.	"	Franklin P. Fisk
South Division	"	Jeremiah Slocum
South Chicago	"	Charles I. Parker
West Division	"	George M. Clayberg
Chicago Manual Training,	H. H. Belfield,	Director.
Chrisman	S. C. Clark	Cora Reno
Clinton	J. W. Hesler	Minnie Bishop

SCHOOL	SUPERINTENDENT	PRINCIPAL
Clinton, Ia.	O. P. Bostwick	E. L. Mason
Cobden	A. L. Bliss	A. L. Bliss
Danville	J. E. Bryan	B. D. Billingham
Davenport, Ia.	J. B. Young	H. H. Roberts
Decatur	E. A. Gastman	Frank Hamsher
Delavan	F. L. Calkins	Stella I. Hoghton
Dixon (North)	E. C. Smith	Lydia Williamson
Dixon (South)	Charles W. Groves	Benjamin F. Bullard
Dubuque, Ia.	F. T. Oldt	F. L. Smart
Dundee	S. M. Abbott	S. M. Abbott
DuQuoin	David B. Rawlins	Charles E. Knapp
Dwight	G. W. Horton	Leila Britt
East St. Louis	John Richeson	John Richeson
Edwardsville	J. M. Parkinson	M. D. Cox
Effingham	C. V. McReynolds	Miss E. C. Finley
Elgin	M. A. Whitney	Eugene C. Peirce
Elmwood	L. E. Flanegin	Jeannette C. Munson
El Paso (West)	R. E. Worley	R. E. Worley
Evanston (Township High School)		Henry L. Boltwood
Evansville, Ind.	W. A. Hester	Robert Spear
Farmer City	C. C. Covey	C. C. Covey
Farmington	H. L. Roberts	Elizabeth Williams
Flora	J. L. Hughes	Philo S. Stevenson
Freeport	R. S. Page	S. E. Raines
Fulton	A. Ebersole	Mary O. Conrath
Galena	Joel A. Harley	C. E. Smith
Galesburg	Wm. L. Steele	F. D. Thomson
Galva	F. U. White	Hedwig M. Maul
Geneseo	A. W. Hussey	Emma Roane
Gibson City	R. G. Jones	Samuel L. Garvin
Grand Prairie Seminary (Onarga)		S. VanPelt
Greenfield	Horace G. Russell	Horace G. Russell
Griggsville	H. C. McCairel	Nora Simmons
Harvard	John S. Brazier	Anna M. Morrow
Harvey	F. L. Miller	J. E. Cable
Henry	Wm. Calhoun	Sue McMurtry
Hillsboro	Josiah Bixler	Mattie Hunt
Hinsdale	J. M. Frost	Grace E. Germain
Hoopeston	S. A. D. Harry	B. E. Ford
Jacksonville	J. W. Henninger	Hugh S. Weston

SCHOOL	SUPERINTENDENT	PRINCIPAL
Jerseyville	J. Pike	Edward B. Shafer
Joliet	Mrs. K. A. Henderson	J. Stanley Brown
Kankakee	F. N. Tracy	Eugene C. Crosby
Keokuk, Ia.	O. W. Meyer	George E. Marshall
Kewanee	A. C. Butler	H. S. Latham
Lacon	Frank H. Wescott	Isabelle Baird
La Grange (Township High School)		E. G. Cooley
Lanark	E. S. Hady	Louise C. Winner
LeRoy	B. C. Moore	Bertha Rutledge
Lewistown	Burton E. Nelson	Hattie M. Wasmuth
Lexington	Jesse L. Smith	Jesse L. Smith
Lincoln	F. M. Richardson	Jane Kidd
Litchfield (North) (Township High School)		J. E. Wooters
Lockport	J. E. Hooton	Augusta Rudd
Macomb	R. C. Rennick	J. W. Hays
Marengo	John E. Nelson	A. M. McDermott
Mason City	C. O. DuBois	Mrs. E. A. Naylor
Mattoon	B. F. Armitage	E. Kate Carman
Maywood	J. Porter Adams	H. A. Owen
Mendota (East)	W. R. Foster	Lillian Purkhiser
Mendota (West)	S. E. Beede	Myra J. Howes
Moline	H. M. Slauson	W. J. Cox
Monmouth	J. C. Burns	W. D. McDowell
Morrison	M. M. Warner	Mrs. P. F. Burtch
Mound City	J. M. McKinney	J. M. McKinney
Mt. Carmel	D. W. Gamble	Kate Marsh
Mt. Carroll	J. M. McCallie	Ada M. Griggs
Murphysboro	Charles W. Parkinson	Ellis H. Rogers
Nashville	J. B. Bundy	A. B. Wight
Newton	E. B. Brooks	Electa Ransom
Normal	E. A. Fritter	T. M. Birney
Oak Park	W. H. Hatch	D. O. Barto
Oregon	W. J. Sutherland	Adalaide Steele
Ottawa (Township High School)		J. O. Leslie
Paris	J. D. Shoop	J. D. Shoop
Paxton	O. J. Bainum	J. E. McKown
Pekin	Orren A. Schotts	Josephine Goodheart
Peoria	Newton C. Dougherty	Alfred W. Beasley
Pittsfield	W. R. Hatfield	Caroline Grote
Polo	I. M. Bridgman	Mrs. I. M. Bridgman

SCHOOL	SUPERINTENDENT	PRINCIPAL
Pontiac	(Township High School)	J. E. Bangs
Princeton	(Township High School)	W. A. Pratt
Quincy	Alfred A. Seehorn	Wm. F. Geiger
Ridge Farm	H. H. Kidd	Mrs. Jessie Fletcher
Rochelle	C. F. Philbrook	Mollie V. Hodgman
Rockford	P. R. Walker	B. D. Parker
Rock Island	R. G. Young	E. V. Robinson
Roodhouse	P. M. Silloway	Wm. Skinner
Rossville	I. A. Smothers	Clarence N. Boord
Rushville	Nathan T. Veatch	Nathan T. Veatch
Salem	D. B. Fager	Laura Myers
Sandwich	W. W. Woodbury	Alice E. Blanchard
Savanna	W. S. Wallace	Florence Chowning
Shelbyville	Thomas A. Hillyer	Jennie Good
Southern Collegiate Institute (Albion)		Frank B. Hines
Sparta	S. B. Hood	J. M. Nickles
Springfield	J. H. Collins	Wm. Helmle
Sterling (3d Dis't)	H. L. Chaplin	Anna Parmelee
Sterling (Wallace)	S. B. Hursh	Harriet B. Esterly
Streator	(Township High School)	Alfred Bayliss
Sullivan	J. M. Martin	I. N. Biebinger
Taylorville	(Township High School)	William E. Andrews
Terre Haute, Ind.	Wm. Wiley	Charles Meek
Tuscola	Charles S. Earle	Charles Ammerman
Urbana	J. W. Hays	H. T. Willson
Vienna	M. N. McCartney	M. N. McCartney
Virden	E. A. MacMillan	C. M. Brennen
Virginia	Benjamin H. Scudder	Lydia G. Clark
Warren	M. C. Ladd	O. M. Buser
Washington	H. W. Veach	H. W. Veach
Waukegan	C. Victor Campbell	Emily M. Coon
Western Military Academy (Upper Alton)		A. M. Jackson
Wheaton	J. B. Russell	H. O. Staufft
Wilmington	F. M. Crosby	Helen Buss
Winchester	I. M. Jeffords	Hattie Hulick
Woodstock	C. W. Hart	Mrs. Etta Beach
Wyoming	J. M. Hutchinson	Myra N. Manning.
Yorkville	Richard Heyward	Jennie M. Price

## MILITARY SCIENCE

The military instruction is under the charge of a graduate of the U. S. Military Academy and officer of the regular army of the United States. The course as a whole has special reference to the duties of officers of the line. A full supply of arms and ammunition is furnished by the War Department, including 300 cadet rifles and accoutrements, and two field pieces of artillery.

Every male student, able to perform military duty, and not excused for sufficient cause, is required to drill twice each week until he has gained six creditable term-records. He is also required to study Drill Regulations for Infantry and to recite upon the same once a week until he passes two creditable term-examinations. This practical instruction begins as soon as possible after he enters the University; but a preparatory student carrying no freshman studies and not expecting to matriculate during the year, is not permitted to drill. The standings in study and drill are placed on record, with other class credits; two terms of recitations and drill count one credit, and the four remaining terms of drill another, and are requisite to graduation in every University course.

Appointments in the battalion are made on nomination by the professor in charge and confirmation by the Faculty.

Students who have passed two examinations in the drill regulations and who have gained two term-credits in drill practice are eligible for corporals; those having three term-credits in each are eligible for sergeants, and those having six term-credits in each, for lieutenants and for officers of higher rank.

The battalion (four companies) is composed mainly of the members of the freshman and sophomore classes, the first supplying the corporals, the second, the sergeants. The lieutenants are taken from those of the junior class, and the major and captains from those of the senior class, who have passed through the lower grades satisfactorily.

A special military scholarship, good for one year, is open to each student who attains the grade of a commissioned officer, the value of which is paid the holder at the close of the year.

An artillery detachment is organized mainly from the second year, or sophomore, class, which receives practical instruction twice each week during the college year.

Toward the close of the spring term, a committee appointed by the Faculty examines candidates for nomination to the Governor of the state to receive commissions as brevet captains in the state militia. Candidates must be members of the senior class in full standing at the time of this examination; must have completed the course of military studies; must have served three terms as captains or lieutenants, and must be approved by the Faculty as having good reputations as scholars, officers, and gentlemen.

Under the authority of the acts of incorporation, the Trustees have prescribed a uniform of cadet gray, coat trimmed with black mohair braid, trousers with black cloth stripe, cut after the U. S. army pattern. The uniform of the cadet officers is of dark blue cloth for coat and light blue for trousers; cap, for all, of dark blue cloth, army pattern, with university badge embroidered thereon in gold bullion; white gloves; the uniform of the band dark blue throughout, with special trimmings.

In order that all uniforms worn at this University may be, in quality, make, and finish in strict accordance with the specifications adopted by the Board of Trustees, all students enrolled in the military department will be required to obtain them from that firm only that may, for the time being, be under agreement and bond with the Trustees to furnish said uniforms at a stated price and of standard quality.

The University Cornet Band is composed of students, and every full term of service therein is counted as one term of drill.

## PHYSICAL TRAINING

The object of the department of physical training is to teach and put into practice the best methods of preserving health, of gaining physical vigor, of correcting imperfect development, and of avoiding injury and disease. Certificates of the proper examiner are required for membership in the athletic teams.

Men and women have their practice and much of their instruction separately in physical training, but all students have equal consideration in the provisions made for the work and in the freedom of choice under the necessary regulations.

## FOR MEN

The new gymnasium, located in the building formerly occupied by the engineering laboratory, is equipped with the latest appliances. There is an unobstructed floor space of 61 by 121 feet. The building contains shower baths, needle bath, tub bath, lavatories, lecture room, and directors' offices. The gymnasium is open from 9 a. m. to 4 p. m. The adjoining Illinois Field serves well for games and for track purposes, and here take place all the intercollegiate contests.

## FOR WOMEN

Each student who takes physical instruction is expected to undergo a physical examination every year, in order that her physical condition may be known and suitable exercises and advice given. Systematic class work is given in the use of dumb-bells, wands, bar-bells, foils, Indian clubs, and on many pieces of gymnastic apparatus.

During the fall and spring terms, out-door games and exercises receive considerable attention. Lectures and talks on hygiene, physical training, etc., are given during the winter term.

Special attention is given to the correction of those inequalities of hips, shoulders, and vertebræ which prevent the



harmonious development of the body. Each student comes under the personal observation of the director and is given exercises to meet her special needs.

Every woman student not physically disqualified must take the prescribed work and may elect enough to make two credits.

The women's gymnasium occupies very attractive quarters in Natural History Hall, and is well equipped. The pastime grounds near by, in use through the year, when the weather permits, have a sixteen-lap running track, eight tennis courts, two basket ball fields, and space for hurdling, handball, and other suitable amusements.

The gymnasium is open for exercise, at certain hours, under suitable restrictions, to those who are not enrolled in classes.

#### ANTHROPOMETRY

Considerable time and attention is given to this work. Careful anthropometrical examinations are made as to the particular needs of the students, and on the basis of the information thus gained suitable exercises are prescribed; various strength tests and measurements are taken; the heart, lungs, and eyes are examined, and special attention is given to those who do not reach the normal in strength or in bodily development.

## EXPENSES

### BOARD

The University does not furnish board, but there is a large number of suitable private places in Urbana and Champaign, within walking distance of the University, and easily accessible by electric railway, where students can obtain table board and rooms. There are several students' clubs at which the cost of meals is about two and a half dollars a week.

The Business Manager and the Young Men's and Young Women's Christian Associations of the University will aid new students in procuring rooms and boarding places.

### FEEES

The TUITION IS FREE in all the University classes for matriculated students.

THE MATRICULATION FEE entitles the student to membership in the University until he completes his studies, and is... \$10 00  
THE DIPLOMA FEE, payable before graduation, is..... 5 00  
THE TERM FEE, for incidental expenses, is, for each student, except in Graduate School..... 7 50  
THE TUITION FEE, for all special students (except in music), and for pupils of the Preparatory School, per term, is... 5 00

MUSIC FEES.—Students enrolled in the department of music only, pay no matriculation fee or term fee. They must, however, pay the following music fees:

	FIRST TERM	SECOND TERM	THIRD TERM
Piano, Organ, or Voice.....	\$25 00	\$20 00	\$20 00
(Two lessons a week.)			
Piano, Organ, or Voice.....	15 00	12 00	12 00
(One lesson a week.)			
Violin or other stringed instrument.	21 00	16 00	16 00
(Two lessons a week.)			
Violin or other stringed instrument.	11 00	9 00	9 00
(One lesson a week.)			

Harmony, counterpoint, fugue, etc., in classes not to exceed four, \$6.00 per term.

Students enrolled in any other department of the University and paying fees therein, may enter the department of music on payment of the following fees:

	FIRST TERM	SECOND TERM	THIRD TERM
Piano, Organ, or Voice..... (Two lessons a week.)	\$20 00	\$15 00	\$15 00
Piano, Organ, or Voice..... (One lesson a week.)	12 00	9 00	9 00
Violin or other stringed instrument. (Two lessons a week.)	16 00	11 00	11 00
Violin or other stringed instrument. (One lesson a week.)	9 00	6 00	6 00

No deduction is made on account of absence in any course, except in case of protracted illness.

Students can rent pianos for practice by applying to the head of the music department.

**LABORATORY FEES.**—Each student working in laboratories, or in the drafting or engineering classes, is required to make a deposit varying from 50 cents to \$10, to pay for chemicals and apparatus used, and for any breakages or damages.

**LIBRARY SCHOOL FEES.**—Estimated expenses of visits of inspection to Chicago libraries, \$25.00.

Deposit Fund for Library School supplies: \$20.00 junior year; \$10.00 senior year.

*ALL BILLS due the University must be paid within ten days after the student enters classes.*

#### NECESSARY EXPENSES

The following are estimated minimum and maximum annual expenses, exclusive of books, clothing, railroad fare, laboratory fees, if any, and small miscellaneous needs:

Term fees.....	\$ 22 50	\$ 22 50
Room rent for each student (two in a room).....	22 50	50 00
Table board in boarding houses and clubs.....	90 00	126 00
Fuel and light.....	10 00	15 00
Washing .....	12 00	18 00
<b>Total .....</b>	<b>\$157 00</b>	<b>\$231 50</b>
Board and room in private houses, per week.....	4 00	6 00

## CAUTION TO PARENTS—STUDENTS' FUNDS

The Business Manager will receive on deposit any funds parents may intrust to him to meet the expenses of their sons and daughters. *No greater error can be committed than to send young people from home with large amounts of spending money, without the authoritative care of some prudent friend. Half the dissipation in colleges springs from excessive allowances of money.*

## LAW SCHOOL FEES are—

Matriculation fee, paid once.....				\$10.00
	FALL TERM.	WINTER TERM.	SPRING TERM.	
Tuition .....	\$25.00	\$15.00	\$10.00	

## SCHOOL OF MEDICINE FEES are—

Matriculation fee, paid each year.....	\$ 5.00
General ticket, each year.....	105.00

## Winter Term—

Laboratory Deposit (for material and breakages, balance returned).....	\$25.00
Matriculation fee, good for the year.....	5.00

## Spring Term—

General ticket .....	20.00
Laboratory deposit.....	10.00

## SCHOOL OF PHARMACY FEES are—

Tuition fee, each year.....	75.00
Laboratory deposit each year.....	5.00

# PREPARATORY SCHOOL

---

## INSTRUCTORS

EDWARD G. HOWE, B. S., Principal, Natural Science.  
LILLIE ADELLE CLENDENIN, English.  
REUBEN S DOUGLASS, A. B., Geometry and Physics.  
CHARLES B. RANDOLPH, A. B., Latin and Greek.  
CLARENCE W. ALVORD, A. B., History and Algebra.

---

This school offers special advantages to young men and women who, on account of advanced age or prolonged absence from school, are out of touch with the high school.

## ADMISSION

Candidates for admission must be at least fifteen years of age. Those of age may enter such classes as they are prepared for without examination. All under twenty-one years of age must pass a satisfactory examination in the following subjects:

1. ARITHMETIC.—A thorough knowledge is required of fundamental operations, simple and denominate numbers, the metric system of weights and measures, common and decimal fractions, practical measurements, percentage, ratio and proportion.
2. ENGLISH.—The examination is intended to test the student's vocabulary, and his knowledge of grammar.
3. GEOGRAPHY.—An accurate knowledge of elementary physical and political geography is required.
4. HISTORY.—As a foundation in this subject, a knowledge of the early settlement of North America and of the growth and development of the United States, is required. A knowledge of

the nature and operation of the forces active in American life is desired, rather than the memorization of isolated dates and names.

ENTRANCE should be made at the opening of the term. Examinations are held in the rooms of the school. For the fall term, 1898, these examinations occur on Thursday, Friday, and Saturday, the 8th, 9th, and 10th of September; for the winter and spring terms, on the two days previous to the opening of each term. Examinations on these dates are free, but for examinations at other times a fee of three dollars is charged.

EXAMINATIONS may be conducted in Illinois by county superintendents of schools in the same manner as for teachers' certificates, and their favorable reports will be accepted for entrance. First or second grade teachers' certificates from superintendents of Illinois will be taken for the same purpose.

On the written recommendation of their principals, students from the accredited schools of the University may be admitted without entrance examinations and credit will be allowed for all equivalent work already done. Blanks for such recommendations will be sent on application.

## COURSE OF STUDY

The time necessary for the completion of the course offered is not fixed, but depends on the ability and previous training of the student. Applicants will be admitted at any time on presenting proof that they are prepared to pursue the selected subjects. Preparatory students generally carry four studies, one of which should be such as needs but little work outside of the class room. The number varies, however, with the ability of the student and the nature of the course.

The following schedule gives the subjects in which instruction can be had and the term or terms in which they are taught:

		FALL TERM	WINTER TERM	SPRING TERM
1	Algebra..... *	Through two unknown quantities.	To quadratics.	Completed.
2	Botany.....		Last half of the year.	
3	English, 1, 2, 3.....	Grammar, composition, and reading.	Rhetoric, composition, and reading.	Rhetoric, composition, and reading.
4	English, 4, 5, 6.....	Literature, themes, and reading.	Literature, themes, and reading.	Literature, themes, and reading.
5	Drawing.....	Any one term.		
6	French.....	Two years.		
7	German.....	Two years.		
8	Geometry, plane...	5 books.	1st and 2d books. †	3d, 4th, and 5th † books.
9	Geometry, solid....	All. †	All.	All †
10	Greek, 1st year ....	Grammar and readings.	Grammar and readings.	Grammar, Anabasis and composition
11	Greek, 2d year.....	Anabasis and composition.	Grammar, Hellenica and composition.	Gram., Herodotus, and composition.
12	History.....	England.	England and America.	America and civil government.
13	Latin, 1st year.....	Grammar, readings, and composition.	Grammar, readings and composition.	Cæsar.
14	Latin, 2d year.....	Cæsar	Sallust.	Cicero.
15	Latin, 3d year.....	Cicero.	Cicero and Vergil.	Vergil.
16	Physics.....		Magnetism, elect'y mensuration, heat.	Mechanics, sound and light.
17	Physiology.....	Fall term.		
18	Zoology.....	One-half year.		

Students must choose from the above list such studies as they require for their chosen courses in the University.

## COURSES OF INSTRUCTION

### ALGEBRA

Rapidity and accuracy in all operations is rigidly required. Special emphasis is laid upon the use of purely literal expressions, radicals, fractional, and negative exponents, and upon the fundamental nature of the equation. *Text, Wentworth's Higher Algebra.*

\* If 5 or more apply, a class will *review* the entire subject in the fall term or *begin* in the winter term.

† If 5 or more apply.

By terms, the work is divided as follows:

1. Fundamental processes, factoring, divisors, and multiples, fractions, and simple equations with one or more unknown quantities.
2. Involution and evolution, theory of exponents, radicals, and quadratic equations.
3. Theory of quadratic equations, inequalities, theory of limits, ratio and proportion, variation and the progressions.

#### **BOTANY**

This is a study of plants rather than of books about plants, although books are not disregarded. It is an introduction to the science, and is intended to give an acquaintance with the chief features of the subject. The analysis of simple flowers and the preparation of a small herbarium of correctly named and properly mounted plants is required. *Berges's Elements of Botany.*

#### **ENGLISH**

The subject is presented in such a way as to increase the student's vocabulary and to develop elegance and exactness of expression in his composition. Advanced grammar and rhetoric are taught in connection with this work. The study of literary masterpieces is also pursued to furnish material for the weekly written exercises, and to cultivate a taste for good literature. Considerable collateral reading in English and American authors is therefore required.

#### **FREE-HAND DRAWING**

This subject is best taken in the first term in order that pupils may have the benefit of its training in the studies which follow. *Frederick's Notes on Free-Hand Drawing.*

#### **FRENCH AND GERMAN**

Students in the Preparatory School take the work of the regular University German and French classes.

#### **GEOMETRY**

Special attention is paid to the development of the idea of mathematical demonstration; and, as many students who can reason logically cannot express their ideas clearly, due attention is paid to correctness of form. As soon as the student has attained the art of rigorous demonstration he is required to produce constructions and demonstrations for himself. Considerable attention is devoted to original work. *Wentworth's Plane and Solid Geometry.*



**GREEK**

The study of this subject should, when possible, be preceded by at least one year of Latin.

**HISTORY**

Instruction in this subject is confined to English and American history. A detailed study of the rise and progress of the English-speaking people in England and America is made, and considerable attention is given to the origin and development of representative government. The work extends through one year; one-half of the time is devoted to English, and the other half to American history.

The work, by terms, is as follows:

1. English History through the Revolution of 1688. *Green's Shorter History of English People.*
2. English History from 1688 to the present time, and American History to the Revolutionary War. *Fiske's History of the United States.*
3. American History from the Revolutionary War to the present time.

**LATIN**

The ground covered consists of the grammar and selections from Cæsar, Sallust, Cicero, and Vergil. Translation of English into Latin is made a prominent part of the work, and in connection with the Vergil the scansion of hexameter verse and matters of historical and mythological interest are studied. The Roman method of pronunciation is used, with special attention to quantity.

**PHYSICS**

This study is so presented as to cultivate habits of careful observation, and to develop in the student the ability to reach general conclusions inductively by means of exact experiment. In all laboratory work the student is required to keep a notebook containing a complete record of experiments performed.

**PHYSICAL TRAINING**

Preparatory students can now have the benefit of a thorough physical examination and regular exercise, under the guidance of University instructors. This will be required of all, under the same regulations as for University students.

Those suffering from serious physical defects may be excused on the written advice of the Physical Director, and those who are working for self-support may be excused for the period so engaged.

**PHYSIOLOGY**

In this subject the book used is illustrated by the use of charts, skeleton, and manikin, and by a series of laboratory experiments.

**ZOÖLOGY**

Through the study of typical animals the subject is so presented as to lead the student to a knowledge of methods of scientific classification in the natural sciences, and to prepare for the more advanced work of the University. Orton's Zoölogy and collateral reading.

## REGULATIONS

Reports regarding all non-resident and minor students (and, upon request, regarding any others) are sent to parents or guardians as soon as students are settled in their work, and reports regarding all students are sent at the close of each term.

The calendar of the Preparatory School is the same as that of the University.

For information concerning fees and expenses, see page 264.

For special information with regard to the Preparatory School, address Edward G. Howe, Urbana, Illinois.

## LIST OF STUDENTS

---

### TECHNOLOGICAL, SCIENTIFIC, AGRICULTURAL AND LITERARY DEPARTMENTS

#### \*GRADUATE SCHOOL

- Adams, Charles Christopher, B.S., (*Illinois Wesleyan Univ.*), *Urbana*, Natural Science.
- †Barber, Ella Ursula, B.L., (*Univ. of Ill.*), *Chicago*, English and History.
- †Barclay, Thomas, B.S., (*Univ. of Ill.*), *Aurora*, Smelting and Refining Processes of the United States; Geology of Ore Deposits.
- Beadle, Thomas B., B.S., (*Univ. of Ill.*), *Kewanee*, Chemistry.
- †Beebe, Charles David, B.S., (*Univ. of Ill.*), *Evanston*, Mechanical Engineering.
- Boggs, Cassandra Armstrong, B.L., (*Univ. of Ill.*), *Urbana*, English and Pedagogy.
- Boon, William Guthrie, B.S., (*Univ. of Ill.*), *Armstrong*, Civil Engineering.
- Brenke, William Charles, B.S., (*Univ. of Ill.*), *Champaign*, Mathematics and Astronomy.
- †Brown, Walter Burrows, B.S., (*Univ. of Ill.*), *Buffalo, N. Y.*, Chemistry.
- Burnham, Alton Cyrel, B.S., (*Mich. Agri. Coll.*), *Urbana*, Mechanical Engineering.
- †Burt, Henry Jackson, B.S., (*Univ. of Ill.*), *New Orleans, La.*, Civil Engineering.
- †Busey, Frank Lyman, B.S., (*Univ. of Ill.*), *Urbana*, Mechanical Engineering.
- Carnahan, David Hobart, A.B., (*Univ. of Ill.*), *Fellow, Champaign, French*.

---

\*Each student of the Graduate School is a candidate for a Master's or a Doctor's degree.

†*In absentia*, see p. 243.

- Carpenter, Hubert Vinton, B.S., (*Univ. of Ill.*), *Champaign*, Electrical Engineering.
- \*Clarke, Edwin Besançon, B.S., (*Univ. of Ill.*), *Chicago*, Architecture.
- \*Cole, Edward E., B.S., (*Univ. of Ill.*), *Pueblo, Colo.*, Economics and History.
- Dewey, James Ansel, B.S., (*Univ. of Ill.*), *Urbana*, Natural Science.
- Dewey, Louise Sarah, B.S., (*Univ. of Ill.*), *Urbana*, Natural Science.
- Foote, Ferdinand John, B.S., (*Univ. of Ill.*), *Champaign*, Electrical Engineering.
- Fraser, Wilber John, B.S., (*Univ. of Ill.*), *Champaign*, Agriculture.
- \*Frederick, Grant, B.L., (*Univ. of Ill.*), *Paxton*, Economics.
- \*Garber, John Frederick, A.B., (*Univ. of Ill.*), *Flora*, Pedagogy.
- \*Gardner, Frank Duane, B.S., (*Univ. of Ill.*), *Washington, D. C.*, Agriculture.
- \*Garnett, Charles Hunter, A.B., (*Univ. of Ill.*), *Chicago*, Economics and History.
- \*Goodenough, George Alfred, B.S., (*Mich. Agri. Coll.*), *Scranton, Pa.*, Mechanical Engineering.
- \*Gregory, Alfred, A.B., (*Univ. of Ill.*), *Kansas City, Mo.*, Economics.
- \*Gulick, Edward Everett, B.L., (*Univ. of Ill.*), *Champaign*, History.
- \*Hallinen, Joseph Edward, B.S., (*Univ. of Ill.*), *Ottawa*, Zoölogy and Pedagogy.
- \*Harris, James Waldo, B.S., (*Univ. of Ill.*), *Baraboo, Wis.*, Civil Engineering.
- Heller, Opal, B.L., (*Univ. of Ill.*), *Urbana*, English and Pedagogy.
- \*Hempel, Adolph, B.S., (*Univ. of Ill.*), *São-Paulo, Brazil*, Protozoa and Rotifera; Literature of Biological Station Methods and Investigations.
- Hobart, Albert Claude, B.S., (*Univ. of Ill.*), *Fellow, Elgin*, Civil Engineering.
- \*Honens, Fred William, B.S., (*Univ. of Ill.*), *Milan*, Civil Engineering.
- Hubbard, George David, B.S., (*Univ. of Ill.*), *Urbana*, Paleontology, Zoölogy, and Entomology.
- \*Kendall, William Finley, B.S., (*Univ. of Ill.*), *Del Rio, Texas*, Civil Engineering.
- \*Kerns, Shirley Kendric, A.B., (*Univ. of Ill.*), *Champaign*, English and Modern Language.

\* *In absentia*, see p. 243.

- \*Ketchum, Milo Smith, B.S., (*Univ. of Ill.*), *Butte, Mont.*, Civil Engineering.
- Ketchum, Richard Bird, B.S., (*Univ. of Ill.*), *Urbana*, Civil Engineering.
- Kyle, Martha Jackson, A.B., (*Univ. of Ill.*), *Urbana*, English and Modern Languages.
- \*Linn, Homer Roberts, B.S., (*Univ. of Ill.*), *Cleveland, O.*, Mechanical Engineering.
- \*McCormack, Harry, B.S., (*Drake Univ.*), *Des Moines, Ia.*, Chemistry.
- McKee, James Harry, B.S., (*Univ. of Ill.*), *Urbana*, Mechanical Engineering.
- \*Martin, John Madison, A.B., (*Univ. of Ill.*), *Sullivan*, Pedagogy, Sociology, and Psychology.
- Millar, Adam Vause, B.S., (*Univ. of Ill.*), *Mattoon*, Mathematics and Astronomy.
- \*Milne, Edward Lawrence, B.S., (*Univ. of Ill.*), *Champaign*, Mathematics and Astronomy.
- Myers, James William, A.B., (*Univ. of Ill.*), *Urbana*, History.
- Paul, Arthur Ernest, B.S., (*Univ. of Ill.*), *Fellow, Chicago*, Chemistry.
- Poole, Edward Warren, B.S., (*Univ. of Ill.*), *Fellow, Dover*, Electrical Engineering.
- \*Richart, Frederick William, B.S., (*Univ. of Ill.*), *Fredonia*, Mechanical Engineering.
- Sager, Fred Anson, B.S., (*Univ. of Mich.*), *Urbana*, Mathematics and Physics.
- Sammis, John Langley, B.S., (*Univ. of Ill.*), *Jacksonville*, Chemistry.
- \*Sayers, Albert Jefferson, B.S., (*Univ. of Ill.*), *Chicago*, Mechanical Engineering.
- Schacht, Frederick William, B.S., (*Univ. of Ill.*), *Fellow, Moline*, Natural Science.
- \*Shepardson, John Eaton, B.S., (*Univ. of Ill.*), *Aurora*, Civil Engineering.
- Smith, Louie Henrie, B.S., (*Univ. of Ill.*), *Crystal Lake*, Chemistry.
- Spurgin, William Grant, A.B., (*Univ. of Ill.*), *Urbana*, Classical.
- Stickles, Arndt Matthew, A.B., (*Ind. State Univ.*), *Patricksburg, Ind.*, History, Pedagogy, and Economics.
- Sweney, Don, B.S., (*Univ. of Ill.*), *Fellow, Gettysburg, Pa.*, Mechanical Engineering.

- \*Sy, Albert Philip, B.S., (*Univ. of Ill.*), *Chicago*, Chemistry.  
 Teeple, Wallace Douglas, B.S., (*Univ. of Ill.*), *Marengo*, Architecture.  
 Webber, Hubert Anthony, B.S., (*Univ. of Ill.*), *Champaign*, Architecture.  
 Zimmerman, Walter Howard, B.S., (*Univ. of Ill.*), *Champaign*, Mechanical Engineering.

#### †RESIDENT GRADUATES

- Arnold, Mary Edna, Ph.D., (*Univ. of Indianapolis*), *Souders*, Art and Design.  
 Christner, Fred Wallace, B.S., (*Doane Coll.*), *Crete, Neb.*, Library.  
 Edwards, Grace Osborne, B.S., (*Wellesley Coll.*), *LaCrosse, Wis.*, Library.  
 Hopkins, Mrs. Emma, B.S., (*Univ. of S. Dak.*), *Urbana*, Music.  
 Miner, Ralph Scott, M.S., (*Knox Coll.*), *Table Grove*, Natural Science.  
 Orme, Hence Irwin, A.B., (*Ind. State Univ.*), *Glenns Valley, Ind.*, General L. and A.  
 Parker, Phebe, A.B., (*Univ. of Mich.*), *Norwalk, Ohio*, Library.  
 Porter, Horace Chamberlain, A.B., (*Univ. of Ill.*), *Champaign*, Chemistry.  
 Rundle, Frank, A.B., (*Hanover Coll.*), *Clinton*, Civil Engineering.  
 Shawhan, Gertrude, B.L., (*Univ. of Ill.*), *Champaign*, Library.  
 Smith, Leo Clark, A.B., (*Neb. State Univ.*), *Council Bluffs, Ia.*, Library.  
 Sparks, Marion Emeline, A.B., (*Univ. of Ill.*), *Urbana*, Library.  
 Tibbitts, Carrie Sarah, A.B., (*Hiram Coll.*), *Cleveland, Ohio*, Library.  
 Waters, Willard Otis, A.B., (*Benzonia Coll.*), *Benzonia, Mich.*, Library.  
 Winston, Charles Sumner, A.B., (*Univ. of Chicago*), *Chicago*, Electrical Engineering.  
 Wright, Wilber Hoyt, A.B., (*Univ. of Ill.*), *Normal*, Natural Science.

\* *In absentia*, see p. 243.

† Students in this list are not candidates for higher degrees than they now hold.

## SENIORS

[In the lists which follow "L. and A." stands for College of Literature and Arts; "S." for College of Science.]

Aaron, Philip Judy,	<i>Big Neck,</i>	Electrical Eng'g.
Anderson, Clark Godfrey,	<i>Moline,</i>	Civil Engineering.
Arnold, Jay Jennings,	<i>Springfield,</i>	Natural Science.
Beasley, D Edythe,	<i>Urbana,</i>	Classical.
Beem, Fred Clarkson,	<i>Ottawa,</i>	Architecture.
Berry, Erwin Howard,	<i>Paw Paw,</i>	Chemistry.
Black, William Wesley,	<i>Champaign,</i>	Philosophy, L. and A.
Breidert, Henry Cyrille,	<i>Havana,</i>	Civil Engineering.
Brockway, Edwin Ladue,	<i>Macomb,</i>	Electrical Eng'g.
Brower, Lyle Ireneus,	<i>Urbana,</i>	Architecture.
Byrne, Lee,	<i>Marshall, Minn.,</i>	Classical.
Chester, Guy Jacob,	<i>Champaign,</i>	Electrical Eng'g.
Clark, Charles Albert,	<i>Vandalia,</i>	Electrical Eng'g.
Clark, Charles Richard,	<i>Champaign,</i>	Architecture.
Clayton, Thomas Wiley,	<i>Dixon,</i>	Civil Engineering.
Coffeen, Harry Clay,	<i>Champaign,</i>	Math. and Astron.
Collins, Edgar Francis,	<i>Urbana,</i>	Electrical Eng'g.
Craig, Wallace,	<i>Chicago,</i>	Natural Science.
Crathorne, Arthur R,	<i>Champaign,</i>	Mathematics, L. and A.
Davison, Chester Morton,	<i>Rock Falls,</i>	Architecture.
Dickey, James Harvey,	<i>Urbana,</i>	Math. and Physics.
Dillon, William Wagner,	<i>Sheldon,</i>	General, L. and A.
Eckles, Harry Edward,	<i>New Castle, Penn.,</i>	Civil Engineering.
Enochs, Claude Douglass,	<i>Champaign,</i>	Electrical Eng'g.
Enochs, Delbert Riner,	<i>Champaign,</i>	Classical.
Everhart, Rollin Orlando,	<i>Carlinville,</i>	Political Science.
Fischer, Louis Englemann,	<i>Shiloh,</i>	Municipal Eng'g.
Forbes, Stuart Falconer,	<i>Urbana,</i>	Architecture.
Fox, Fred Gates,	<i>Peru,</i>	General, L. and A.
Frazey, Alice Belle,	<i>Urbana,</i>	General, L. and A.
Fullenwider, Arthur Edwin,	<i>Mechanicsburg,</i>	Architecture.
Fulton, William John,	<i>Hartford City, Ind.,</i>	Gen'l, L. and A.
Goodridge, Henry Anthony,	<i>Chicago,</i>	Electrical Eng'g.
Hair, Charles Ernest,	<i>Galesburg,</i>	Architecture.
Hall, Fred Silvey,	<i>Arcola,</i>	General, L. and A.
Hammers, Morgan J,	<i>Champaign,</i>	Mechanical Eng'g.
Hatch, Thomas Milford,	<i>Goshen, Ind.,</i>	Electrical Eng'g.

Hays, Don,	<i>Sidney,</i>	Civil Engineering.
Hopper, Georgia Etherton,	<i>Champaign,</i>	General, L. and A.
House, Leone Pearl,	<i>Sadorus,</i>	Classical.
Hurd, Arthur Burton,	<i>El Paso,</i>	Electrical Eng'g.
Jordan, Helen,	<i>Tolono,</i>	Classical.
Kaesar, Albert Fred,	<i>Highland,</i>	Natural Science.
Koch, Fritz Conrad,	<i>Elmhurst,</i>	Chemistry.
Kofoid, Nellie Ione,	<i>Normal,</i>	Natural Science.
Lentz, Caroline,	<i>Arcola,</i>	Classical.
Linn, Francis David,	<i>Byron,</i>	Agriculture.
Linzee, Albert Carl,	<i>DuQuoin,</i>	Electrical Eng'g.
McCarty, Charles James,	<i>Rock Falls,</i>	Electrical Eng'g.
Marshutz, Joseph Hunter,	<i>Champaign,</i>	General, L. and A.
May, Harry Monroe,	<i>Rochelle,</i>	Electrical Eng'g.
Merker, Henry Fleury,	<i>Belleville,</i>	Electrical Eng'g.
Mesiroff, Josef,	<i>Chicago,</i>	Electrical Eng'g.
Mitchell, Frederick Alexander,	<i>Hillsboro,</i>	Mechanical Eng'g.
Morrow, Grace Eliot,	<i>Stillwater, Okla.,</i>	Natural Science.
Musham, John William,	<i>Chicago,</i>	Civil Engineering.
Naper, Herbert John,	<i>Chicago,</i>	Architectural Eng'g.
Neureuther, Andrew Henry,	<i>Peru,</i>	Mechanical Eng'g.
Nevins, John,	<i>Camp Point,</i>	Architecture.
Nickoley, Edward Frederick,	<i>Long Grove,</i>	Eng. and Modern Lang.
von Oven, Frederick William,	<i>Naperville,</i>	Civil Engineering.
Pease, Henry Mark,	<i>Malta,</i>	Electrical Eng'g.
Perkins, Reed Miles,	<i>Springfield,</i>	General, L. and A.
Polk, Cicero Justice,	<i>Champaign,</i>	General, L. and A.
Pooley, William Vipond,	<i>Galena,</i>	General, L. and A.
Ray, George Joseph,	<i>El Paso,</i>	Civil Engineering.
Rhodes, Ora M.,	<i>Bloomington,</i>	Natural Science.
Robinson, Lewis Archibald,	<i>White Post, Va.,</i>	General, L. and A.
Ross, Herbert Austin,	<i>Jerseyville,</i>	Architectural Eng'g.
Saunders, Rome Clark,	<i>Champaign,</i>	Electrical Eng'g.
Shamel, Archibald Dixon,	<i>Taylorville,</i>	Agriculture.
Smith, Elmer Church,	<i>Columbus, Neb.,</i>	Civil Engineering.
Soper, Stanley Livingston,	<i>Garrison,</i>	Eng. and Modern Lang.
Staley, Joseph Clarence,	<i>Urbana,</i>	Classical.
Thayer, Albert Lewis,	<i>New Castle, Pa.,</i>	Architecture.
Thompson, Guy Andrew,	<i>Steward,</i>	General, L. and A.
Toenniges, Ferdinand Frederick Emil,	<i>Davenport, Ia.,</i>	Civil Eng'g.
Unzicker, William Luther,	<i>Hopedale,</i>	Classical.



Walker, Rufus, Jr.,	<i>Moline,</i>	General, L. and A.
Walter, Charles Albert,	<i>Sandwich,</i>	Chemistry.
Webster, Joshua Percy,	<i>Philadelphia, Pa.,</i>	Civil Engineering.
Webster, Sarah Emeline,	<i>Urbana,</i>	General, L. and A.
Weirick, Ralph Wilson,	<i>Washington,</i>	Architecture.
Wetzel, Clyde Leigh,	<i>Traer, Ia.,</i>	Electrical Eng'g.
Wharf, Allison James,	<i>Olney,</i>	Civil Engineering.
Williamson, Albert St. John,	<i>Quincy,</i>	Mechanical Eng'g.
Wilson, Frederick Henry,	<i>Evanston,</i>	Electrical Eng'g.
Wingard, Lewis Forney,	<i>Champaign,</i>	General, L. and A.
Wolcott, James Thompson,	<i>Peoria,</i>	Chemistry.
Woolsey, Lulu Catherine,	<i>Polo,</i>	Political Science.
Wray, David Couden,	<i>Elida,</i>	Civil Engineering.
Wuerffel, Herman Louis,	<i>Chicago,</i>	Electrical Eng'g.
Young, John Hayes,	<i>Chicago,</i>	Electrical Eng'g.

## JUNIORS

Alarcó, Joseph Maria,	<i>Valencia, Spain,</i>	Electrical Eng'g.
Anderson, Harry,	<i>Sheldon,</i>	Electrical Eng'g.
Armstrong, Frank Hall,	<i>Serena,</i>	Mechanical Eng'g.
Bayard, Samuel Michael,	<i>Vincennes, Ind.,</i>	General, L. and A.
Bevans, Thomas Murray,	<i>Chicago,</i>	Electrical Eng'g.
Beckerleg, Gwavas Foster,	<i>Chicago,</i>	Civil Engineering.
Bennett, Ralph,	<i>Chicago,</i>	Electrical Eng'g.
Bennett, Ruth,	<i>Chicago,</i>	General, L. and A.
Bigelow, Mary C,	<i>Champaign,</i>	Math., L. and A.
Bradley, James Clifford,	<i>Morrison,</i>	Mechanical Eng'g.
Brown, Arthur Artemas,	<i>Urbana,</i>	Mechanical Eng'g.
Burkland, Theodore Leonard,	<i>Moline,</i>	Civil Engineering.
Burroughs, Elmer,	<i>Savoy,</i>	Electrical Eng'g.
Busey, Robert Oscar,	<i>Urbana,</i>	General, L. and A.
Campbell, Maude Permill,	<i>Champaign,</i>	Art and Design.
Carter, Henry Leslie,	<i>Girard,</i>	Math. and Physics.
Chase, Adelaide Maria,	<i>Chicago,</i>	Library.
Chipps, Halbert Lilly,	<i>Sullivan,</i>	Civil Engineering.
Church, Frank Wilson,	<i>Chicago,</i>	Architecture.
Chuse, Harry Arthur,	<i>Mattoon,</i>	Mechanical Eng'g.
Clark, Edith,	<i>Vandalia,</i>	General, L. and A.
Clark, Mary Edith,	<i>Champaign,</i>	Classical.
Clark, Philip Henry,	<i>Galena,</i>	General, L. and A.
Clifford, Charles Luther,	<i>Serena,</i>	Electrical Eng'g.

Cooke, Jane Elizabeth,	<i>Monroe, Mich.,</i>	Library.
Dill, William,	<i>Little Rock, Ark.,</i>	Architecture.
Dinwiddie, Virginia,	<i>Champaign,</i>	Natural Science.
Dodds, George,	<i>Neoga,</i>	Electrical Eng'g.
DuBois, Alexander Dawes,	<i>Springfield,</i>	Electrical Eng'g.
Eastman, Harry,	<i>Rock Island,</i>	Architecture.
Ely, Howard Montgomery,	<i>Peoria,</i>	Mechanical Eng'g.
Fairchild, Edna,	<i>Toledo, Ohio,</i>	Library.
Fleager, Clarence Earl,	<i>Sheldon,</i>	Electrical Eng'g.
Flesch, Eugene William Penn,	<i>Chicago,</i>	Architectural Eng'g.
Foberg, John Albert,	<i>Chicago,</i>	Math. and Physics.
Fowler, Robert Lambert,	<i>Charity,</i>	Civil Engineering.
Fraser, William Alexander,	<i>La Salle,</i>	Mechanical Eng'g.
Gallaher, Lewis Theron,	<i>Mt. Palatine,</i>	Natural Science.
Garver, Daisy,	<i>Bloomington,</i>	Classical.
Gerber, Winfred Dean,	<i>Rockford,</i>	Municipal Engineering.
Gilchrist, Hugh McWhurr,	<i>Gilchrist,</i>	Electrical Eng'g.
Ginzel, Roland Francis,	<i>Trenton,</i>	Architecture.
Goodman, Ella,	<i>Chicago,</i>	General, L. and A.
Graham, Archie James,	<i>Gallipolis, Ohio,</i>	Natural Science.
Graham, George Woods,	<i>Freeport,</i>	Civil Engineering.
Griffin, Walter B,	<i>Elmhurst,</i>	Architectural Eng'g.
Grim, Fred,	<i>Canton,</i>	Civil Engineering.
Hall, Louis Dixon,	<i>Hawarden, Ia.,</i>	Agriculture.
Harrower, John Charles,	<i>Barrington,</i>	Mechanical Eng'g.
Haseltine, Warren Edmund,	<i>Aurora,</i>	Chemistry.
Hawley, William Albert,	<i>Dundee,</i>	Civil Engineering.
Hazlitt, Albert Nichols,	<i>Ottawa,</i>	Architecture.
Herwig, John Newton,	<i>Mason City,</i>	Mechanical Eng'g.
Hill, Irwyn Horatio,	<i>Joliet,</i>	Architecture.
Hoagland, John King,	<i>Herborn,</i>	Agriculture.
Hubbard, George Wallace,	<i>Urbana,</i>	Mechanical Eng'g.
Hughston, Allie Dellena,	<i>Urbana,</i>	Natural Science.
James, Frederick Milton,	<i>Piasa,</i>	Natural Science.
Jones, Louise,	<i>Champaign,</i>	General, L. and A.
Jutton, Emma Reed,	<i>Champaign,</i>	Library.
Kable, James Franklin,	<i>Virden,</i>	Architectural Eng'g.
Ketchum, Daniel Clement,	<i>Champaign,</i>	Political Science.
Krahl, Benjamin Franklin,	<i>Aurora,</i>	Civil Engineering.
Krause, Louise Beerstecher,	<i>Chicago,</i>	Library.
Landel, Ida Susan,	<i>Paxton,</i>	Eng. and Modern Lang.

Latzer, John Albert,	<i>Highland,</i>	Agriculture.
Lawrence, Carroll Gray,	<i>Carbondale,</i>	Architecture.
Leach, William Blake,	<i>McLean,</i>	Eng. and Modern Lang.
Leutwiler, Oscar Adolph,	<i>Highland,</i>	Mechanical Eng'g.
Loftus, Ella,	<i>Champaign,</i>	General, L. and A.
McElfresh, Fred Morgan,	<i>Jacksonville,</i>	Natural Science.
Meharry, Jesse Erle,	<i>Tolono,</i>	Political Science.
Mercil, Benoni Edward,	<i>Chicago,</i>	Electrical Eng'g.
Merrill, Stillwell Frederick,	<i>Collinsville,</i>	Chemistry.
Montross, Sarah Elizabeth,	<i>Chicago,</i>	Library.
Newell, Mason Harder,	<i>Springfield,</i>	General, L. and A.
Nilsson, Olaf Anton,	<i>Urbana,</i>	Architectural Eng'g.
Owbridge, Lionel Herbert,	<i>Springfield,</i>	Architecture.
Owens, Dasie Margaret,	<i>Urbana,</i>	Natural Science.
Paine, Arthur Elijah,	<i>Rosemond,</i>	Classical.
Parham, Nellie E,	<i>Lima, Ind.,</i>	Library.
Paul, Wesley Arthur,	<i>Peoria,</i>	Natural Science.
Pierce, Mary Turner,	<i>Chicago,</i>	Library.
Postel, Fred Jacob,	<i>Mascoutah,</i>	Electrical Eng'g.
Railsback, Roy J,	<i>Hopedale,</i>	Classical.
Raymond, Ruth Cleveland,	<i>Sidney,</i>	General, L. and A.
Reat, Fred Lee,	<i>Tuscola,</i>	General, L. and A.
Rhoads, Horace Adams,	<i>Champaign,</i>	General, L. and A.
Ritchey, Felix,	<i>Cadwell,</i>	General, L. and A.
Robinson, Phillip Sidney,	<i>Sharon, Vt.,</i>	Art and Design.
Rolfe, Martha Deette,	<i>Champaign,</i>	Natural Science.
Rudnick, Paul Frederick Augustus,	<i>Chicago,</i>	Chemistry.
Sawyer, John Henry,	<i>Magnet,</i>	Natural Science.
Schutt, Walter Robert,	<i>Belleville,</i>	Ger. and Romance Lang.
Seely, Garrett Teller,	<i>Oswego,</i>	Civil Engineering.
Sheean, Frank Thomas,	<i>Galena,</i>	General, L. and A.
Sheean, Henry David,	<i>Galena,</i>	General, L. and A.
Sheldon, Carl Edmunds,	<i>Sterling,</i>	General, L. and A.
Smith, Charles Augustus,	<i>Mattoon,</i>	Architecture.
Smith, Florence Mary,	<i>Urbana,</i>	General, L. and A.
Smoot, Elma,	<i>Danville,</i>	General, L. and A.
Staley, Maggie Edith,	<i>Urbana,</i>	General, L. and A.
Streight, Laura Allana,	<i>Franklinville, N. Y.,</i>	Library.
Swenson, Sidney Orin,	<i>Chicago,</i>	Electrical Eng'g.
Tarrant, William Henry,	<i>Champaign,</i>	Civil Engineering.
Tebbetts, George Edward,	<i>Chicago,</i>	Civil Engineering.

Theiss, Otto John,	<i>Sublette,</i>	Civil Engineering.
Ullensvang, Martin L,	<i>Steward,</i>	Natural Science.
Uthoff, Herman Conrad,	<i>Peru,</i>	Philosophy, S.
Vial, Alice Mildred,	<i>Western Springs,</i>	General, L. and A.
Volk, Edmund,	<i>Mendota,</i>	Electrical Eng'g.
Walker, Herbert William,	<i>Dundee,</i>	Electrical Eng'g.
Weaver, Ben: Perley,	<i>Urbana,</i>	Natural Science.
Webster, William W,	<i>Urbana,</i>	Mechanical Eng'g.
Wernham, James Ingersoll,	<i>Marengo,</i>	Natural Science.
Whitmeyer, Mark Hubert,	<i>Danville,</i>	Architecture.
Willcox, Maurice Meacham,	<i>Elmore,</i>	Civil Engineering.
Williams, George Bassett,	<i>Washington, D. C.,</i>	Arch. Eng'g.
Williams, Mary Floyd,	<i>Oakland, Cal.,</i>	Library.
Wilmarth, George Henry,	<i>Aurora,</i>	Electrical Eng'g.
Wilson, Guy Mitchell,	<i>Frankfort, Ind.,</i>	Philosophy, S.
Woodworth, Minnie Barney,	<i>Champaign,</i>	General, L. and A.
Young, Bertram Otho,	<i>LeRoy,</i>	General, L. and A.

**SOPHOMORE**

Allen, Frank Gilbert,	<i>Rock Island,</i>	Electrical Eng'g.
Appelquist, Jerome Gustav,	<i>Orion,</i>	Civil Engineering.
Applegate, Alpheus Miller,	<i>Atlanta,</i>	Music.
Arps, George Frederick,	<i>Cary,</i>	Natural Science.
Bear, Katharine W,	<i>Ludlow,</i>	Math. and Physics.
Bird, Frederick Joel,	<i>Woodstock,</i>	Mechanical Eng'g.
Bixby, Alice Persis,	<i>Champaign,</i>	Natural Science.
Bocock, Clarence Edgar,	<i>Bradford,</i>	General, L. and A.
Booker, Lucile Alice,	<i>Champaign,</i>	Eng. and Modern Lang.
Borton, William Franklin,	<i>DeLand,</i>	Mechanical Eng'g.
Bracken, Ellis Freeman,	<i>Greenview,</i>	Electrical Eng'g.
Branch, Elizabeth,	<i>Champaign,</i>	Library.
Branch, James McKenne,	<i>Champaign,</i>	Agriculture.
Brown, William Jay,	<i>Urbana,</i>	Architecture.
Bryant, Ralph Clement,	<i>Princeton,</i>	Natural Science.
Burke, Eugene,	<i>Champaign,</i>	Philosophy, S.
Busey, Laura,	<i>Urbana,</i>	General, L. and A.
Bush, John Kenyon,	<i>Joliet,</i>	General, L. and A.
Campbell, Bruce Alexander,	<i>Albion,</i>	General, L. and A.
Church, Walter Samuel,	<i>Chicago,</i>	Architecture.
Clinton, Edgar Marcellus,	<i>Polo,</i>	Natural Science.
Craig, Frank Hale,	<i>Fair Grange,</i>	Political Science.

Curtis, Flora Elizabeth,	<i>Champaign,</i>	General, L. and A.
Darmer, George Alexander,	<i>Champaign,</i>	Natural Science.
Davison, Herbert,	<i>Rock Falls,</i>	Classical.
Dobbins, Lester Charles,	<i>Champaign,</i>	Political Science.
Dowiatt, Stanislav,	<i>Chicago,</i>	Civil Engineering.
Dunning, William Niel,	<i>Chicago,</i>	Civil Engineering.
Eagelston, Frank Ward,	<i>Bradford,</i>	Civil Engineering.
Eddy, Clarence LeRoy,	<i>Leslie, Ia.,</i>	Civil Engineering.
Fairclo, George Cassius,	<i>Sycamore,</i>	Electrical Eng'g.
Few, Walter Henderson,	<i>Delavan,</i>	Electrical Eng'g.
Forden, James Russell,	<i>Springfield,</i>	General, L. and A.
Foster, William Grant,	<i>Urbana,</i>	Architecture.
Francis, Frank D,	<i>New Lenox,</i>	General, L. and A.
Freeman, Harry Eben,	<i>Millington,</i>	Natural Science.
Fucik, Edward James,	<i>Chicago,</i>	Electrical Eng'g.
Gastman, Louise Antoinette,	<i>Decatur,</i>	General, L. and A.
Gernand, William Isaac,	<i>Rossville,</i>	Electrical Eng'g.
Gibbs, Laura Russell,	<i>Riverton, Ky.,</i>	Library.
Gillett, Walter Noble,	<i>Chicago,</i>	Electrical Eng'g.
Goldsmith, Elliott Robert,	<i>Oak Park,</i>	General, L. and A.
Goodell, John,	<i>Chandlerville,</i>	Civil Engineering.
Gray, Robert,	<i>Lily Lake,</i>	Electrical Eng'g.
Griffith, George John,	<i>Savanna,</i>	Eng. and Modern Lang.
Griffiths, John, Jr.,	<i>Chicago,</i>	Architectural Eng'g.
Hanson, Rachele Margaret,	<i>Urbana,</i>	Natural Science.
Harker, George Mifflin,	<i>Carbondale,</i>	General, L. and A.
Harker, Oliver Albert, Jr.,	<i>Carbondale,</i>	Eng. and Modern Lang.
Harrison, Dale Stuart,	<i>Sterling,</i>	Civil Engineering.
Hartrick, Dinchen Clara,	<i>Urbana,</i>	Eng. and Modern Lang.
Hartrick, Louis Eugene,	<i>Urbana,</i>	Natural Science.
Hartrick, Nancy Emma,	<i>Urbana,</i>	Eng. and Modern Lang.
Hasson, Harry,	<i>Lewistown,</i>	Chemistry.
Hazzard, Nellie,	<i>Monticello,</i>	General, L. and A.
Helton, Alfred Joseph,	<i>Atwood,</i>	General, L. and A.
Hines, Edward George,	<i>Huey,</i>	Architecture.
Hinrichsen, Edward Eugene,	<i>Jacksonville,</i>	Electrical Eng'g.
Hopkins, Milton Irwin,	<i>Indianapolis, Ind.,</i>	Electrical Eng'g.
Housel, Oscar Lloyd,	<i>Galesburg,</i>	Electrical Eng'g.
Huffman, Carl,	<i>Caruthersville, Mo.,</i>	Gen'l, L. and A.
Hughes, Emma Edna,	<i>Ferris,</i>	Natural Science.
Husk, Fredrick William,	<i>Shabbona,</i>	Electrical Eng'g.

Iddings, Daisy Deane,	<i>Atlanta,</i>	General, L. and A.
Jackson, Walter Harker,	<i>Vienna,</i>	Civil Engineering.
Johnson, Charles Sunderland,	<i>Champaign,</i>	Mechanical Eng'g.
Johnson, Frederick Dawson,	<i>Alton,</i>	Mechanical Eng'g.
Johnson, James Edward,	<i>Champaign,</i>	General, L. and A.
Johnston, Arthur Russell,	<i>Joliet,</i>	Chemistry.
Jordan, George Thomas,	<i>Tolono,</i>	General, L. and A.
Joy, Samuel Scott,	<i>Princeton,</i>	Architectural Eng'g.
Keeney, Henry Ezra,	<i>Sterling,</i>	Mechanical Eng'g.
Kepler, George Frank,	<i>Ashtabula, Ohio,</i>	Architecture.
Kettenring, Henry Sylvester,	<i>Pekin,</i>	General, L. and A.
Kratz, James Piatt,	<i>Monticello,</i>	General, L. and A.
Kuehn, Alfred,	<i>Chicago,</i>	Civil Engineering.
Latzer, Jennie Mary,	<i>Highland,</i>	Natural Science.
Lee, Julian Liechaski,	<i>Memphis, Tenn.,</i>	Mechanical Eng'g.
Logue, Charles Louis,	<i>Danville,</i>	Chemistry.
McCollum, Harvey Darling,	<i>Louisville,</i>	General, L. and A.
McCune, Fred Leavitt,	<i>Sterling,</i>	Mechanical Eng'g.
McMurry, Fred Russell,	<i>Normal,</i>	General, L. and A.
McWilliams, Nellie Louise,	<i>Champaign,</i>	General, L. and A.
Martin, Robert William,	<i>Wilmington,</i>	Political Science.
Mather, Grace Ella,	<i>Joliet,</i>	Natural Science.
Mather, Lydia Maria,	<i>Joliet,</i>	Latin.
Maury, Harvey,	<i>Rossville,</i>	Civil Engineering.
Mayall, Edwin Lyman,	<i>Peoria,</i>	Mechanical Eng'g.
Mills, Ralph Walter,	<i>Webster Groves, Mo.,</i>	Nat. Science.
Moorshead, Alfred Lee,	<i>St. Louis, Mo.,</i>	Architecture.
Norton, Wilbur Perry,	<i>Alton,</i>	Electrical Eng'g.
Olsen, Joseph Matthias,	<i>Seneca,</i>	General, L. and A.
Owens, Wilkens Hoover,	<i>Baltimore, Md.,</i>	Natural Science.
Palmer, William Gay,	<i>Princeton,</i>	General, L. and A.
Pettinger, Robert Gerald,	<i>Cumberland, Ia.,</i>	Electrical Eng'g.
Prickett, Fred William,	<i>Lewistown,</i>	Agriculture.
Radley, Guy Richardson,	<i>Sandwich,</i>	Electrical Eng'g.
Rapp, George Leslie,	<i>Carbondale,</i>	Architecture.
Raymond, John Eaton,	<i>Sidney,</i>	Agriculture.
Reimers, Fred William,	<i>Evanston,</i>	Electrical Eng'g.
Ricker, Raymond Craver,	<i>Harvey,</i>	Architecture.
Robbins, Ernest Thompson,	<i>Payson,</i>	Agriculture.
Robertson, Lloyd Silas,	<i>Barrington,</i>	Agriculture.
Rochow, Carl John Frederick,	<i>Rock Island,</i>	Natural Science.

Safford, Edward Brigham,	<i>Sycamore,</i>	Chemistry.
Samson, Charles Leonard,	<i>Deers,</i>	Mechanical Eng'g.
Sandberg, Carl Eric,	<i>Köping, Sweden,</i>	Architecture.
Schenck, Charles, Jr.,	<i>Chicago,</i>	Civil Engineering.
Schneider, Edward John,	<i>Pontiac,</i>	Electrical Eng'g.
Sherman, William Horace,	<i>Sullivan,</i>	General, L. and A.
Slocum, Roy Harley,	<i>Loda,</i>	Civil Engineering.
Smith, George Russell,	<i>Urbana,</i>	Mechanical Eng'g.
Smith, William Walter,	<i>Broadlands,</i>	General, L. and A.
Smurr, Tom Woods,	<i>Ottawa,</i>	Political Science.
Snider, Earl Quinter,	<i>Cerro Gordo,</i>	Electrical Eng'g.
Soverhill, Harvey Allen,	<i>Tiskilwa,</i>	Mechanical Eng'g.
Spurgin, Isaac Meigs,	<i>Urbana,</i>	General, L. and A.
Stakemiller, Benjamin Benton,	<i>Sterling,</i>	Civil Engineering.
Stern, Renée Bernd,	<i>Chicago,</i>	Library.
Still, Samuel Jay,	<i>Cerro Gordo,</i>	Civil Engineering.
Stubbins, Lewis Clark,	<i>Mattoon,</i>	Civil Engineering.
Thompson, George Henry,	<i>Champaign,</i>	Political Science.
Thompson, Ralph,	<i>Carbondale,</i>	General, L. and A.
Thorpe, John Charles,	<i>Urbana,</i>	Mechanical Eng'g.
Tompkins, Clara Alice,	<i>Grover,</i>	Agriculture.
Tracy, Alice Emelyn,	<i>Biloxi, Miss.,</i>	Architecture.
Tyler, Walter Simeon,	<i>Joliet,</i>	Electrical Eng'g.
Vance, William Herbert,	<i>Edwardsville,</i>	Civil Engineering.
VanPatten, Seth Fields,	<i>Clarion, Ia.,</i>	General, L. and A.
Wason, Chester Herman,	<i>Canton,</i>	Electrical Eng'g.
Wehrstedt, Otto Charles,	<i>Evanston,</i>	Civil Engineering.
Wetherbee, Charles Earl,	<i>Sterling,</i>	Architecture.
Widmann, Otto,	<i>Old Orchard, Mo.,</i>	Natural Science.
Wiley, Raymond Sly,	<i>Potomac,</i>	Architecture.
Wood, Harvey Edgerton,	<i>Joliet,</i>	Chemistry.
Woods, William Francis,	<i>Ludlow,</i>	Classical.
Wray, Thomas,	<i>Chicago,</i>	Electrical Eng'g.
Zmrhal, Yaroslav,	<i>Chicago,</i>	Natural Science.

## FRESHMEN

Adams, Elisha Brown,	<i>Jacksonville,</i>	Electrical Eng'g.
Aikin, Arthur Lewis,	<i>Urbana,</i>	Chemistry.
Allen, John L,	<i>Roodhouse,</i>	Electrical Eng'g.
Armitage, James Howard,	<i>Buckingham,</i>	Classical.
Armstrong, Emilie Edith,	<i>Champaign,</i>	General, L. and A.

*Arthur, Charles Alvin,	<i>Champaign,</i>	Electrical Eng'g.
Atwood, John Roy,	<i>Roscoe,</i>	Agriculture.
Bailey, Donald Herbert,	<i>Clinton,</i>	Classical.
Baker, Horatio Weber,	<i>Champaign,</i>	Mechanical Eng'g.
Baldwin, Aneta,	<i>Paris,</i>	General, L. and A.
Ballard, David Paige,	<i>Maywood,</i>	Electrical Eng'g.
Barrett, James Theophilus,	<i>Butler,</i>	General, L. and A.
Barry, George Richard,	<i>Hillsboro,</i>	Electrical Eng'g.
Bassett, Frank Deloss,	<i>Kewanee,</i>	Architectural Eng'g.
Bates, John Schuyler,	<i>Monmouth,</i>	Civil Engineering.
Beebe, Florence Jennie,	<i>Blunt, So. Dak.,</i>	General, L. and A.
Bell, Edgar Deforest,	<i>Urbana,</i>	Mechanical Eng'g.
Bernhardi, Carl Oscar,	<i>Rock Island,</i>	Natural Science.
Berry, Claude,	<i>Paw Paw,</i>	Civil Engineering.
Black, Alice Mary,	<i>Urbana,</i>	Eng. and Modern Lang.
Black, George McCall,	<i>Canton,</i>	Electrical Eng'g.
Boon, Harry Larry,	<i>Armstrong,</i>	General, L. and A.
Bowles, Ida Huston,	<i>Paris,</i>	General, L. and A.
Brayton, Louis Frederick,	<i>Mt. Morris,</i>	Architectural Eng'g.
Brookie, Frank McCord,	<i>Vincennes, Ind.,</i>	Civil Engineering.
Brunner, Sidonia,	<i>Peru,</i>	Art and Design.
Buchanan, Edwin Boyd,	<i>Paris,</i>	Natural Science.
Burdick, Jay Horace,	<i>Elgin,</i>	Agriculture.
Burleigh, Cornelius Howard,	<i>Evanston,</i>	Architectural Eng'g.
Burroughs, Zoelah Maria,	<i>Lafayette, Ind.,</i>	General, L. and A.
Caldwell, Charles Burr,	<i>Monticello,</i>	Natural Science.
Calhoun, Etta Anne,	<i>Champaign,</i>	Natural Science.
Campbell, Ashton Ellsworth,	<i>Champaign,</i>	Political Science.
Canmann, Harris Louis,	<i>Chicago,</i>	Civil Engineering.
Chamberlin, Charles Cory,	<i>Hoopeston,</i>	Electrical Eng'g.
Chapin, Edward Pierce,	<i>Champaign,</i>	Eng. and Mod. Lang.
Chapman, Charles Hiram,	<i>Vienna,</i>	Classical.
Charles, Clayton Henry,	<i>Woodstock,</i>	Natural Science.
Chester, Marguerite,	<i>Champaign,</i>	General, L. and A.
Chiggs, Willis Cullen,	<i>Sullivan,</i>	Mechanical Eng'g.
Chisholm, Estella,	<i>Farmer City,</i>	Classical.
Coen, Homer,	<i>Olney,</i>	General, L. and A.
Collins, Guy Richard,	<i>Urbana,</i>	Mechanical Eng'g.
Collins, John Milton,	<i>Keokuk, Ia.,</i>	Architectural Eng'g.

\*Deceased.



Collis, Frank Bernard,	<i>Rockford,</i>	Electrical Eng'g.
Cook, Clara,	<i>Farmer City,</i>	Classical.
Crossland, George Marshall,	<i>Sheldon,</i>	General, L. and A.
Crum, Bird Emily,	<i>Farmer City,</i>	Classical.
Cummings, Wilber Judd,	<i>Sparta, Mich.,</i>	Architecture.
Curfman, Lawrence Everrett,	<i>Urbana,</i>	Math. and Physics.
Daggett, Daisy Viola,	<i>Macon,</i>	Natural Science.
Daugherty, Anna Elizabeth,	<i>Champaign,</i>	General, L. and A.
Davis, Mary Belle,	<i>Urbana,</i>	Math. and Astron.
Davis, Roscoe Conklin,	<i>Ashland, Ky.,</i>	Electrical Eng'g.
Day, Charles Phillip,	<i>Champaign,</i>	Mechanical Eng'g.
Denning, Harry,	<i>Gillum,</i>	Agriculture.
Dinwiddie, Elizabeth,	<i>Champaign,</i>	Architecture.
Drew, Fred Leon,	<i>Elgin,</i>	Civil Engineering.
Dunn, Cornelia Beatrice,	<i>Paris,</i>	General, L. and A.
Ealey, Minnie,	<i>Urbana,</i>	Music.
Edwards, Ralph Owen,	<i>Belleflower,</i>	General, L. and A.
Eidam, Edward George,	<i>Blue Island,</i>	Mechanical Eng'g.
Emmett, Arthur Donaldson,	<i>Peoria,</i>	Architectural Eng'g.
Evans, Waldo Carl,	<i>Danville,</i>	Eng. and Mod. Lang.
Ferris, Harold Gano,	<i>Carthage,</i>	Mechanical Eng'g.
Fishback, Mason McCloud,	<i>Paris,</i>	General L. and A.
Fisher, James Melville,	<i>Neoga,</i>	Classical.
Frazey, Nellie May,	<i>Urbana,</i>	General, L. and A.
Frost, Frank G,	<i>Gays,</i>	Electrical Eng'g.
Fulton, Robert Bruce,	<i>Hartford City, Ind.,</i>	Civil Eng'g.
Gardiner, Charles Matthew,	<i>Champaign,</i>	Chemistry.
Garver, Louis Cormany,	<i>Rockford,</i>	Civil Engineering.
Garvin, Joseph Aloysius,	<i>Memphis, Tenn.,</i>	Architecture.
Gayman, Myrtle,	<i>Champaign,</i>	Library.
Gelder, Edgar Earl,	<i>Virden,</i>	Natural Science.
Gibbs, George, Jr.,	<i>Riverton, Ky.,</i>	Natural Science.
Gilmore, Thomas,	<i>Macomb,</i>	Electrical Eng'g.
Gleason, Henry Allan,	<i>Champaign,</i>	Natural Science.
Goodwin, John Mitchell,	<i>Hot Springs, Ark.,</i>	General, L. and A.
Gordon, Joseph Hinckley,	<i>Vandalia,</i>	General, L. and A.
Graber, Howard Tyler,	<i>Peoria,</i>	Chemistry.
Green, Frances Myrtle,	<i>Urbana,</i>	General, L. and A.
Gridley, Harry Norman,	<i>Virginia,</i>	General, L. and A.
Griswold, Augustus Harold,	<i>Princeton,</i>	Electrical Eng'g.
Gross, Albertina Marguerite,	<i>Joliet,</i>	Natural Science.

Gulick, Margaret Grace,	<i>Champaign,</i>	General, L. and A.
Haake, Charles John,	<i>Chicago,</i>	General, L. and A.
Haas, Grace Anne,	<i>Farmer City,</i>	General, L. and A.
Hammers, Edna Rose,	<i>Champaign,</i>	General, L. and A.
Hannan, John Edward,	<i>Champaign,</i>	General, L. and A.
Hartrick, Guy Russell,	<i>Urbana,</i>	Natural Science.
Harvey, Raymond Wade,	<i>Griggsville,</i>	Natural Science.
Hayes, Zella Bernice,	<i>Rankin,</i>	General, L. and A.
Hays, Carl,	<i>Urbana,</i>	Mechanical Eng'g.
Headen, Thomas Moulton,	<i>Shelbyville,</i>	General, L. and A.
Hensley, Lee Grant,	<i>Champaign,</i>	Natural Science.
Hensley, Marion Charles,	<i>Champaign,</i>	Chemistry.
Hicks, Byron Wallace,	<i>Warren,</i>	Electrical Eng'g.
Hinckley, George Clifford,	<i>Aurora,</i>	Chemistry.
Hinkle, Ida May,	<i>Champaign,</i>	General, L. and A.
Hobble, Arthur Casson,	<i>Rushville,</i>	Electrical Eng'g.
Holcomb, Timothy Osmond, Jr.,	<i>Milmine,</i>	Math. and Physics.
Hopkins, Mabel,	<i>Indianapolis, Ind.,</i>	General, L. and A.
Hoppin, Charles Albert,	<i>Aurora,</i>	Mechanical Eng'g.
Horner, Harlan Hoyt,	<i>Cerro Gordo,</i>	General, L. and A.
Hunter, Edward Spencer,	<i>Paris,</i>	Civil Engineering.
Hunter, Harry Edgar,	<i>Newton, Ia.,</i>	Architecture.
Kariher, Harry,	<i>Champaign,</i>	Natural Science.
Katt, Adolph John,	<i>Belleville,</i>	Mechanical Eng'g.
Keator, Edward Oris,	<i>Polo,</i>	Electrical Eng'g.
Kemmerer, John Martin,	<i>Assumption,</i>	Civil Engineering.
Ketchum, George Spencer,	<i>Champaign,</i>	Natural Science.
Kirkpatrick, Harlow Barton,	<i>Anna,</i>	Civil Engineering.
Kreikenbaum, Charles Otto Adolph,	<i>Chicago,</i>	Chemistry.
Lamkin, Grace Minerva,	<i>Champaign,</i>	General, L. and A.
Layton, Katherine Alberta,	<i>Canton,</i>	Classical.
Lee, Albert R.,	<i>Champaign,</i>	General, L. and A.
Lewis, Addison Thompson,	<i>Chatham,</i>	Chemistry.
Lindley, Walter Charles,	<i>Neoga,</i>	General, L. and A.
Lingee, Fred Norton,	<i>Du Quoin,</i>	Electrical Eng'g.
Lodge, Paul Edmund,	<i>Monticello,</i>	General, L. and A.
Logan, Harry Ralph,	<i>Arcola,</i>	General, L. and A.
Lotz, John Rudolph,	<i>Lockport,</i>	Electrical Eng'g.
Lowenthal, Fred,	<i>Chicago,</i>	Classical.
Lyman, Frank Lewis,	<i>Farmingdale,</i>	Chemistry.
Lytle, Ernest Barnes,	<i>Decatur,</i>	Math. and Physics.

McAnally, Harry Forrest,	<i>Paris,</i>	Electrical Eng'g.
McCall, Eugene Adolphus,	<i>Vienna,</i>	General, L. and A.
McCormick, Roscoe,	<i>Garber,</i>	Natural Science.
McDowell, William Orin,	<i>Waterloo, Ia.,</i>	Natural Science.
McFadden, John Hill,	<i>Arcola,</i>	General, L. and A.
McGee, Benjamin Franklin,	<i>Vienna,</i>	General, L. and A.
McGill, Ruel Starr,	<i>Chicago,</i>	Civil Engineering.
McLane, Elmer Cavett,	<i>Allerton, Ia.,</i>	Classical.
McLean, Elmer Lyman,	<i>Lombardville,</i>	Mechanical Eng'g.
Maffit, Robert Usrey,	<i>Decatur,</i>	Civil Engineering.
*Magner, Harold Bernard,	<i>Morris,</i>	Civil Engineering.
Mahurin, Guy Marshal,	<i>Indianapolis, Ind.,</i>	Architecture.
Manspeaker, Pearle,	<i>Champaign,</i>	General, L. and A.
Martin, Camden Edward,	<i>Lacon,</i>	General, L. and A.
Martin, Webb Wilde,	<i>Jerseyville,</i>	Chemistry.
Mathews, Clyde Milton,	<i>Urbana,</i>	General, L. and A.
Merrill, Orland Paul,	<i>Elgin,</i>	Natural Science.
Miles, Rutherford Thomas,	<i>Urbana,</i>	General, L. and A.
Miller, George Louis,	<i>Champaign,</i>	Natural Science.
Miller, William Pitt,	<i>Champaign,</i>	Math. and Physics.
Miner, Timothy Ralph,	<i>Adair,</i>	Agriculture.
Mitchell, Annie,	<i>Bement,</i>	General, L. and A.
Moon, Arthur Edward,	<i>Champaign,</i>	General, L. and A.
Murphy, John Campbell,	<i>Long Grove, Ia.,</i>	Chemistry.
Murphy, Merritt Norton,	<i>Chicago,</i>	Electrical Eng'g.
Murray, Charles Brent,	<i>LeRoy,</i>	Electrical Eng'g.
Myers, Jesse J,	<i>Green River,</i>	Natural Science.
Newcomb, Cyrus Forsyth,	<i>Champaign,</i>	Natural Science.
Nichols, Gunther,	<i>Lima, Ind.,</i>	General, L. and A.
Norton, Charles Waterman,	<i>Lockport,</i>	Classical.
Null, Marion Michael,	<i>Blandinsville,</i>	Natural Science.
O'Hair, Edna,	<i>Laurel, Ind.,</i>	General, L. and A.
Otwell, Allen Meade,	<i>Plainview,</i>	Natural Science.
Parkins, Charles Raymond,	<i>Chicago,</i>	Civil Engineering.
Patrick, Frederick Phillips,	<i>Blue Island,</i>	Architectural Eng'g.
Peeples, Cornelius James,	<i>Shawneetown,</i>	General, L. and A.
Plant, Sarah Lulu,	<i>Champaign,</i>	General, L. and A.
Pletcher, Nuba Mitchel,	<i>Hoopeston,</i>	Natural Science.
Polk, Robert Collins,	<i>Champaign,</i>	General, L. and A.
Pollard, Earle Royal,	<i>Centralia,</i>	Mechanical Eng'g.

\*Deceased.

Price, Helen Louise,	<i>Champaign,</i>	Library.
Radcliffe, William Hickman,	<i>Springfield,</i>	Civil Engineering.
Radebaugh, Estella May,	<i>Rippon, Ia.,</i>	General, L. and A.
Read, Nellie Lewis,	<i>Urbana,</i>	General, L. and A.
Reardon, Neal Daniel,	<i>Boynton,</i>	General, L. and A.
Reeves, George I,	<i>Wauponsee,</i>	Natural Science.
Roberts, Harry Ashton,	<i>Ottawa,</i>	Civil Engineering.
Rolfe, Mary Annette,	<i>Champaign,</i>	Natural Science.
Russell, William Cissna,	<i>Milford,</i>	Civil Engineering.
Sawyer, George Kingsley,	<i>Carpentersville,</i>	Mechanical Eng'g.
Schulte, Mabel,	<i>Hopedale,</i>	General, L. and A.
Schulz, Ernest A,	<i>White, So. Dak.,</i>	Electrical Eng'g.
Scott, Frank William,	<i>Centralia,</i>	General, L. and A.
Seidel, Charles William,	<i>Sterling,</i>	Civil Engineering.
Shawhan, William Warren,	<i>Champaign,</i>	Natural Science.
Short, Walter Campbell,	<i>Fillmore,</i>	General, L. and A.
Shuler, Hugh McWhurr,	<i>Gilchrist,</i>	Civil Engineering.
Simmons, Aaron Trabue,	<i>Jerseyville,</i>	Architecture.
Sims, Mrs. Flora Morris,	<i>Urbana,</i>	Art and Design.
Sluss, Alfred Higgins,	<i>Tuscola,</i>	Electrical Eng'g.
Smith, Clarence Kirby,	<i>Monticello,</i>	Electrical Eng'g.
Smith, George Carroll,	<i>Flora,</i>	General, L. and A.
Steely, George,	<i>Danville,</i>	General, L. and A.
Stevenson, Arthur Gladred,	<i>Urbana,</i>	General, L. and A.
Stevenson, Ralph Ewing,	<i>Bloomington,</i>	Mechanical Eng'g.
Stewart, Miles Vincent,	<i>Toulon,</i>	Electrical Eng'g.
Storrs, Martha,	<i>Creston, Ia.,</i>	General, L. and A.
Summerhays, William Arthur,	<i>Chicago,</i>	Civil Engineering.
Swift, Charles Clyde,	<i>Streator,</i>	Civil Engineering.
Tallyn, Louis Liston,	<i>Benson,</i>	Civil Engineering.
Thornton, Robert Ingersoll,	<i>Magnolia,</i>	Civil Engineering.
Tull, Effie May,	<i>Farmer City,</i>	Classical.
Van Arsdale, Edith Maud,	<i>Beatrice, Neb.,</i>	Library.
Van Duzer, Edward Craig,	<i>Rockford,</i>	General, L. and A.
Veirs, David Carroll,	<i>Urbana,</i>	Mechanical Eng'g.
Wahl, Henry,	<i>Sterling,</i>	Electrical Eng'g.
Wait, Ernest Ludden,	<i>Urbana,</i>	Natural Science.
Warner, Harry Jackson,	<i>Prophetstown,</i>	Chemistry.
Webb, Alma Blanche,	<i>Taylorville,</i>	Classical.
Webb, Edwin Warnock,	<i>Bloomington,</i>	Civil Engineering.
Widmayer, George Henry,	<i>Virginia,</i>	General, L. and A.

Wilcox, Emmons John,	<i>Seneca,</i>	General, L. and A.
Williams, Seymour,	<i>Monticello,</i>	Classical.
Willis, Harry Thomas,	<i>Champaign,</i>	Mechanical Eng'g.
Willis, Wilber Fred,	<i>Chicago,</i>	Civil Engineering.
Willson, Hiram Everett,	<i>Carbondale,</i>	Electrical Eng'g.
Wolcott, Richard John,	<i>Batavia,</i>	Mechanical Eng'g.
Woodruff, Ralph Hiram,	<i>Eagle Point,</i>	General, L. and A.
Wright, Sidney Walter,	<i>Atlanta,</i>	General, L. and A.
Zipf, Ferdinand,	<i>Hopedale,</i>	Natural Science.
Zuck, Cassius Harmond,	<i>Rockford,</i>	Mechanical Eng'g.

## SPECIALS

Adsit, Bertram Wilson,	<i>Wellington,</i>	General, L. and A.
Ahlrich, Augusta,	<i>Urbana,</i>	Music.
Ainsworth, Nellie Elizabeth,	<i>Champaign,</i>	Music.
Allen, Albert Miller,	<i>Oberlin, Ohio,</i>	Architecture.
Allen, Layton,	<i>Indianapolis, Ind.,</i>	Architecture.
Arnold, Clarence Scarborough,	<i>Payson,</i>	Electrical Eng'g.
Atwood, Frank Howard,	<i>Dwight,</i>	General, L. and A.
Bartholomew, Ross,	<i>Vermont,</i>	Agriculture.
Bear, Ida Pauline,	<i>Ludlow,</i>	Art and Design.
Black, Mrs. Anna Eliza,	<i>Champaign,</i>	Philosophy, S.
Boggess, Leaton McCollister,	<i>Roodhouse,</i>	General, L. and A.
Bradfield, Angie May,	<i>Palermo,</i>	General, L. and A.
Breed, Elmer,	<i>Monmouth,</i>	Natural Science.
Brode, Arletta Elizabeth,	<i>Urbana,</i>	Natural Science.
Brookie, Mrs. Alice Austin,	<i>Vincennes, Ind.,</i>	Art and Design.
Brower, Florence,	<i>Champaign,</i>	Music.
Brown, Mrs. Lucy Stewart,	<i>Urbana,</i>	Mathematics.
Brown, William Bolt,	<i>Champaign,</i>	General, L. and A.
Buchanan, James William,	<i>Charleston, Ind.,</i>	Pedagogy, S.
Burnham, Mrs. Madge Julia,	<i>Urbana,</i>	General, L. and A.
Busey, Allen,	<i>Urbana,</i>	Music.
Calvin, Bertrand,	<i>Champaign,</i>	History.
Campbell, Mae Athleen,	<i>Champaign,</i>	Music.
Campbell, Mary Ellen,	<i>Rankin,</i>	Art and Design.
Carlisle, Mrs. Clara Thompson,	<i>Elgin,</i>	Library.
Carter, Carrie Mabel,	<i>Champaign,</i>	Art and Design.
Clark, William Owen,	<i>Scotland,</i>	Mechanical Eng'g.
Colvin, Mrs. Sarah Jane,	<i>Urbana,</i>	Art and Design.
Conard, Philip Arthur,	<i>Monticello,</i>	General, L. and A.

Crathorne, Annie Ellen,	<i>Champaign,</i>	Music.
Craw, Nellie Edna,	<i>Sadorus,</i>	Music.
Crawford, Emma,	<i>Urbana,</i>	Music.
Crossley, Elijah R.,	<i>Marshall,</i>	Natural Science.
Cunningham, Mrs. Harriet M.,	<i>Sidney,</i>	Music.
Custer, Mae Viola,	<i>Danville,</i>	Music.
Draper, Charlotte Leland,	<i>Urbana,</i>	Music.
Drummond, William Eugene,	<i>Austin,</i>	Architecture.
Dunlap, Ralph VanBuren,	<i>Canton, S. Dak.,</i>	General, L. and A.
Easton, Louis Byron,	<i>Hudson,</i>	Natural Science.
Ebersol, Elmer Tryon,	<i>Ottawa,</i>	Natural Science.
Emery, Fannie Louise,	<i>Adams, N. Y.,</i>	Art and Design.
Eno, Imle L.,	<i>Pomona, Cal.,</i>	Electrical Eng'g.
Fairchild, Oscar Harmon,	<i>Danville,</i>	Natural Science.
Fenner, Edith L.,	<i>Urbana,</i>	Music.
Ford, Ralph Leo,	<i>Lewistown,</i>	Electrical Eng'g.
Franks, Charles Wilber,	<i>Brookville,</i>	General, L. and A.
Frazier, Elmer Allen,	<i>Champaign,</i>	General, L. and A.
Freeman, James Alexander,	<i>Carbondale,</i>	Natural Science.
Frison, Edward Howard,	<i>Champaign,</i>	Art and Design.
Goodspeed, Stella,	<i>Urbana,</i>	Music.
Green, Otis Martin,	<i>Urbana,</i>	Natural Science.
Grinnell, Jessie Clare,	<i>Mayfair,</i>	Art and Design.
Hall, Arthur Raymond,	<i>East Lynn,</i>	General, L. and A.
Hanson, Francis Owen,	<i>Fifer,</i>	General, L. and A.
Harris, Thomas Luther,	<i>Modesto,</i>	Political Science.
Hauter, Andrew Edgar,	<i>Tiskilwa,</i>	General, L. and A.
Hedges, Charles Wilbur,	<i>Urbana,</i>	Natural Science.
Hipple, James Stone,	<i>Elgin,</i>	Mechanical Eng'g.
Hubachek, Lambert W.,	<i>Racine, Wis.,</i>	Architecture.
Hughes, Davis Everett,	<i>Pinkstaff,</i>	General, L. and A.
Hulsebus, Bernard Lubertus,	<i>Saxon, Ia.,</i>	Architecture.
Hutchinson, Frank,	<i>Olney,</i>	Civil Engineering.
Irwin, Herbert Ellwood,	<i>Galesburg,</i>	Mechanical Eng'g.
Jack, Robert Douglas,	<i>Chicago,</i>	Natural Science.
Jacobs, Henry,	<i>Virginia,</i>	General, L. and A.
Ketchum, Mary Phronia,	<i>Champaign,</i>	Art and Design.
Kitterman, Fred Raymond,	<i>Tiskilwa,</i>	General, L. and A.
Kuhn, Rudolph,	<i>Champaign,</i>	Art and Design.
Latzer, Alice Bertha,	<i>Highland,</i>	Natural Science.
LeFevre, Ervilla Belle,	<i>Urbana,</i>	Music.

Leib, Harvey Ellsworth,	<i>Exeter,</i>	General, L. and A.
Lesch, Mrs. Sylvia Adda,	<i>Ivesdale,</i>	Music.
Lewis, Stanley Melville,	<i>Urbana,</i>	Art and Design.
Liggett, Estelle Helen,	<i>Danville,</i>	Music.
Loeffler, Katharine Armina,	<i>Ogden,</i>	Music.
Love, Justin Jay,	<i>Moweaqua,</i>	Natural Science.
McIntyre, Margaret Pearl,	<i>Newman,</i>	Music.
McLaughlin, Nora Elvira,	<i>Penfield,</i>	Music.
Millar, Nellie Decker,	<i>Mattoon,</i>	Art and Design.
Mojonnier, Timothy,	<i>Highland,</i>	Natural Science.
Moon, Amy Constance,	<i>Champaign,</i>	General, L. and A.
Moore, Lucy Kate,	<i>Pesotum,</i>	Music.
Mount, Madison Hoge,	<i>Walnut Prairie,</i>	Electrical Eng'g.
Myers, Elsie Mae,	<i>Eldorado, Kan.,</i>	Music.
Nabstedt, Frederick,	<i>Davenport, Ia.,</i>	Electrical Eng'g.
Nash, Benjamin Franklin,	<i>Champaign,</i>	Music.
Needham, John Lowry,	<i>Neoga,</i>	Pedagogy, S.
Odbert, Alice Bradway,	<i>Indianola,</i>	Music.
Padget, Will,	<i>Palmyra,</i>	Political Science.
Patterson, Edith Lynn,	<i>Danville,</i>	General, L. and A.
Porteous, Mary Simpson,	<i>Dixon,</i>	General, L. and A.
Praeger, William Emilius,	<i>Urbana,</i>	Natural Science.
Purcell, Etta Belle,	<i>St. Joseph,</i>	General, L. and A.
Putnam, Alice,	<i>Champaign,</i>	General, L. and A.
Quirk, Elizabeth,	<i>Champaign,</i>	Music.
Reynolds, Elodie May,	<i>Golden,</i>	Art and Design.
Rhoads, Emma May,	<i>Champaign,</i>	General, L. and A.
Robinson, Robert Bruce,	<i>Albany,</i>	Civil Engineering.
Schermerhorn, Laura Dell,	<i>Newtown, Ind.,</i>	Music.
Scott, John T,	<i>LaMoille,</i>	General, L. and A.
Seaborg, Amanda Eleanora,	<i>Weldon,</i>	Music.
Seymour, Roy Vincent,	<i>Dwight,</i>	General, L. and A.
Shaw, Richard Sharrocks,	<i>Chicago,</i>	General, L. and A.
Shelton, Addison M,	<i>Loami,</i>	General, L. and A.
*Sim, Anna Mae,	<i>Urbana,</i>	Art and Design.
Simpson, Robert Archibald,	<i>Vincennes, Ind.,</i>	Agriculture.
Smith, Helen Amelia,	<i>Sidney,</i>	Music.
Smith, Percy Almerin,	<i>Dixon,</i>	General, L. and A.
Sperry, James Franklin,	<i>Champaign,</i>	Political Science.
Stanley, Otis Orion,	<i>Champaign,</i>	Classical.

\*Deceased.

Stanton, Burt Tompkins,	<i>Chicago,</i>	Mechanical Eng'g.
Stevens, Frank Asbury,	<i>Monticello,</i>	General, L. and A.
Stoltey, Jennie Florence,	<i>Champaign,</i>	General, L. and A.
Stotlar, Edwin M.,	<i>Herrin,</i>	General, L. and A.
Thordenberg, Fred Moses,	<i>Rock Island,</i>	Architecture.
Tillotson, Mabel,	<i>Kinder, La.,</i>	Music.
Tumbleson, Alvin Tredell,	<i>Harrisonville, Mo.,</i>	Architecture.
Weaver, Edith Maria,	<i>Urbana,</i>	Music.
Weinberg, Simon, Jr.,	<i>Galesburg,</i>	Electrical Eng'g.
Wells, Geneva Estelle,	<i>DuQuoin,</i>	General, L. and A.
Wentworth, John Louis,	<i>Kewanee,</i>	Mechanical Eng'g.
Wetherell, Charles E,	<i>Urbana,</i>	Architecture.
Williams, Ralph Joseph,	<i>Galesburg,</i>	Architecture.
Williamson, George Warren,	<i>Blandinsville,</i>	General, L. and A.
Wilson, Mrs. Ina,	<i>Frankfort, Ind.,</i>	General, L. and A.

## WINTER SCHOOL IN AGRICULTURE—1898

Arnott, James Valentine,	<i>Paxton.</i>
Atkinson, Avelyn Charles,	<i>Champaign.</i>
Bishop, Malon Lyle,	<i>LeRoy,</i>
Bondurant, Frank Leigh,	<i>Paxton.</i>
Buffum, George Nelson,	<i>LaFayette.</i>
Burrows, James Bering,	<i>Decatur.</i>
Clifton, Marion,	<i>Urbana.</i>
Coffmen, Thurlow Weed,	<i>Stratford.</i>
Downs, Fred Lawson,	<i>Downs.</i>
Dunlap, Fred Hiram,	<i>Savoy.</i>
Engelmann, Julius,	<i>Shiloh.</i>
Havard, Bert Henry,	<i>Urbana.</i>
Jones, Frank Cyrus,	<i>Chebanse.</i>
Kastning, Louis Fred,	<i>Schaumburg.</i>
Lyford, Custer Charles,	<i>Pasco.</i>
Maxcy, Leigh Forest,	<i>Pasfield.</i>
Patterson, Charles Irwin,	<i>Mason City.</i>
Pfingston, Fred William,	<i>Meacham.</i>
Salge, William,	<i>Schaumburg.</i>
Seago, Charles T,	<i>Jerseyville.</i>
Seltzer, John Franklin,	<i>Fairland.</i>
Vorhes, John William,	<i>Springfield.</i>
Wyllie, Albert,	<i>Vincennes, Ia.</i>



## SCHOOL OF LAW

## THIRD YEAR

Kent, Louis Maxwell, A.B., ( <i>Univ. of Ill.</i> ),	<i>Danville.</i>
Kuykendall, Andrew Jackson, A.B., ( <i>DePauw Univ.</i> ),	<i>Vienna.</i>
Spalding, Roy Verner,	<i>Byron.</i>
Worthen, George Bedell,	<i>Warsaw.</i>

## FIRST YEAR

Adams, Otto C,	<i>Cerro Gordo.</i>
Armstrong, J Latrell,	<i>Urbana.</i>
Baker, Zion Frost,	<i>Sullivan.</i>
Barnett, Ellis Richard,	<i>Clinton.</i>
Barrett, George Francis,	<i>Chicago.</i>
Beatty, John Wertz,	<i>Delavan.</i>
Bixby, Guy Masson,	<i>St. Louis, Mo.</i>
Boyd, Hobart Sherman,	<i>Lewistown.</i>
Cofield, Jesse Douglas,	<i>Arcola.</i>
Cooper, Fred Worth,	<i>Champaign.</i>
Davidson, Roy Nebeker,	<i>Champaign.</i>
Dougherty, Horace Raymond, A.B., ( <i>Univ. of Chicago</i> ),	<i>Peoria.</i>
Douglass, Reuben S, A.B., ( <i>Marietta College</i> ),	<i>Champaign.</i>
Dunseth, James Morten,	<i>Urbana.</i>
Eggleston, Jacob Lloyd,	<i>Champaign.</i>
Glenn, Leslie Leland,	<i>Champaign.</i>
Glenn, Otis Ferguson,	<i>Champaign.</i>
Grossberg, Harry Altman,	<i>Chicago.</i>
Jackson, Andrew Oliver, A.B. ( <i>Lake Forest Univ.</i> ),	<i>Lake Forest.</i>
Ketchum, Margaret Adèle,	<i>LaPrairie,</i>
Lamet, Louis Harman,	<i>Warsaw.</i>
Manny, Fred Hugh, B.S., ( <i>Univ. of Ill.</i> ),	<i>Urbana.</i>
May, Fred Hutchinson,	<i>Prophetstown.</i>
Mulliken, Albert Danforth,	<i>Champaign.</i>
Ostrowski, Samuel,	<i>Chicago.</i>
Phillips, Thomas Lewis,	<i>Mt. Carroll.</i>

Pontious, Ralph,	<i>Macomb.</i>
Rhodes, Edward Melvin,	<i>Bloomington.</i>
Schaefer, Peter Philip,	<i>Carlyle.</i>
Spiesberger, Herbert,	<i>Chicago.</i>
Trevett, John Howard,	<i>Champaign.</i>
Van Brundt, Chester S,	<i>Champaign.</i>
Van Horne, Sada,	<i>Freeport.</i>
Webb, Otto Thorle,	<i>Bement.</i>
Wesemann, Adolph Henry,	<i>LaGrange.</i>

SCHOOL OF MEDICINE  
[COLLEGE OF PHYSICIANS AND SURGEONS OF  
CHICAGO]

SENIOR CLASS

NAME.	STATE.	PRECEPTOR.
Bacon, Victor V., M.D.,	<i>Illinois.</i>	Faculty.
Baker, Henry L.,	<i>Minnesota.</i>	J. D. Higgins.
Bebb, Walter S.,	<i>Illinois.</i>	Henry Richings.
Belitz, William,	<i>Wisconsin.</i>	Faculty.
Beveridge, James M., A.B.,	<i>Illinois.</i>	Faculty.
Bingley, M. Arista,	<i>Texas.</i>	Faculty.
Bjorkman, David A. T., A.B.,	<i>Sweden.</i>	Gustaf Bjorkman.
Blayney, Frederick H., A.B.,	<i>Pennsylvania.</i>	Faculty.
Brown, Darwin E.,	<i>Wisconsin.</i>	Faculty.
Brownell, William Flockton,	<i>Michigan.</i>	W. McCallum.
Bursma, Jacob, A.B.,	<i>Michigan.</i>	Benj. Pyle.
Butts, J. Baptist,	<i>Canada.</i>	Faculty.
Byers, Emery M.,	<i>Illinois.</i>	R. H. Burton.
Cahill, Leo L.,	<i>Michigan.</i>	Faculty.
Carr, Bert. Mather,	<i>Michigan.</i>	Faculty.
Carroll, Henry Colistis,	<i>New York.</i>	Faculty.
Conard, Amos F.,	<i>Illinois.</i>	Faculty.
Conner, Frank H., B.S.,	<i>Iowa.</i>	Faculty.
Coon, George E.,	<i>Wisconsin.</i>	A. S. Maxson.
Corbin, John Francis, B.S.,	<i>Illinois.</i>	Dr. Aldrich.
Crofton, Alfred C., M.D.,	<i>Illinois.</i>	Faculty.
Cummings, Frederick S.,	<i>Illinois,</i>	C. E. Cook.
Dillon, Ira Hugh,	<i>Iowa,</i>	W. W. Williams.
Dolan, Aloysius N. J., A.M.,	<i>Illinois,</i>	C. D. Bradley.
Dowdall, William T.,	<i>Illinois,</i>	Willoughby Walling.
Emmerson, Robert,	<i>Illinois,</i>	W. T. Eckley.

NAME.	STATE.	PRECEPTOR.
Errant, Mrs. Morey, M.D.,	<i>Illinois,</i>	Faculty.
Feeney, Francis Sebastian,	<i>Illinois,</i>	Faculty.
Flanagan, Bartholomew F.,	<i>Indiana,</i>	J. F. Hibbard.
Flemming, Geoffrey J.,	<i>Illinois,</i>	Faculty.
Fletcher, Marcus S.,	<i>Illinois,</i>	Faculty.
Ford, Ward Redfield, Ph.G.,	<i>Illinois,</i>	Bayard Holmes.
Fuson, Amandus W.,	<i>California,</i>	S. H. Manley.
Garber, Samuel Carson, B.S.,	<i>Virginia,</i>	D. Newcomer.
Graeser, Henry Bernard,	<i>Iowa,</i>	B. N. Graeser.
Grey, Margaret, M.D.,	<i>Illinois,</i>	Faculty.
Hadley, I. H., M.D.,	<i>Illinois,</i>	Faculty.
Hall, Hugh Martin,	<i>Indiana,</i>	C. E. Dutrow.
Hambley, Thomas J., Ph.B.,	<i>Connecticut,</i>	Faculty.
Hamill, Mrs. Eunice Bertha,	<i>Illinois,</i>	H. P. Newman.
Hart, William E.,	<i>Illinois,</i>	Faculty.
Heaton, Elbert E., M.D.,	<i>Missouri,</i>	Faculty.
Hill, George B. M.,	<i>Iowa,</i>	B. Thompson.
Homer, Herman Corwin,	<i>Iowa,</i>	L. E. Eslick.
Hooper, Martin L., M.D.,	<i>Iowa,</i>	Faculty.
Hovenden, John Henry,	<i>Iowa,</i>	Drs. Jones and Johnson.
Hunt, Ernest A., B.S.,	<i>Illinois,</i>	Faculty.
Husk, Charles E.,	<i>Illinois,</i>	Faculty.
Hutchinson, Charles S., B.S.,	<i>Iowa,</i>	A. Richmond.
Irwin, Wentworth Lee, M.D.,	<i>Illinois,</i>	A. H. Brumbach.
Johnson, Simeon R., B.S.,	<i>Illinois,</i>	C. W. Johnson.
Kalacinski, Felix,	<i>Illinois,</i>	Carl Beck.
Kemp, Oliver P., B.S.,	<i>Indiana,</i>	Drs. Brinkerhoof and Scott.
Kilbridge, James A., M.D.,	<i>Iowa,</i>	Faculty.
King, Clarence B.,	<i>Illinois,</i>	O. A. King.
Kirkland, Benjamin F.,	<i>Iowa,</i>	R. T. Jewell.
Kittredge, Charles Albert,	<i>New York,</i>	J. H. Lee.
Knight, Eugene C.,	<i>Missouri,</i>	Faculty.
Kohler, Arvid Ernest,	<i>Illinois,</i>	W. K. Sloan.
Lowenrosen, Armin,	<i>Hungary,</i>	M. Lowenrosen.
Lucas, Frank B.,	<i>Illinois,</i>	E. J. Lucas.
Lyon, Elijah A., Ph.G., M.D.,	<i>Illinois,</i>	Faculty.
McManes, Matthew E.,	<i>Ohio,</i>	H. W. Todd.
McManus, Thomas U., A.B.,	<i>Iowa,</i>	D. W. Crouse.
Miller, A. Baxter,	<i>Pennsylvania,</i>	Faculty.

NAME.	STATE.	PRECEPTOR.
Minahan, Patrick Robert,	<i>Wisconsin,</i>	W. E. Minahan.
Mutchler, John A., B.S.,	<i>Iowa,</i>	Faculty.
Nagel, John S., Ph.G.,	<i>Indiana,</i>	E. P. Baur.
Nass, Hildus A.,	<i>Iowa,</i>	E. H. Williams.
Neff, James M.,	<i>Illinois,</i>	Drs. Caldwell and Stealy.
Newhall, Geo. F.,	<i>Illinois,</i>	Dr. LeGrange.
Noe, Charles F.,	<i>Iowa,</i>	C. J. Winzenried.
Onerton, Timothy V.,	<i>Louisiana,</i>	James McCrossie.
Page, Addison C., A.B.,	<i>Iowa,</i>	W. Hutchinson.
Pagelson, Otto Hugo, B.S.,	<i>Michigan,</i>	E. H. Hofma.
Pence, Lawrence W., B.D.,	<i>Iowa,</i>	J. I. Phillips.
Pennington, William Robert,	<i>Missouri,</i>	James Hedden.
Petersmeyer, William,	<i>Iowa,</i>	F. S. Johnson.
Phillips, Mrs. Jennie Lind,	<i>Illinois,</i>	H. B. McChensey.
Pietrowicz, Stephen R., Ph.G.,	<i>Illinois,</i>	E. C. Seufert.
Pleth, V. V., M.D., A.B.,	<i>Illinois,</i>	Faculty.
Pratz, Fred D., A.B.,	<i>Illinois,</i>	C. F. Banta.
Proudfoot, Charles P.,	<i>Iowa,</i>	Faculty.
Purington, William A.,	<i>Maine,</i>	C. P. H. Paul.
Reynolds, Neson W.,	<i>Wisconsin,</i>	Faculty.
Rogers, Henry C.,	<i>Iowa,</i>	Geo. Inglis.
Roszell, Roy A.,	<i>Iowa,</i>	Faculty.
Rubin, George,	<i>Illinois,</i>	Faculty.
Scholes, Paul S., A.B.,	<i>Illinois,</i>	J. F. Percy.
Schuessler, Henry G.,	<i>Illinois,</i>	Martin Cushing.
Schuldt, Franz,	<i>Illinois,</i>	J. R. Noel.
Sherin, Wesley Morley,	<i>Illinois,</i>	Faculty.
Simpson, Austin U., B.S.,	<i>Illinois,</i>	J. H. Miller.
Simpson, Charles E.,	<i>Iowa,</i>	M. W. Hill.
Simpson, Daniel G., A.B.,	<i>Pennsylvania,</i>	J. M. Martin.
Slater, John H.,	<i>Iowa,</i>	Faculty.
Snydacker, Emanuel F.,	<i>Illinois,</i>	Boerne Bettman.
Sollenbarger, George H.,	<i>Iowa,</i>	E. J. Howard.
Spickerman, Harry R.,	<i>Illinois,</i>	R. M. Galloway.
Stayner, William H.,	<i>New York,</i>	W. F. B. Wakefield.
Steele, Wm. J., B.S.,	<i>Illinois,</i>	D. A. K. Steele.
Stevenson, Bayard F.,	<i>Indiana,</i>	G. A. Stevenson.
Stone, Carl Downer,	<i>Illinois,</i>	Faculty.
Stone, William T., M.D.,	<i>New York,</i>	Faculty.

NAME.	STATE.	PRECEPTOR.
Stotz, Charles F.,	<i>Illinois,</i>	Drs. Caldwell and Eckley.
Strohm, Edward H.,	<i>Illinois,</i>	Orlando Mitchell.
Swink, Henry J., A.M.,	<i>Tennessee,</i>	Faculty.
Vary, William Harold, M.D.,	<i>Iowa,</i>	Faculty.
Wald, Olander E.,	<i>Washington,</i>	Faculty.
Walsh, James Lawson,	<i>Michigan,</i>	C. A. Walsh.
Wegner, William Godfrey,	<i>Indiana,</i>	Charles Stoltz.
Wehle, Willibald J., M.D.,	<i>Wisconsin,</i>	Faculty.
Wehrman, Jule O., M.D.,	<i>Ohio,</i>	Faculty.
Wells, David Gillison, Ph.G.,	<i>Canada,</i>	Faculty.
Whitmer, Chas. F., Ph.G.,	<i>Illinois,</i>	L. W. Whitmer.
Whitmore, F. B., M.D., B.S.,	<i>Illinois,</i>	Faculty.
Whitney, Eugene D., Ph.B.,	<i>Ohio,</i>	Faculty.
Wisse, Cornelius,	<i>Michigan,</i>	I. Wisse.
Witherspoon, Louis G., B.S.,	<i>Indiana,</i>	G. L. Dorsey.
Wolf, Milton C.,	<i>Illinois,</i>	J. Frank.
Wolfson, Morris M.,	<i>Illinois,</i>	J. D. Perish.
Wright, Charles E.,	<i>Illinois,</i>	Faculty.
Wuerth, John Jacob, Ph.G.,	<i>Kansas,</i>	C. S. Acker.
Wyland, George Van,	<i>Indiana,</i>	C. E. Davis.
Wynekoop, Charles Ira, B.S.,	<i>Indiana,</i>	F. E. Wynekoop.

#### JUNIOR CLASS

Albrecht, Charles A., Ph.G.,	<i>Minnesota,</i>	O. W. Henssler.
Andrews, Hubert F., B.S.,	<i>Utah,</i>	Faculty.
Backus, Jesse W.,	<i>Michigan,</i>	Faculty.
Barnes, Frederick L.,	<i>Iowa,</i>	C. C. Coen.
Bay, Hiram H.,	<i>Illinois,</i>	A. B. Spach.
Beedy, Lora L.,	<i>Pennsylvania,</i>	J. G. Kiernan.
Betz, John C.,	<i>Illinois,</i>	A. M. Unger.
Brewer, Edwin J., B.S.,	<i>Illinois,</i>	R. J. Nagle.
Brown, James M.,	<i>Illinois,</i>	Moreau Brown.
Browning, George S., B.S.,	<i>Rhode Island,</i>	C. M. Post.
Burke, Jerome T.,	<i>Iowa,</i>	T. F. Burke.
Bush, John H., B.S., Ph.G.,	<i>Illinois,</i>	J. B. Walker.
Butkiewicz, Kasmir A., Ph.G.,	<i>Illinois,</i>	W. Kuflewski.
Butler, Clarence A.,	<i>South Dakota,</i>	Clifton Scott.
Chloupek, E. Arthur,	<i>Wisconsin,</i>	E. H. Chloupek.
Coen, Charles M.,	<i>Illinois,</i>	Faculty.

NAME.	STATE.	PRECEPTOR.
Conroy, John M.,	<i>Wisconsin,</i>	Faculty.
Czarra, Conrad,	<i>Illinois,</i>	Faculty.
Dollard, Edmund C.,	<i>Wisconsin,</i>	C. R. Nutt.
Dugan, James H., A.B.,	<i>Illinois,</i>	Faculty.
Edwards, John M.,	<i>Minnesota,</i>	C. F. Warner.
Fantas, Bernard,	<i>Illinois,</i>	Faculty.
Feingold, Leon,	<i>Illinois,</i>	J. Frank.
Fellows, Marie A.,	<i>Missouri,</i>	G. C. Hall.
Frank, Ira,	<i>Illinois,</i>	S. Kunz.
Fukala, Charles T.,	<i>Illinois,</i>	Vincent Fukala.
Garth, James W.,	<i>Iowa,</i>	T. Garth.
Gathmann, Henry F.,	<i>Illinois,</i>	J. R. Noel.
Gibson, Louis S., A.B.,	<i>Illinois,</i>	J. B. Murphy.
Glass, John L., A.B.,	<i>Illinois,</i>	Faculty.
Goggins, Robert J.,	<i>Wisconsin,</i>	J. E. Luce.
Grabowicz, B. C., Ph.M.,	<i>Poland,</i>	Frank Patera.
Grimes, John P., Ph.G.,	<i>Illinois,</i>	J. B. Murphy.
Hammond, Lloyd,	<i>Indiana,</i>	F. C. Ristine.
Hampton, Rob Roy,	<i>Utah,</i>	A. W. Burrows.
Harris, Fred. G.,	<i>Illinois,</i>	A. P. Ohlmacher.
Harris, Ross Allen,	<i>Ohio,</i>	A. H. Hiatt.
Hayes, Thomas D., B.S.,	<i>Louisiana,</i>	C. F. Dight.
Haynes, Halbert A., B.S.,	<i>Indiana,</i>	R. L. James.
Heald, Harvey C., B.S.,	<i>Nebraska,</i>	Faculty.
Herzog, Albert,	<i>Illinois,</i>	E. W. Weis.
Hillard, Thomas R., A.B.,	<i>Pennsylvania,</i>	R. J. Greer.
Hillebrand, Henry J.,	<i>Illinois,</i>	Dr. Dahl.
Hukill, Hannah Luella,	<i>Illinois,</i>	Faculty.
Hummell, Charles C., Ph.G.,	<i>Iowa,</i>	G. H. Crane.
Jenkins, Charles E., B.S.,	<i>Iowa,</i>	J. F. Nicol.
Kay, Abbott E.,	<i>Illinois,</i>	A. H. Taggart.
Kelley, Luke H., B.S.,	<i>Indiana,</i>	H. M. Evans.
Klein, Matthias J.,	<i>Illinois,</i>	E. G. Earle.
Klokke, W. Emil,	<i>Illinois,</i>	W. T. Eckley.
Knudson, Frank B., Ph.G.,	<i>Illinois,</i>	Faculty.
Krueger, Albert G.,	<i>Texas,</i>	A. B. Parr.
Lafferty, Thomas D.,	<i>Illinois,</i>	Faculty.
Lemke, Albert R.,	<i>Illinois,</i>	E. H. Butterfield.
Lenard, Robert, Ph.G.,	<i>Illinois,</i>	A. Haskanson.
Lerch, William H.,	<i>Iowa,</i>	J. J. Schlawig.

NAME.	STATE.	PRECEPTOR.
Long, William G., B.D.,	<i>Iowa,</i>	C. L. Marston.
McCarthy, Robert J.,	<i>New York,</i>	J. C. Marshall.
McWilliams, Oscar E.,	<i>Pennsylvania,</i>	J. E. Hequembourg.
Madajesky, Ernest H., Ph.G.,	<i>Michigan,</i>	Drs. Thomas and McCabe.
Meloy, J. Earle,	<i>New York,</i>	M. Simons.
Mertens, Herman G.,	<i>Wisconsin,</i>	A. P. Andrews.
Metcalf, John E., A.B.,	<i>Indiana,</i>	F. J. Hodges.
Meyers, Frank W.,	<i>Iowa,</i>	A. Kessler.
Moore, F. Donaldson,	<i>Illinois,</i>	W. M. Harsha.
Myers, Fred. W.,	<i>Iowa,</i>	W. T. Eckley.
Olson, William C.,	<i>Minnesota,</i>	M. Mikkelsen.
Peters, James Alphonsus,	<i>Iowa,</i>	James Murphy.
Potter, Jessie Y.,	<i>Wisconsin,</i>	C. D. Packard.
Ramsey, Frank P., Ph.G.,	<i>Ohio,</i>	William Ramsey.
Reasoner, Matthew A., B.S.,	<i>Illinois,</i>	Faculty.
Reich, William F.,	<i>Wisconsin,</i>	J. E. Luce.
Rich., R. Gilbert, M.D.C.,	<i>Iowa,</i>	Faculty.
Richards, Frederick A.,	<i>South Dakota,</i>	W. G. Smith.
Robinson, Samuel A.,	<i>Texas,</i>	University of Texas.
Russell, Herman,	<i>Minnesota,</i>	C. E. Faucett.
Sanderson, Phillip G.,	<i>Michigan,</i>	L. J. Lennox.
Scheib, George F., B.S.,	<i>Illinois,</i>	L. W. Whitmer.
Schoenberg, Albert J.,	<i>Illinois,</i>	J. J. Bell.
Scott, Robert D., Ph.G.,	<i>Canada,</i>	A. P. F. Gannuack.
Sisson, Charles Elvin,	<i>Wisconsin,</i>	S. R. Wakefield.
Slightam, Clarence H.,	<i>Wisconsin,</i>	W. C. Abaly.
Smith, Thurston, A.M.,	<i>Indiana,</i>	R. C. Rogers.
Steele, Frank B.,	<i>Illinois,</i>	Faculty.
Stillians, Arthur W.,	<i>Illinois,</i>	W. E. Quine.
Strader, George L.,	<i>Nebraska,</i>	Joseph Morrow.
Strohecker, Samuel M., Ph.G.,	<i>Pennsylvania,</i>	Henry Landis.
Sullivan, Eugene A.,	<i>Illinois,</i>	F. G. Crowell.
Swanson, John Emil, A.B.,	<i>Illinois,</i>	W. S. McClanahan.
Taber, Roland Bert, Ph.G.,	<i>Michigan,</i>	F. A. Votey.
Taylor, John R., B.D.,	<i>Illinois,</i>	A. L. Moody.
Thomson, Laura Grace,	<i>Illinois,</i>	J. H. Salisbury.
Tieken, Theodore, Ph.G.,	<i>Illinois,</i>	Faculty.
Timm, Edmund W., Ph.G.,	<i>Wisconsin,</i>	Drs. Smith and Luce.
Turner, John H., A.B.,	<i>Iowa,</i>	Faculty.

NAME.	STATE.	PRECEPTOR.
Wenzel, John V., Ph.G.,	<i>Illinois,</i>	Faculty.
Whitmore, Eugene R., B.S.,	<i>Wisconsin,</i>	P. L. Scanlan.
Winans, Edward C., A.B.,	<i>Michigan,</i>	E. S. Antisdale.
Wood, Glenn,	<i>Illinois,</i>	Faculty.
Wood, W. Weir, A.B.,	<i>Indiana,</i>	H. D. Wood.
Yeakel, William K., B.S.,	<i>Illinois,</i>	C. C. O'Byrne.
Yingst, Sally A.,	<i>Illinois,</i>	Sullivan Howell.
Yoist, John A., A.B.,	<i>Louisiana,</i>	G. Hubbard.
Zurawski, Kasimir A., Ph.G.,	<i>Illinois,</i>	Theodore Kodio.

### SOPHOMORE CLASS

Ball, Edmund J.,	<i>Indiana,</i>	Faculty.
Bauman, Frederick, Ph.G.,	<i>Switzerland,</i>	Adolph Gehrmann.
Birkelund, John R., A.B.,	<i>Denmark,</i>	W. N. Whitney.
Boss, Jacob H.,	<i>Indiana,</i>	C. E. Nusbaum.
Block, Max E.,	<i>Illinois,</i>	Carl Beck.
Brooks, James D.,	<i>Illinois,</i>	Faculty.
Burke, Edward L.,	<i>Minnesota,</i>	G. O. Welch.
Buswell, Clark A.,	<i>Illinois,</i>	P. McPherson.
Carver, Simon C.,	<i>Iowa,</i>	W. F. Carver.
Cassiday, William W.,	<i>Minnesota,</i>	W. J. Cochran.
Chittenden, Horace W., Ph.G.,	<i>Missouri,</i>	R. H. Chittenden.
Clarke, Floyd S.,	<i>Iowa,</i>	W. H. Ensminger.
Corbus, Burton R.,	<i>Illinois,</i>	Faculty.
Curtis, Charles R.,	<i>Pennsylvania,</i>	R. J. Curtis.
Donavan, Joseph P.,	<i>Wisconsin,</i>	W. W. Gill.
Dowdall, Guy G., B.L.,	<i>Illinois,</i>	T. M. Cullimore.
Early, Calvin S., Ph.G.,	<i>Ohio,</i>	Faculty.
Flippin, George A.,	<i>Nebraska,</i>	Faculty.
Fletcher, William R.,	<i>Illinois,</i>	Faculty.
Gantt, John L.,	<i>Texas,</i>	Faculty.
Gaul, Adolph, Ph.G.,	<i>Illinois,</i>	Rudolph Menn.
Geiger, Arthur H.,	<i>Illinois,</i>	Henry Geiger.
Giles, William W.,	<i>Illinois,</i>	Faculty.
Gilmore, Clifford F., B.S.,	<i>Ohio,</i>	Faculty.
Hamilton, Howard B., A.B.,	<i>Iowa,</i>	C. W. McLaughlin.
Hannon, H. Blake,	<i>Illinois,</i>	G. H. McNemer.
Hart, Henry G.,	<i>Illinois,</i>	T. A. Davis.
Heath, Clarence W., B.L.,	<i>Michigan,</i>	John Bell.
Hixson, Robert B.,	<i>Minnesota,</i>	A. D. Larson.



NAME.	STATE.	PRECEPTOR.
Howe, Arden N.,	<i>Michigan,</i>	G. C. Young.
Hummel, Edward P.,	<i>Iowa,</i>	Faculty.
Hurst, Everett,	<i>Indiana,</i>	Faculty.
Hyde, Edward E., A.B.,	<i>Illinois,</i>	H. P. Newman.
Jakubowski, Siegfried,	<i>Germany,</i>	Faculty.
Jacobson, August, Ph.G.,	<i>Wisconsin,</i>	J. P. Lee.
Johnston, Robert M., A.B.,	<i>Pennsylvania,</i>	Faculty.
Kerrigan, George P.,	<i>Illinois,</i>	D. A. K. Steele.
King, Louis, Ph.G.,	<i>New York,</i>	Faculty.
Knauf, Frederick P.,	<i>Wisconsin,</i>	R. W. Monk.
Laben, George J., B.S.,	<i>Indiana,</i>	Dr. Blackstone.
Lang, John M.,	<i>Illinois,</i>	C. N. Ballard.
Liss, Julius, Ph.G.,	<i>Illinois,</i>	Faculty.
McConnell, John W.,	<i>Illinois,</i>	Faculty.
McCormick, Olin,	<i>Illinois,</i>	F. B. Lovell.
McCray, Walter R., Ph.G.,	<i>Iowa,</i>	J. W. McCray.
Macdonald, Charles,	<i>Illinois,</i>	Faculty.
Major, William, B.S.,	<i>Illinois,</i>	N. B. Crawford.
Mason, Harry P.,	<i>Iowa,</i>	Faculty.
Martin, H. Ralph,	<i>Illinois,</i>	E. H. Graves.
Metz, Irvin T., A.B.,	<i>Indiana,</i>	Faculty.
Miller, Gustav A.,	<i>Illinois,</i>	G. F. Butler.
Milroy, William D., A.B.,	<i>Indiana,</i>	Carl Eigenmann.
Moffett, William N., B.S.,	<i>Iowa,</i>	B. S. Crouse.
Moldenhaur, Gustav H.,	<i>Illinois,</i>	C. A. Earle.
Monahan, Richard C.,	<i>Iowa,</i>	G. A. Smith.
Morrill, Arthur B.,	<i>Illinois,</i>	J. L. Morrill.
Morse, Mrs. Clara Kellogg,	<i>California,</i>	Faculty.
Muehlmann, Carl G., Ph.G.,	<i>Illinois,</i>	W. M. Harsha.
Neir, William J.,	<i>Illinois,</i>	F. Linden.
Norsman, Soren S.,	<i>Wisconsin,</i>	G. S. Seim.
North, Frank E.,	<i>Illinois,</i>	E. E. Kerr.
Odoardo, Antonio F., A.B.,	<i>Cuba,</i>	Faculty.
Parsons, Stephen T.,	<i>Iowa,</i>	Artie Folsom.
Phalen, James M., Ph.G.,	<i>Illinois,</i>	C. M. Johnson.
Pinkerton, Walter J.,	<i>Wisconsin,</i>	L. H. Pelton.
Potter, Ward E., Ph.G.,	<i>Illinois,</i>	Faculty.
Purcell, Harry E.,	<i>Wisconsin,</i>	C. A. Harper.
Rock, Henry J., B. S.,	<i>South Dakota,</i>	J. L. Harris.
Rose, Felix E.,	<i>Wisconsin,</i>	J. D. Moraux.

NAME.	STATE.	PRECEPTOR.
Rouse, Elmer E.,	<i>Michigan,</i>	C. A. Winans.
Runyan, Charler P.,	<i>Indiana,</i>	Faculty.
Scholtes, Theodore W.,	<i>Minnesota,</i>	W. J. Cochran.
Schultz, Stephen I.,	<i>Illinois,</i>	J. A. Frain.
Sheppard, Louis D.,	<i>Illinois,</i>	T. A. Davis.
Smith, Hugh E.,	<i>Michigan,</i>	Dr. Scott.
Stockton, William C.,	<i>Ohio,</i>	Faculty.
Stogol, Jacob B.,	<i>Illinois,</i>	J. Silverberg.
Syverson, Elmer L., B.L.,	<i>South Dakota,</i>	H. A. Peabody.
Teschan, Rudolf F.,	<i>Wisconsin,</i>	R. C. Teschan.
Twohig, Henry E.,	<i>Wisconsin,</i>	J. P. Connell.
Tyson, Earle H.,	<i>Iowa,</i>	E. Sherman.
Vincent, Henry A.,	<i>Wisconsin,</i>	J. E. Luce.
Voight, C. Bernard,	<i>Illinois,</i>	R. J. Coultas.
Voss, Carl, A.M.,	<i>Norway,</i>	O. H. Berg.
Wall, Charles D.,	<i>Illinois,</i>	T. A. Davis.
Weakley, W. Harl, B.S.,	<i>Pennsylvania,</i>	Faculty.
West, Theodore C.,	<i>Wisconsin,</i>	G. F. Butler.
Yung, J. Rudolph,	<i>Indiana,</i>	C. Gertsmeier.
Zaleski, Joseph P., Ph.G.,	<i>Poland,</i>	S. T. Felmbec.

#### FRESHMAN CLASS

Addleman, Irving M.,	<i>Wisconsin,</i>	S. W. French.
Ames, Andrew J.,	<i>Minnesota,</i>	Faculty.
Annis, Reginald F.,	<i>Wisconsin,</i>	Drs. Daniels and Packard.
Apfelbaum, David M.,	<i>Illinois,</i>	S. L. Weber.
Berven, Jacob O.,	<i>Illinois,</i>	T. M. Stixrud.
Birk, John W.,	<i>Ohio,</i>	J. A. Chesney.
Blackwelder, Frederick C.,	<i>Illinois,</i>	J. F. Blackwelder.
Bowen, Mrs. Marie E.,	<i>Illinois,</i>	Faculty.
Burke, Edward W.,	<i>Iowa,</i>	W. P. Burke.
Burrell, Henry J.,	<i>Michigan,</i>	E. S. Antisdale.
Buss, Francis J.,	<i>Illinois,</i>	I. Wisse.
Cameron, Warren L.,	<i>Oregon,</i>	Drs. Geary and Pickel.
Carpenter, Cora W.,	<i>Colorado,</i>	Faculty.
Chassell, J. Langdon,	<i>Iowa,</i>	W. P. Burke.
Church, Elmer E.,	<i>Illinois,</i>	Faculty.
Clark, Leslie W.,	<i>Wisconsin,</i>	T. A. Davis.

NAME.	STATE.	PRECEPTOR.
Clemmons, E. Jay,	<i>South Dakota,</i>	Faculty.
Coates, Sintsford B.,	<i>Illinois,</i>	Faculty.
Colburn, George A.,	<i>Illinois,</i>	J. E. Colburn.
Conway, Hugh P.,	<i>Wisconsin,</i>	Faculty.
Corbus, B. Clark,	<i>Illinois,</i>	J. P. Corbus.
Cunningham, William D.,	<i>Pennsylvania,</i>	Faculty.
Dethlefsen, George H.,	<i>Illinois,</i>	E. I. Hook.
Domer, Walter A.,	<i>Indiana,</i>	G. W. Harding.
Emrich, George L.,	<i>Illinois,</i>	S. C. Stanton.
English, Edward G.,	<i>Wisconsin,</i>	W. T. English.
Fox, Harry W.,	<i>Michigan,</i>	Faculty.
Gorrell, Talbot J. H.,	<i>Illinois,</i>	Faculty.
Greenman, John W.,	<i>Iowa,</i>	Faculty.
Gustafson, Joseph A.,	<i>Illinois,</i>	E. V. D. Morris.
Heinzel, Nicholas,	<i>Illinois,</i>	Faculty.
Herrin, Neil L.,	<i>Michigan,</i>	Dr. Donlan.
Hicks, J. Calvin,	<i>Illinois,</i>	Faculty.
Holmberg, LeRoy J.,	<i>Wisconsin,</i>	C. P. Bunsen.
Hombach, William P.,	<i>Iowa,</i>	Faculty.
Howard, Harry W.,	<i>North Dakota,</i>	J. L. Savage.
Hunt, Hiram H.,	<i>Iowa,</i>	A. G. Shellit.
Jefferson, Richard,	<i>Wisconsin,</i>	Faculty.
Johnson, Cecil C.,	<i>Iowa,</i>	A. R. Leith.
Jordan, Marion S.,	<i>Iowa,</i>	T. S. Snyder.
Kennedy, Josie C.,	<i>Illinois,</i>	Faculty.
Kinder, R. G. W.,	<i>Wisconsin,</i>	Faculty.
Klokow, Charles F.,	<i>Illinois,</i>	J. C. Hepburn.
Koch, Wesley A.,	<i>Illinois,</i>	J. I. Skelly.
Krohn, William O.,	<i>Illinois,</i>	Faculty.
Krotter, George,	<i>Illinois,</i>	Faculty.
Lampe, Henry G.,	<i>Illinois,</i>	Faculty.
Leist, Johanna,	<i>Germany,</i>	Sarah H. Stevenson.
Lennon, Aloysius J.,	<i>Illinois,</i>	Martin Cushing.
Ling, Frank,	<i>Illinois,</i>	Faculty.
Little, Zack J.,	<i>Kansas,</i>	Faculty.
Lloyd, Claude A.,	<i>Illinois,</i>	J. T. Wyatt.
Luehrs, Henry E.,	<i>Wisconsin,</i>	J. E. Luce.
Martin, Winfred B.,	<i>Illinois,</i>	C. E. Wilkinson.
McCoy, William M.,	<i>Iowa,</i>	D. S. Fairchild.
McDowell, William O.,	<i>Iowa,</i>	D. W. Crouse.

NAME.	STATE.	PRECEPTOR.
McGuinn, James J.,	<i>Illinois,</i>	Faculty.
McLaughlin, George,	<i>Illinois,</i>	Faculty.
McPherson, Warren G.,	<i>Illinois,</i>	R. H. Bailey.
Morton, Frank R.,	<i>Illinois,</i>	Faculty.
Newman, William M.,	<i>Minnesota,</i>	Faculty.
Noble, Charles M.,	<i>Illinois,</i>	Drs. Edwards and Isham.
Ohlmacher, Joseph C.,	<i>Illinois,</i>	A. P. Ohlmacher.
Oliver, Clifton I.,	<i>Iowa,</i>	W. H. Harriman.
Orcutt, Dwight C.,	<i>Illinois,</i>	J. L. Polk.
Osborn, William S.,	<i>Iowa,</i>	H. E. Lovejoy.
Polson, Nina D.,	<i>Missouri,</i>	Faculty.
Pratt, Mrs. J. Irene,	<i>Illinois,</i>	Faculty.
Rogers, Benjamin F.,	<i>Iowa,</i>	M. L. Hooper.
Robertson, William F.,	<i>Iowa,</i>	Faculty.
Rolfs, Theodore H.,	<i>Wisconsin,</i>	Drs. Durr and Teschan.
Ruge, Edward C.,	<i>Wisconsin,</i>	R. Sweetman.
Ryon, Ralph M.,	<i>Illinois,</i>	Faculty.
Schaeffer, Andrew J.,	<i>Illinois,</i>	Faculty.
Scofield, Charles J.,	<i>Illinois,</i>	Dr. O'Harra.
Sexton, Ira J.,	<i>Illinois,</i>	Drs. Geiger and Heylmann.
Soegarrd, Erik,	<i>Illinois,</i>	O. H. Berg.
Solliday, Monroe H.,	<i>Illinois,</i>	E. M. Alverson.
Sommers, Julius C.,	<i>Wisconsin,</i>	C. A. Harper.
Talmage, George S.,	<i>Indiana,</i>	A. G. Grubb.
Taylor, Lucius L.,	<i>Wisconsin,</i>	Faculty.
Turner, D. Ashley,	<i>Nevada,</i>	J. D. Campbell.
Urquhart, Roy T.,	<i>Indiana,</i>	Faculty.
Wall, Frank J. A.,	<i>Illinois,</i>	Drs. Sullivan and Rieley.
Weaver, W. Claude,	<i>Illinois,</i>	W. L. Linberg.
Weber, Carl E.,	<i>Illinois,</i>	M. L. Goodkind.
West, E. Talmage,	<i>Tennessee,</i>	Faculty.
Westerlund, Joseph E.,	<i>Illinois,</i>	Faculty.
Wiltfong, Charles O.,	<i>Indiana,</i>	W. S. Shafer.
Zabokrtsky, Joseph,	<i>Iowa,</i>	W. A. Manchester.

## SCHOOL OF PHARMACY

## SENIORS

Ashmore, Joseph Samuel,	<i>Elizabeth.</i>
Atzel, George William,	<i>Chicago.</i>
Bakkers, John,	<i>Chicago.</i>
Bauer, Herbert Arthur,	<i>Kilbourn, Wis.</i>
Bowman, William Townzen,	<i>Moweaqua.</i>
Brenner, Bert Lemon,	<i>Rensselaer, Ind.</i>
Clark, Harry Alexander,	<i>Carmi.</i>
Donaberger, Samuel Bricker,	<i>Lebanon, Pa.</i>
Elich, Herman Frederick,	<i>Chicago.</i>
Elisburg, Louis Albert,	<i>Chicago.</i>
Freeman, Arthur Wardo,	<i>Vermont.</i>
Gray, Margaret McClintock,	<i>Chicago.</i>
Harris, Andrew Hope,	<i>Alexandria, S. Dak.</i>
Hathaway, Charles Edwin,	<i>Freeport.</i>
Hermann, William Frederick,	<i>La Salle.</i>
Holmstead, Axel Sanfred,	<i>Chicago.</i>
Honens, Hugh Benton,	<i>Milan.</i>
Huddleston, Clyde Ernest,	<i>Farmer City.</i>
Janda, Joseph,	<i>Chicago.</i>
Jones, Charles Everett,	<i>Greenwood.</i>
Kalpus, George Jacob,	<i>Tiffin, Ohio.</i>
Kloppenburg, Joseph Robert,	<i>Springfield.</i>
Kops, William Gabriel Joseph,	<i>Chicago.</i>
Koropp, Ernest August,	<i>Mendota.</i>
Lauber, Bohumil,	<i>Chicago.</i>
Linxwiler, Albert,	<i>Hillsboro.</i>
Maier, Bertram,	<i>Chicago.</i>
Martin, John Wright,	<i>Wrightsville, Ga.</i>
Maxwell, Charles Edward,	<i>Odell.</i>
Mentz, Otto Herman,	<i>Chicago.</i>
Moore, Algy Charles,	<i>Wilmington.</i>
Neverman, Edward Paul Albert,	<i>Neillsville, Wis.</i>
Olsen, Egil Thorbjorn,	<i>Chicago.</i>
Rainey, Charles Francis,	<i>Arcadia, Wis.</i>
Ruhland, Charles Theodore Fred. Wm.	<i>Milwaukee, Wis.</i>
Schultz, Ziska Erhart,	<i>Mendota.</i>
Schultz, Emil Henry,	<i>Neenah, Wis.</i>
Siedenburg, Frank,	<i>Elizabeth.</i>

Smale, William,	<i>Chicago.</i>
Sobel, Maximillian,	<i>Chicago.</i>
Sorensen, John Julius,	<i>Chicago.</i>
Steinfeldt, Adolph Emanuel,	<i>Stratford, Ia.</i>
Stroetzel, William,	<i>Chicago.</i>
Thomson, Charles Reuben,	<i>Grayslake.</i>
Van deLuyster, John,	<i>Grand Rapids, Mich.</i>
Warhanik, Charles Augustus,	<i>Chicago.</i>
Watters, Mark Henry,	<i>Castleton, Vt.</i>
Weigand, Henry, Jr.,	<i>Chicago.</i>
Wiedel, Paul Harry,	<i>Chicago.</i>
Wright, Margaret Louise,	

**JUNIORS**

Arnold, George Edward,	<i>Watseka.</i>
Barnett, Moses,	<i>Evansville, Ind.</i>
Bartells, Charles Waldron,	<i>Camp Point.</i>
Bentley, Hugh Burton,	<i>Chassell, Mich.</i>
Boehm, Rudolph Siegfried,	<i>Chicago.</i>
Brady, Horatius Thomas Addis,	<i>Chicago.</i>
Brand, Otto Axel Bernard,	<i>Chicago.</i>
Buchholz, William John,	<i>Hooper, Neb.</i>
Burmeister, Henry Joseph,	<i>Chicago.</i>
Chisin, John Sam,	<i>Argonia, Kas.</i>
Condrey, Maynard Clyde,	<i>Oblong.</i>
Conklyn, Frank Shelmire,	<i>Manchester, Mich.</i>
Czaja, Peter,	<i>Chicago.</i>
vonDanden, Raymond,	<i>Chicago.</i>
Dauber, Adolph,	<i>Peru.</i>
Davis, Leonard Watkins,	<i>Topeka, Kas.</i>
Dougherty, Arthur,	<i>Macomb.</i>
Dudenbostel, Louis Ernest,	<i>Campbell Hill.</i>
Ellmann, Alfred,	<i>Oconto, Wis.</i>
Emerson, Irving Lewis,	<i>Sauk Center, Minn.</i>
Fahrner, Pius Michael,	<i>Joliet.</i>
Fax, Calvin Pliny,	<i>Chicago.</i>
Friedlander, John David,	<i>Chicago.</i>
Goodman, Lewis,	<i>Chicago.</i>
Greene, Grove,	<i>Marshall, Mich.</i>
Griffith, Marcus Adelbert,	<i>Dundee.</i>
Haeseler, Frank Preston,	<i>Mt. Vernon, Ia.</i>

Harder, Frank Ramsey,	<i>Pittsfield.</i>
Harris, Frank Anthony,	<i>Galena.</i>
Hartig, Henry,	<i>Peoria.</i>
Hawley, Robert Coleman,	<i>Mound City.</i>
Heidbreder, Albert Henry,	<i>Quincy.</i>
Herbold, Charles,	<i>Peru.</i>
Hoffsted, John Lawrence,	<i>Chicago.</i>
Holiday, Oren Perry,	<i>Georgetown.</i>
Hosteny, Joseph Nevi,	<i>Chicago.</i>
Hottinger, Joseph Andrew,	<i>Chicago.</i>
Jansen, William Leonard,	<i>Quincy.</i>
Johnson, Alva Andrew,	<i>Kilbourn, Wis.</i>
Joubert, Louis Joseph,	<i>Kankakee.</i>
Joyner, Wilbur Newell,	<i>Chicago.</i>
Jungk, Walter August,	<i>Chicago.</i>
Kirby, George Bell,	<i>Clarksville, Tenn.</i>
Kucera, Anton,	<i>Hazelhurst, Wis.</i>
McCoy, Laul Verne,	<i>Dassel, Minn.</i>
McKinnie, Lewis Hugh,	<i>Viola.</i>
McMillan, Herbert Lewis,	<i>Sunbeam.</i>
Marvin, Earle Zebina,	<i>Coldwater, Mich.</i>
Meinger, Alonzo Edward,	<i>Sioux City, Ia.</i>
Mercer, Robert John,	<i>Burlington, Ia.</i>
Metz, John Joseph,	<i>Chicago.</i>
Michelmann, Albert,	<i>Quincy.</i>
Mitchell, Jay Howard,	<i>Chicago.</i>
Mortland, Arthur Caldwell,	<i>Edgerton, Ohio.</i>
Mueller, Carl,	<i>Kansas City, Mo.</i>
Munsterman, Henry Albert,	<i>Chicago.</i>
Newland, John Beach,	<i>Palestine.</i>
Nickerson, Howard Arthur,	<i>Buchanan, Mich.</i>
Nikodem, Charles Valentine,	<i>Chicago.</i>
Nims, Boyden,	<i>Mt. Holly, N. C.</i>
Pahnke, August Albert,	<i>Chicago.</i>
Parker, Oren Francis,	<i>Rensselaer, Ind.</i>
Pick, Emie Edward,	<i>Chicago.</i>
Pokorney, Frank Joseph,	<i>Chicago.</i>
Priest, Fred Horace,	<i>Hastings, Ia.</i>
Prince, Charles Franklin,	<i>Beardstown.</i>
Reuter, William Conrad,	<i>Chicago.</i>
Robson, Andrew Jackson,	<i>Joliet.</i>

Schomer, Michael Frank,	<i>Aurora.</i>
Seyfarth, Clarence Alexander,	<i>Blue Island.</i>
Shambaugh, Ray Leroy,	<i>Arlington, Ia.</i>
Slyter, Charles Elmer,	<i>Cozad, Neb.</i>
Smith, Frank George Douglas,	<i>Grand Forks, N. Dak.</i>
Smith, Robert Clyde,	<i>Oak Park.</i>
Steyer, George Edward,	<i>Chicago.</i>
Strait, Burton Emra,	<i>Ottawa.</i>
Susa, Joseph James,	<i>Chicago.</i>
Swanson, Harold Gideon,	<i>Chicago.</i>
Talbot, Francis James,	<i>Chicago.</i>
Taylor, George Owen,	<i>Chicago.</i>
Taylor, Raymond Eugene,	<i>Chicago.</i>
Utt, Alfred Reuben,	<i>Pittsfield.</i>
Vannatta, Dewitt Snow,	<i>Galesburg.</i>
Werber, Max Frederick,	<i>Chicago.</i>
Williams J. H.,	<i>Long Creek, Ore.</i>
Wilson, Don Edward,	<i>Bonham, Tex.</i>
Woelz, Frederick Wilhelm,	<i>Green Bay, Wis.</i>
Wright, Herbert Collins,	<i>Rockford.</i>
Zippel, Walter,	<i>Chicago.</i>

**SPECIAL**

Barrett, William Craig, Ph.G.,	<i>Highwood.</i>
--------------------------------	------------------

**PREPARATORY SCHOOL**

Adams, Frank E,	<i>Lintner.</i>
Allen, John Newell,	<i>Hoopeston.</i>
Bailiff, Lucius Fremont,	<i>Lovett, Ind.</i>
Barnett, Arthur,	<i>Hallsville.</i>
Beasley, Sally Louise,	<i>Champaign.</i>
Bennett, William Lee,	<i>Colchester.</i>
Black, Laura Louise,	<i>Urbana.</i>
Block, Edgar William,	<i>Sidney.</i>
Bopp, William George,	<i>Chicago.</i>
Boulden, Darwin,	<i>Eddyville.</i>
Bowers, Lloyd Enrick,	<i>Brookville.</i>
Boyd, Lulu Stella,	<i>Sidney.</i>
Breiner, John Francis,	<i>Sciota.</i>
Bridge, Horace Lawrence,	<i>Solsville, N. Y.</i>
Brittin, Frederick,	<i>Cantrall, Ia.</i>



Brown, Warren Howe,	<i>Urbana.</i>
Brundage, Martin Denman,	<i>Malta.</i>
Buell, Fred Allen,	<i>Ridge Farm.</i>
Burrill, Mildred Ann,	<i>Urbana.</i>
Busey, Paul,	<i>Urbana.</i>
Cadwell, Charles Nickerson,	<i>Urbana.</i>
Carper, Ulysses Stanton,	<i>Seymour.</i>
Carson, Thomas Francis,	<i>Urbana.</i>
Carter, Ira Calvin,	<i>St. Charles, Minn.</i>
Carter, Opal Gertrude,	<i>Champaign.</i>
Chapin, Arlo,	<i>Champaign.</i>
Clark, Elwyn Lorenzo,	<i>Momence.</i>
Coe, John Edwin,	<i>Rochester.</i>
Collins, Maud Myrtle,	<i>Bondville.</i>
Conard, Frank Eli,	<i>Monticello.</i>
Conner, Thomas John Antoine,	<i>Prairie du Rocher.</i>
Craig, Arthur Emanuel,	<i>Fair Grange.</i>
Crane, Zaide Varney,	<i>Champaign.</i>
Crawford, Ollie Grace,	<i>Bondville.</i>
Crissey, Ruth Elizabeth,	<i>Champaign.</i>
Cummings, Joseph Ross,	<i>Monmouth.</i>
Daniels, Charles Edgar,	<i>Savoy.</i>
Davis, Cleon Leslie,	<i>Mt. Zion.</i>
Davis, George Royal, Jr.,	<i>Chicago.</i>
Davis, Oliver Marcy,	<i>Evanston.</i>
Dean, Cora Edna,	<i>Evanston.</i>
Donoghue, William Joseph,	<i>LaSalle.</i>
Draper, Charlotte Enid,	<i>Hakodate, Japan.</i>
Draper, Edwin Lyon,	<i>Urbana.</i>
Drury, Clair Fred,	<i>New Boston.</i>
Dunkin, Gilbert Leslie,	<i>Urbana.</i>
Evans, Earl Ralph,	<i>Hammond.</i>
Ferry, Thomas Roy,	<i>Pleasant Plains.</i>
Forbes, Ethel Clara Schumann,	<i>Urbana.</i>
Forbes, Winifred,	<i>Urbana.</i>
Frazier, James William,	<i>Bushton.</i>
Freeman, Julius Buckingham,	<i>Bloomington.</i>
Fullenwider, Thomas Irwin,	<i>Mechanicsburg.</i>
Fullerton, Hugh Regnier,	<i>Havana.</i>
Ferguson, Anna,	<i>Casey.</i>
Gaffin, Benjamin Heistand,	<i>Leaf River.</i>

Gaffin, Charles Harold,	<i>Leaf River.</i>
Gallaher, Fred Lee,	<i>Mt. Palatine.</i>
Gibbs, Elizabeth Hayward,	<i>Riverton, Ky.</i>
Gifford, Roy Lytton,	<i>Rantoul.</i>
Goff, Mary Emma,	<i>Rantoul.</i>
Greene, Josephine Maxwell,	<i>Ramsey.</i>
Greer, James Richard,	<i>Fairmount.</i>
Greencamp, Henry Herman,	<i>Havana.</i>
Hanson, Gertrude Lucie,	<i>Urbana.</i>
Harbeson, Davis Lawler,	<i>Stewardson.</i>
Harris, Chester Ellis,	<i>Ogden.</i>
Harris, Thaddeus Sidney,	<i>Modesto.</i>
Haussler, Robert Edward,	<i>Centralia.</i>
Helm, James Wilson, Jr.,	<i>Danville.</i>
Herring, Horace,	<i>Civer.</i>
Hidy, Llorá Mabel,	<i>Mansfield.</i>
Higgins, Samuel Chase,	<i>El Paso, Texas.</i>
Hoadley, Lester Joseph,	<i>Earlville.</i>
Hobart, Harry Edwin,	<i>Armington.</i>
Hopper, Flora Evelyn,	<i>Jamaica.</i>
Hopper, Margaret,	<i>Jamaica.</i>
Hopper, Orvil Frank,	<i>Jamaica.</i>
Howard, Lida Frances,	<i>Clinton.</i>
Howell, Carrie Barnes,	<i>Champaign.</i>
Huntoon, George Edward,	<i>Moline.</i>
Jacobs, Manuel Joseph,	<i>Chicago.</i>
Johnson, Clarence Eugene,	<i>Champaign.</i>
Keniston, Charles Herbert,	<i>Wilton Center.</i>
Kile, Sadie Alice,	<i>Cisco.</i>
Kilbury, Asa,	<i>St. Joseph.</i>
Kincaid, Anna Laura,	<i>Athens.</i>
King, Jacob Weinberg,	<i>Augusta.</i>
Kirby, Nellie Maye,	<i>Monticello.</i>
Kruse, Richard Fred,	<i>Davenport, Ia.</i>
Kuhn, Leopold,	<i>Champaign.</i>
Lawhead, Maud Madge,	<i>Urbana.</i>
Linden, Frank William,	<i>Chicago.</i>
Lee, Kittie Grace,	<i>Homer.</i>
Lippincott, Charles Allen,	<i>Rardin.</i>
Lorenson, John Hanson,	<i>Lovington.</i>
McCracken, George Milas,	<i>Pana.</i>

McFarland, Herman Earl,	<i>Mendon.</i>
McShane, John James Hugh,	<i>Ivesdale.</i>
McVay, Camden J,	<i>Champaign.</i>
Manny, Clay Yates,	<i>Urbana.</i>
Marsh, Albert Leroy,	<i>Pana.</i>
Martin, Albert Carey,	<i>LaSalle.</i>
Martin, James Walter,	<i>Wilmington.</i>
Martinie, Charles Austin,	<i>Urbana.</i>
Mathis, Roy Hayes,	<i>Prophetstown.</i>
Means, Lee David,	<i>Saybrook.</i>
Mitchel, Lyman Betts,	<i>Danvers.</i>
Mitchel, Walter Ormsby,	<i>Danvers.</i>
Moore, Claude Bliss,	<i>Wilmington.</i>
Moran, Mark Asher,	<i>Canton.</i>
Morris, Robert Lyman,	<i>Maroa.</i>
Mykins, Perry H,	<i>Battle Creek, Mich.</i>
Nebeker, Milo Washington,	<i>Davenport, Ia.</i>
Neikirk, John Oscar,	<i>Forest City.</i>
Newbold, Theodore Aubrey,	<i>Joliet.</i>
Null, Louis Agassiz,	<i>Blandinsville.</i>
Onken, John August,	<i>Harpster.</i>
Perrigo, Lyle Donovan,	<i>Urbana.</i>
Powell, John Thomas,	<i>Belleflower.</i>
Prehm, Walter Fred,	<i>Chicago.</i>
Price, Hugh Mitchel,	<i>Champaign.</i>
Pritchard, Frank Preston,	<i>Fisher.</i>
Purvines, George Oscar,	<i>Pleasant Plains.</i>
Quinn, Jennie May,	<i>Champaign.</i>
Railsback, Charles Philip,	<i>Tazewell.</i>
Read, Edgar Newton,	<i>Urbana.</i>
Reasoner, Clara Beck,	<i>Ogden.</i>
Richardson, James Roy,	<i>Pleasant Plains.</i>
Ricker, Ethel,	<i>Urbana.</i>
Rogers, Lawrence Stevens,	<i>Mendota.</i>
Rogers, Myron Cyrus,	<i>Prophetstown.</i>
Rolfe, Susie Farley,	<i>Champaign.</i>
Sauers, Arthur Andrew,	<i>Earlville.</i>
Scott, Vera Charlotte,	<i>Mahomet.</i>
Seymour, Roy Vincent,	<i>Dwight.</i>
Smith, David Aaron,	<i>Claytonville.</i>
Smith, James Howard,	<i>Sidney.</i>

Snyder, Simeon M,	<i>Metamora.</i>
Sonnemann, Floyd,	<i>Vandalia.</i>
Sparks, Annie Elnora,	<i>Urbana.</i>
Spence, Will Potter,	<i>Macomb.</i>
Stanley, Harvey Hatten,	<i>Champaign.</i>
Stewart, John Hardin,	<i>Exeter.</i>
Stark, Claude,	<i>Champaign.</i>
Stratton, Isaac Harry,	<i>Toulon.</i>
Strouse, Milton,	<i>Delavan.</i>
Taylor, Lewis James,	<i>Earlville.</i>
Thatcher, Alice Neta,	<i>Decatur.</i>
Thomas, William Frederick,	<i>Bradford.</i>
Thompson, Clarence,	<i>Champaign.</i>
Thompson, Frank Linn,	<i>Warrensburg.</i>
Thompson, Fred Bailey,	<i>Canton.</i>
Thompson, George Palmer,	<i>Steward.</i>
Thompson, Lenora Bell,	<i>Steward.</i>
Thompson, McDonald,	<i>Isabel.</i>
Thompson, Willard Carr,	<i>Canton.</i>
Thornton, Jae James,	<i>Magnolia.</i>
Tobin, Louis Michael,	<i>Urbana.</i>
Tomlin, Milton Dell,	<i>Easton.</i>
Toops, Claude,	<i>Seymour.</i>
Toops, George Noble,	<i>Seymour.</i>
Trevett, Helen Mary,	<i>Champaign.</i>
Tuthill, Lewis Butler,	<i>Anna.</i>
Voris, Henry McMunn,	<i>Neoga.</i>
Voris, Ralph Emerson,	<i>Stewardson.</i>
Waite, Will Clarence,	<i>Danville.</i>
Wallace, Jacob H,	<i>Altamont.</i>
Webber, Bernard Porter,	<i>Wenona.</i>
Webber, Pearl,	<i>Urbana.</i>
Wendell, Frank,	<i>New Holland.</i>
Whipple, Fred George,	<i>Chicago.</i>
Whitaker, Jesse Lee,	<i>Kinmundy.</i>
White, Howard Allen,	<i>Batchtown.</i>
Whitney, Jay Asa,	<i>Lostant.</i>
Whitson, Milton James,	<i>Davenport, Ia.</i>
Williams, Elrick,	<i>Illioopolis.</i>
Williams, Simon,	<i>Illioopolis.</i>
Williamson, Josephine Huldah,	<i>Champaign.</i>

Wilson, Margaret Mary,	<i>LaPlace.</i>
Womacks, Nita,	<i>Champaign.</i>
Wright, Edith,	<i>Urbana.</i>
Wright, Lora,	<i>Urbana.</i>
Wright, William Wilberforce, Jr.,	<i>Toulon.</i>
Yocum, Clyde Hathaway,	<i>Chestnut.</i>
Youle, Claude M,	<i>Saybrook.</i>
Youle, Floyd Quincy,	<i>Saybrook.</i>

**SPECIALS IN MUSIC**

Besore, Hazel,	<i>Urbana.</i>
Breckenridge, Blanche Fargason,	<i>Urbana.</i>
Burrill, Irene Elsa,	<i>Urbana.</i>
Byerly, Edna Gertrude,	<i>Urbana.</i>
Davidson, Hazel Frances,	<i>Champaign.</i>
Griffin, Anna Mabel,	<i>Argenta.</i>
Grigsby, Mary Louise,	<i>Blandinsville.</i>
Lafin, Mary Elizabeth,	<i>Champaign.</i>
Payne, Lena Venice,	<i>Potomac.</i>
Renner, Wendell Phillips,	<i>Urbana.</i>
Stedman, Jeanette,	<i>Champaign.</i>
Trevett, Bessie Harriet,	<i>Champaign.</i>

## SUMMARY OF STUDENTS, 1897-98

---

	MEN	WOMEN	TOTAL
GRADUATE SCHOOL.....	57	5	62
RESIDENT GRADUATES.....	9	7	16
COLLEGES—			
Seniors .....	83	10	93
Juniors .....	93	30	123
Sophomores .....	117	21	138
Freshmen .....	173	44	217
Specials .....	72	53	125
Total .....	604	170	774
WINTER SCHOOL IN AGRICULTURE.....	23	...	23
LAW SCHOOL—			
First year.....	33	2	35
Third year.....	4		4
Total .....	37	2	39
SCHOOL OF MEDICINE—			
Seniors .....	121	4	125
Juniors .....	98	6	104
Sophomores .....	88	1	89
Freshmen .....	84	6	90
Total .....	391	17	408
SCHOOL OF PHARMACY—			
Seniors .....	48	2	50
Juniors .....	89		89
Special .....	1		1
Total .....	138	2	140
PREPARATORY SCHOOL.....	145	54	199
	1,338	245	1,583
Deduct counted twice.....	1		1
Total in University.....	1,337	245	1,582

# HOLDERS OF SCHOLARSHIPS, PRIZES, AND COMMISSIONS

---

## HONORARY SCHOLARSHIPS

Cook,	Barrett, George Francis.
Dupage,	vonOven, Frederick W.
Iroquois,	Dillon, William W.
Kendall,	Seely, Garrett T.
LaSalle,	Clifford, Charles L.
Ogle,	Woolsey, Lulu C.
Stark,	Eagelston, Frank G.
Whiteside,	Bradley, James C.

## STATE SCHOLARSHIPS

Champaign,	Hartrick, Louis E.
Champaign,	Black, Alice M.
Coles,	Stubbins, Lewis C.
Coles,	Frost, Frank G.
Cook, 9th Senatorial District,	Rudnick, Paul F. A.
Cumberland,	Lindley, Walter C.
DeKalb,	Radley, Guy R.
DeWitt	Tull, Effie M.
Douglas,	Polk, Robert C.
DuPage,	Hinckley, George C.
Fulton,	Dobbins, Lester C.
Grundy,	Magner, Harold B.
Iroquois,	Pletcher, Nuba M.
Kane,	Hoppin, Charles A.
LaSalle,	Olson, Joseph M.
McLean,	Hartrick, D. Clara.
McLean,	Reardon, Neal D.
Macon,	Woods, William T.
Macon,	Lytle, Ernest B.
Macoupin,	Otwell, Allen M.
Montgomery,	Barry, George R.
Ogle,	Brayton, Louis F.
Piatt,	Mitchell, Annie.
Piatt,	Hinkle, Ida M.
Richland,	Coen, Homer.

Stark,	Stewart, Miles V.
Tazewell,	Zipf, Ferdinand.
Vermilion,	Hayes, Z. Bernice.
Whiteside,	Warner, Harry J.
Will,	Reeves, George I.

## CHICAGO CLUB LOAN FUND

Mesiroff, Joseph.

## WINNER OF HAZELTON PRIZE MEDAL

Cadet Corporal, Ernest Thompson Robbins.

COMMISSIONS AS BREVET CAPTAIN ILLINOIS  
NATIONAL GUARD, ISSUED BY THE  
GOVERNOR IN 1897Ralph P. Brower, Alvin C. Beal, Albert C. Hobart, Charles W.  
Leigh, and Horace C. Porter.ROSTER OF OFFICERS AND NON-COMMISSIONED  
OFFICERS, BATTALION OF THE UNIVERSITY  
OF ILLINOIS

Major, A. St. J. Williamson.

Adjutant, W. A. Fraser.

Sergeant Major, A. R. Johnston.

Color Sergeant, E. E. Hinrichsen.

Drum Major, Fred Lowenthal.

Company A—Captain, M. I. Hopkins; First Lieutenants, G. W.  
Hubbard, R. L. Fowler; First Sergeant, C. H. Chapman; Ser-  
geants, R. S. Wiley, H. E. Keeney, W. H. Few, F. G. Allen,  
B. F. McGee.Company B—Captain, A. D. DuBois; First Lieutenants, J. C. Har-  
rower, E. W. P. Flesch; First Sergeant, C. L. Eddy; Sergeants,  
J. P. Kratz, G. R. Smith, W. C. Evans, H. A. Soverhill.Company C—Captain, D. R. Enochs; First Lieutenants, M. M. Will-  
cox, C. G. Lawrence; First Sergeant, E. T. Robbins; Ser-  
geants, W. G. Palmer, J. G. Appelquist, W. P. Norton, F. D.  
Francis, O. L. Housel.Company D—Captain, O. M. Rhodes; First Lieutenant, W. A.  
Hawley; First Sergeant, C. E. Sandberg; Sergeants, A. Kuehn,  
Robt. Gray, W. G. Foster, H. W. Baker, L. C. Dobbins, L. S.  
Rogers.Battery—Captain, H. M. May; First Sergeant, C. L. Logue; Ser-  
geants, R. Thompson, C. H. Charles.



# THE UNIVERSITY CALENDAR

1898-99

---

## FALL TERM, 1898

Sept. 8, Thursday.	Entrance Examinations begin.
Sept. 12, 13, Monday and Tuesday.	Registration Days.
Sept. 14, Wednesday.	Instruction begins.
Nov. 7, Monday.	Latest date for announcing Subjects of Theses.
Dec. 14, Wednesday.	Term Examinations begin.
Dec. 16, Friday.	Term ends.

## WINTER TERM, 1899

Jan. 2, Monday.	Entrance Examinations.
Jan. 3, Tuesday.	Registration Day.
Jan. 4, Wednesday.	Instruction begins.
Feb. 20, Monday.	Prize Debate.
March 15, Wednesday.	Term Examinations begin.
March 17, Friday.	Term ends.

## SPRING TERM, 1899

March 28, Tuesday.	Registration Day.
March 29, Wednesday.	Instruction begins.
May 17, 18, 19, Wednes- day evening to Friday noon.	University High School Conference.
May 19, Friday.	Interscholastic Oratorical Contest.
May 20, Saturday.	Interscholastic Athletic meet.
May 29, Monday.	Hazleton Prize Drill.
May 30, Tuesday.	Competitive Drill.
June 6, Tuesday.	Latest Day for Acceptance of Theses.
June 7, Wednesday.	Term Examinations begin.
June 11, Sunday.	Baccalaureate Address.
June 12, Monday.	Class Day.
June 13, Tuesday.	Alumni Day and Oratorical Contest.
June 14, Wednesday.	Twenty-seventh Annual Commencement.

FALL TERM, 1899

Sept. 7, Thursday. Entrance Examinations begin.  
 Sept. 11, 12, Monday and Tuesday. Registration Days.  
 Sept. 13, Wednesday. Instruction begins.  
 Nov. 6, Monday. Latest date for announcing Subjects of These.  
 Dec. 13, Wednesday. Term Examinations begin.  
 Dec. 14, Friday. Term ends.

1898							1899																				
<b>SEPTEMBER</b>							<b>JANUARY</b>							<b>MAY</b>							<b>SEPTEMBER</b>						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
..	..	..	..	1	2	3	1	2	3	4	5	6	7	..	1	2	3	4	5	6	..	..	..	..	..	1	2
4	5	6	7	8	9	10	8	9	10	11	12	13	14	7	8	9	10	11	12	13	3	4	5	6	7	8	9
11	12	13	14	15	16	17	15	16	17	18	19	20	21	14	15	16	17	18	19	20	10	11	12	13	14	15	16
18	19	20	21	22	23	24	22	23	24	25	26	27	28	21	22	23	24	25	26	27	17	18	19	20	21	22	23
25	26	27	28	29	30	..	29	30	31	..	..	..	..	28	29	30	31	..	..	..	24	25	26	27	28	29	30
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
<b>OCTOBER</b>							<b>FEBRUARY</b>							<b>JUNE</b>							<b>OCTOBER</b>						
..	..	..	..	..	..	1	..	..	..	1	2	3	4	..	..	..	..	1	2	3	1	2	3	4	5	6	7
2	3	4	5	6	7	8	5	6	7	8	9	10	11	4	5	6	7	8	9	10	8	9	10	11	12	13	14
9	10	11	12	13	14	15	12	13	14	15	16	17	18	11	12	13	14	15	16	17	15	16	17	18	19	20	21
16	17	18	19	20	21	22	19	20	21	22	23	24	25	18	19	20	21	22	23	24	22	23	24	25	26	27	28
23	24	25	26	27	28	29	26	27	28	..	..	..	..	25	26	27	28	29	30	..	29	30	31	..	..	..	..
30	31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
<b>NOVEMBER</b>							<b>MARCH</b>							<b>JULY</b>							<b>NOVEMBER</b>						
..	..	1	2	3	4	5	..	..	..	1	2	3	4	..	..	..	..	..	1	..	..	..	1	2	3	4	
6	7	8	9	10	11	12	5	6	7	8	9	10	11	2	3	4	5	6	7	8	5	6	7	8	9	10	11
13	14	15	16	17	18	19	12	13	14	15	16	17	18	9	10	11	12	13	14	15	12	13	14	15	16	17	18
20	21	22	23	24	25	26	19	20	21	22	23	24	25	16	17	18	19	20	21	22	19	20	21	22	23	24	25
27	28	29	30	..	..	..	26	27	28	29	30	31	..	23	24	25	26	27	28	29	26	27	28	29	30	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	30	31	..	..	..	..	..	..	..	..	..	..	..	
<b>DECEMBER</b>							<b>APRIL</b>							<b>AUGUST</b>							<b>DECEMBER</b>						
..	..	..	..	1	2	3	..	..	..	..	..	..	1	..	..	1	2	3	4	5	..	..	..	..	..	1	2
4	5	6	7	8	9	10	2	3	4	5	6	7	8	6	7	8	9	10	11	12	3	4	5	6	7	8	9
11	12	13	14	15	16	17	9	10	11	12	13	14	15	13	14	15	16	17	18	19	10	11	12	13	14	15	16
18	19	20	21	22	23	24	16	17	18	19	20	21	22	20	21	22	23	24	25	26	17	18	19	20	21	22	23
25	26	27	28	29	30	31	23	24	25	26	27	28	29	27	28	29	30	31	..	..	24	25	26	27	28	29	30
..	..	..	..	..	..	..	30	..	..	..	..	..	..	..	..	..	..	..	..	..	31	..	..	..	..	..	..

# INDEX

- Accredited High Schools, 35, 255.  
Adelphic Literary Society, 250.  
Administration of the University, 49; officers of, 7.  
Administration, Public Law and. See PUBLIC LAW AND ADMINISTRATION.  
Admission: To the University, by certificate, 35; by examination, 36ff.; as Special Students, 42; by transfer of credits, 41; to Graduate School, 138; to Preparatory School, 267. See also EXAMINATIONS AFTER SEPTEMBER, 1899, 43; to the School of Law, 142; to the School of Medicine, 148; to the School of Pharmacy, 156; to the Bar, 145.  
Advanced Standing, 42, 143, 149.  
Agricultural Experiment Station, 19, 24.  
Agriculture, College of. See COLLEGE.  
Agriculture, courses in, 157; Winter School, 129.  
Aethenal Society, 250.  
Algebra. See MATHEMATICS.  
Anglo-Saxon. See ENGLISH.  
Anthropology, course in, 160.  
Anthropometry, 263.  
Appropriations, 22, 24.  
Architectural Engineering, 72.  
Architecture, 70ff.; courses in, 161; description of department, 70; equipment, 29, 70; graduation, 71.  
Art and Design, 60; courses in, 167.  
Art Gallery, 32.  
Astronomy, for admission, 38; courses in, 103, 169; department, 104; equipment, 106.  
Athletic Meet, Interscholastic, 249.  
Athletics. See PHYSICAL TRAINING.  
Bacteriology. See courses in BOTANY AND MUNICIPAL AND SANITARY ENGINEERING.  
Band, Military, 137, 261.  
Bar, admission to the, 145.  
Battalion, officers of. See MILITARY.  
Beneficiary Aid, 250.  
Biological Experiment Station, 28.  
Board. See EXPENSES.  
Botany, for admission, 38; courses in, 171; department, 113; equipment, 113; in Preparatory School, 270.  
Buildings and Grounds, 24.  
Calendar, 319.  
Central Heating Station, 25.  
Certificates. See ADMISSION AND COUNTY SUPERINTENDENTS.  
Chemical and Physical Group, 90.  
Chemical Laboratory, 24. See also LABORATORIES.  
Chemistry, for admission, 38; courses in 92ff., 174; department, 98; equipment, 91; graduation in, 93, 97; laboratories for, 24, 91.  
Chicago Club Loan Fund, 250.  
Christian Associations, 251.  
Civil Engineering, courses in, 179; description of departments, 74; equipment, 27, 29, 74.  
Classical Group, 56.  
Club, Chicago, 250.  
Clubs, 137, 251.  
Collections, 28ff.  
College of Agriculture, 51, 123ff.; admission, 38, 40; aims and scope, 124; equipment, 125; faculty, 123; graduation, 128; Winter School, 129.  
College of Engineering, 51, 67ff.; admission, 39; aims and scope, 68; courses of instruction, 71, 73, 74, 77, 81, 83; departments, 70, 72, 74, 75, 79, 82, 84, 85; equipment, 69, 70, 74, 76, 79, 84, 85; faculty, 67; graduation, 48, 71, 73, 74, 77, 81, 83.  
College of Literature and Arts, 50, 53ff.; admission, 35, 38; aims and scope, 54; courses of instruction, 59; departments, 60; general course system, 54; graduation, 57; group system, 55.  
College of Physicians and Surgeons. See SCHOOL OF MEDICINE.  
College of Science, 51, 87ff.; admission, 35, 40; aims and scope, 88; courses of instruction, 94, 96, 103, 110, 112; departments, 98, 100, 104, 113, 120; equipment, 27, 30, 31, 90, 91, 92, 106, 113, 115, 116, 118; faculty, 87; graduation, 93, 95, 97, 102, 109, 112, 120; group system, 90, 95, 100, 107, 119.  
Commencement. See CALENDAR.  
Commissions, 261; holders of, 317.  
Council of Administration, 49.  
County Superintendents' Certificates, 268.  
Courses, General Description of, 157ff.; in Preparatory School, 269.  
Courses of instruction, 59, 71, 73, 74, 77, 81, 83, 94, 95, 98, 103, 110, 112, 129, 133, 144.  
Deans, 49.  
Degrees, Bachelors', 145, 241, 242; in agriculture, 123; in engineering, 71, 73, 74, 77, 81, 83; in science, 90; in library science, 133; in law, 145; in literature and arts, 58; in music, 135; in pharmacy, 156; SECOND, 145, 242, 243; DOCTORS', 214.  
Diplomas, 23.  
Donations to the University. See GIFTS.

- Drawing**, for admission, 39; in Preparatory School, 270; general engineering, 183. See also **ART AND DESIGN**.
- Economics**, courses in, 183; department, 60, 120.
- Election of studies**, 111, 157.
- Electrical Engineering**, courses in, 77, 187; description of department 75; equipment, 76.
- Engineering**, architectural, 72; civil, 74; electrical, 75; mechanical, 73; municipal and sanitary, 82. See **COLLEGE OF ENGINEERING**.
- English Club**. See **CLUBS**.
- English Language and Literature**, for admission, 37, 38; courses in, 189; department, 61; group, 56; in Preparatory School, 270. See also **RHETORIC**.
- Entomology**. See **ZOOLOGY**.
- Esthetics**, 227.
- Ethics**, 227.
- Examinations**, for admission, 36ff.; for advanced standing, 42; term, 47; scholarship, 248; graduate, 189.
- Expenses**, 264.
- Experiment Station**, Agricultural, 19, 24; biological, 28.
- Faculty**, University, 49; College of Agriculture, 123; College of Engineering, 67; College of Literature and Arts, 53; School of Law, 142; Library School, 131; Medical School, 14; School of Music, 135; School of Pharmacy, 18; Preparatory School, 11.
- Fees**, Law School, 146. See **EXPENSES**.
- Fellowships**, 245.
- Fine Arts**, 253. See **ART AND DESIGN AND MUSIC**.
- French**, for admission, 40; courses in, 191; Preparatory School, 270. See also **ROMANCE LANGUAGES**.
- Forestry**. See **HORTICULTURE**.
- General Course System**, 54.
- Geology**, course in, 192; department, 114; equipment, 30, 115.
- Geometry**. See **MATHEMATICS**.
- German**, for admission, 40, 45; courses in, 194; department, 61; and Romance Language Group, 56; in Preparatory School, 270.
- Gifts**, 21, 32.
- Glee Clubs**, 137.
- Government**, of the University, 49; of the Preparatory School, 272.
- Graduate Courses**, in agriculture, 160; architecture, 166; botany, 173; chemistry, 179; civil engineering, 182; economics, 186; electrical engineering, 189; French, 192; geology, 194; Greek, 197; history, 198; Latin, 201; mathematics, 211; mechanical engineering, 216; mechanics, 218; municipal and sanitary engineering, 221; pedagogy, 225; philosophy, 228; physics, 230; psychology, 233; zoology, 240.
- Graduate School**, 51, 138.
- Graduation**, requirements for, 48; College of Agriculture, 128; College of Engineering, 71, 73, 74, 77, 81, 83; College of Literature and Arts, 57; College of Science, 93, 95, 97, 102, 109, 112, 120; Law School, 142; Library School, 133; Medical School, 152; Music School, 135; School of Pharmacy, 156.
- Greek**, for admission, 39; courses in, 196; department, 62; in Preparatory School, 271. See **CLASSICAL GROUP**.
- Group System**, 55ff., 89, 90, 100, 107, 119, 246 note.
- Gymnasium**, 262, 263.
- Hazleton Prize Medal**, 249, holder of, 318.
- High Schools**, accredited, 35, 255.
- History of the University of Illinois**, 21.
- History**, for admission, 37; courses in, 197; department, 62; in Preparatory School, 271.
- Horticulture**, courses in, 198.
- Hospital Facilities**, 151.
- Hygiene**. See **PHYSIOLOGY**.
- Instruction**, courses of. See **COURSES**; methods of, 69, 75, 82, 125, 132, 142, 151.
- Interscholastic Oratorical Contest**. See **PRIZES, ORATORICAL**.
- Italian**, courses in, 200. See **ROMANCE LANGUAGES**.
- Laboratories**, engineering, 23, 27, 79, 85; medical, 150; science, 24, 27, 90, 91, 113, 115, 118, 125; for special research, 28; State, of Natural History, 28.
- Lands**, University, 21, 24.
- Latin**, for admission, 39; courses in, 200; department, 62; in Preparatory School, 271, and Modern Language Group, 56. See also **CLASSICAL GROUP**.
- Law**. See **SCHOOL OF LAW**.
- Library**, 26, 33, 146.
- Library School**. See **STATE LIBRARY SCHOOL**.
- Library Science**, courses in, 203. See **STATE LIBRARY SCHOOL**.
- Literature and Arts**, College of. See **COLLEGE**.
- Lithology**. See **GEOLOGY**.
- Loan Funds**, 250.
- Logic**, 58, 227.
- Machine Shops**, 25, 80.
- Masters' Degrees**. See **DEGREES**.
- Mathematical Group**, 100ff.
- Mathematics**, for admission, 36, 37, 40, 41; courses in, 206; department, 63, 106; equipment, 107.
- Mechanical Engineering**, courses in, 81, 211; department, 79; equipment, 25, 27, 79.
- Mechanics**, courses in, 216; department, 85; equipment, 28, 85.
- Medical Club**. See **CLUBS**.

- Medicine, School of, 52; courses preliminary to, 112.  
 Military Band, 137, 261.  
 Military Hall, 26.  
 Military Science, courses in, 218; department, 63, 260.  
 Military Scholarships, 248.  
 Mineralogy, courses in, 219; equipment, 116. See also GEOLOGY.  
 Municipal and Sanitary Engineering, courses in, 83, 219; description of department, 82.  
 Music, School of, 52; courses in, 221.  
 Natural History, State Laboratory of, 19, 23.  
 Natural History Hall, 26.  
 Natural Science Group, 107ff.  
 Observatory, 26.  
 Officers of Battalion, 318.  
 Oratorio Society, 137.  
 Oratory, Prizes in, 249.  
 Orchestra, 137.  
 Organization of the University, 50ff.  
 Paleontology, 224. See also GEOLOGY and MINERALOGY.  
 Pedagogy, Courses in, 64, 224; Department of, 64.  
 Pharmacy, School of, 52, 154.  
 Philomathean Literary Society, 250.  
 Philosophical Group, 66, 119.  
 Philosophy, Courses in, 226; Department of, 64, 121.  
 Physical Training, courses in, 228; department, 64, 262. See under REQUIREMENTS for GRADUATION.  
 Physics, for admission, 37; courses in, 97, 228; department, 84, 92, 100; in Preparatory School, 271.  
 Physics, agricultural, 125.  
 Physiology, for admission, 38; courses in, 230; department, 116; equipment, 116; in Preparatory School, 272.  
 Political Science Group, 57.  
 Preparatory School, 267; admission, 267; course of study, 268; instructors, 19; students, 310.  
 Prizes, 249; holders of, 317.  
 Psychology, courses in, 232; department, 56, 65, 121; equipment, 27, 121.  
 Public Law and Administration, courses in, 233; department of, 64.  
 Reading Room, 33.  
 Registration, 47.  
 Rhetoric, courses in, 235; department of, 65.  
 Romance Languages, 56, 66. See also FRENCH, ITALIAN, SPANISH.  
 Sanitary Engineering, Municipal and. See MUNICIPAL.  
 Scholarships, Military, 248; State, 247. Holders of, 317.  
 Science. See COLLEGE OF SCIENCE.  
 School of Law, 52, 142ff.; admission, 142; advanced standing, 143; courses, 144; faculty, 142; graduation, 144.  
 School of Library Science. See STATE LIBRARY SCHOOL.  
 School of Medicine, 52, 147ff.; admission, 148; advanced standing, 149; courses, 149; equipment, 150; graduation, 152; hospital, 151.  
 School of Music, 52, 135ff.; aims, 135; courses, 136, 221; graduation, 135.  
 School of Pharmacy, 52, 154ff.; admission, 156; graduation, 156.  
 Shops, mechanical, 25, 79.  
 Societies. See CLUBS.  
 Sociology. See under ECONOMICS.  
 Spanish, courses in, 235. See also ROMANCE LANGUAGES.  
 Specialized Course System, 96. See GROUP SYSTEM.  
 State Laboratory of Natural History, 19, 23, 28, 108.  
 State Library School, 52, 131ff.; admission, 38ff.; courses, 133, 203; equipment, 132; graduation, 133.  
 Students, List of, 273; summary of, 316.  
 Terms and Vacations, 48. See also CALENDAR.  
 Testing Laboratory. See SHOPS.  
 Theoretical and Applied Mechanics. See MECHANICS.  
 Theses, 55, 58, 72, 73, 75, 78, 82, 83, 94, 95, 102, 109, 128, 135, 145, 241, 243, 245. See DEGREES, GRADUATION, and CALENDAR.  
 Trustees, 5, 22.  
 University of Illinois; history, 21; location, 21.  
 Uniform, Military, 261.  
 University Hall, 26.  
 Vacations, 48. See also CALENDAR.  
 Veterinary Science, courses in, 236.  
 Water Analysis, 28.  
 Winter School in Agriculture, 129.  
 Women at the University, 23; special advantages for, 253; Physical Training for, see PHYSICAL TRAINING.  
 Zoölogy, for admission, 38; courses in, 236; department, 117; equipment, 26, 27, 31, 118; in Preparatory School, 272. See NATURAL SCIENCE GROUP.



Dupl  
Recd May 9, 1898.  
Gift of Univ<sup>y</sup> of Illinois.