



Catalogue of the University of Wisconsin for the academic year 1884-5. October, 1884

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CATALOGUE

OF THE

UNIVERSITY OF WISCONSIN

FOR THE

ACADEMIC YEAR 1884-5.

MADISON, WISCONSIN.

OCTOBER, 1884.

DAVID ATWOOD, PRINTER AND STEREOTYPER, MADISON, WIS.

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UNIVERSITY OF WISCONSIN.

From Chapter 25, Revised Statutes of Wisconsin.

SECTION 385. The object of the University of Wisconsin shall be to provide the means of acquiring a thorough knowledge of the various branches of learning connected with scientific, industrial and professional pursuits; and to this end it shall consist of the following colleges or departments, to wit: 1st, The College or Department of Arts; 2d, The College or Department of Letters; 3d, Such professional or other colleges or departments as now are or may from time to time be added thereto or connected therewith.

SECTION 386. The College or Department of Arts shall embrace courses of instruction in mathematical, physical and natural sciences, with their application to the industrial arts, such as agriculture, mechanics, engineering, mining and metallurgy, manufactures, architecture and commerce; in such branches included in the College of Letters as shall be necessary to proper fitness of the pupils in the scientific and practical courses for their chosen pursuits, and in military tactics; and as soon as the income of the University will allow, in such order as the wants of the public shall seem to require, the said courses in the sciences, and their application to the practical arts, shall be expanded into distinct colleges of the University, each with its own faculty and appropriate title. The College of Letters shall be co-existent with the College of Arts, and shall embrace a liberal course of instruction in language, literature, and philosophy, together with such courses, or parts of courses, in the College of Arts, as the Regents of the University shall prescribe.

SECTION 387. The University shall be open to female as well as to male students, under such regulations and restrictions as the Board of Regents may deem proper; and all able-bodied male students of the University, in whatever college, may receive instruction and discipline in military tactics, the requisite arms for which shall be furnished by the state.

BOARD OF REGENTS.

STATE SUPERINTENDENT OF PUBLIC INSTRUCTION,

Ex-Oficio Regent.

Term Expires first Monday in February, 1885.

State at Large.....	GEO. H. PAUL.....	Milwaukee.
9th Congressional District.....	J. M. BINGHAM.....	Chippewa Falls.

Term Expires first Monday in February, 1886.

State at Large.....	E. W. KEYES.....	Madison.
1st Congressional District.....	J. G. McMYNN.....	Racine.
2d Congressional District.....	H. D. HITT.....	Oakfield.
6th Congressional District.....	A. C. PARKINSON.....	Columbus.
7th Congressional District.....	C. H. WILLIAMS.....	Baraboo.

Term Expires first Monday in February, 1887.

3d Congressional District.....	W. F. VILAS.....	Madison.
4th Congressional District.....	GEO. KOEPHEN.....	Milwaukee.
5th Congressional District.....	HIRAM SMITH.....	Sheboygan Falls.
8th Congressional District.....	JOHN C. SPOONER.....	Hudson.

OFFICERS OF THE BOARD.

GEO. H. PAUL, PRESIDENT.

J. G. McMYNN, VICE-PRESIDENT.

JOHN S. DEAN, SECRETARY.

STATE TREASURER, *Ex-Oficio* TREASURER.

COMMITTEES.

Executive—E. W. KEYES, W. F. VILAS, A. C. PARKINSON.

Farm—HIRAM SMITH, H. D. HITT, C. H. WILLIAMS.

Library and Text-Books—R. GRAHAM, J. G. McMYNN, GEO. KOEPHEN.

Law Department—J. M. BINGHAM, J. C. SPOONER, W. F. VILAS.

Office of Regents—101 S. Hamilton St., opposite Park Hotel.

FACULTIES, INSTRUCTORS AND OFFICERS.

JOHN BASCOM, D. D., LL. D., PRESIDENT,	620 State St.
Professor of Mental and Moral Philosophy.	
<i>Professors of the Colleges of Art and Letters*—</i>	
JOHN WHELEN STERLING, PH. D., VICE PRESIDENT,	811 State St.
Emeritus Professor of Mathematics.	
WILLIAM FRANCIS ALLEN, A. M.,	233 Langdon St.
Professor of Latin and History.	
ALEXANDER KERR, A. M.,	140 Langdon St.
Professor of the Greek Language and Literature.	
JOHN BARBER PARKINSON, A. M.,	803 State St.
Professor of Civil Polity and Political Economy.	
JOHN WILLIAM STEARNS, LL. D.,	
Professor of the Science and Art of Teaching.	
JOHN EUGENE DAVIES, A. M., M. D.,	523 N. Carroll St.
Professor of Physics.	
WILLIAM WILLARD DANIELLS, M. S.,	515 N. Carroll St.
Professor of Chemistry.	
WILLIAM H. ROSENSTENGEL, A. M.,	435 Lake St.
Professor of the German Language and Literature.	
JOHN CHARLES FREEMAN, LL. D.,	221 Langdon St.
Professor of English Literature.	
EDWARD SINGLETON HOLDEN, A. M.,	Observatory Hill.
Professor of Astronomy. Director of the Washburn Observatory.	
ROLAND DUER IRVING, PH. D.,	227 Langdon St.
Professor of Geology and Mineralogy.	
FLETCHER ANDREW PARKER,	18 W. Gilman St.
Professor of Music.	
DAVID BOWER FRANKENBURGER, A. M.,	115 W. Gilman St.
Professor of Rhetoric and Oratory.	
HENRY PRENTISS ARMSBY, PH. D.,	702 State St.
Professor of Agricultural Chemistry.	
EDWARD THOMAS OWEN, A. B.,	614 State St.
Professor of the French Language and Literature.	
EDWARD ASAHEL BIRGE, PH. D.,	744 Langdon St.
Professor of Zoology.	
ALLAN DARST CONOVER, C. E.,	151 W. Gilman St.
Professor of Engineering.	
LUCIUS HERITAGE, A. M.,	545 State St.
Assistant Professor of Latin.	
CHARLES A. VAN VELZER, S. B.,	134 W. Gorham St.
Assistant Professor of Mathematics.	

*In order of the time of collegiate graduation.

UNIVERSITY OF WISCONSIN.

WILLIAM HOLME WILLIAMS, A. B.,	- - - - -	811 State St.
Assistant Professor of Greek.		
FREDERICK BELDING POWER, PH. G., PH. D.,	- - - - -	707 State St.
Professor of Pharmacy and Materia Medica.		
GEORGE NATHAN CHASE, LIEUT. 4TH U. S. INF'Y,	- - - - -	406 N. Henry St.
Professor of Military Science and Tactics.		
CHARLES RICHARD VAN HISE, M. S.,	- - - - -	630 Francis St.
Assistant Professor of Metallurgy.		
WILLIAM ARNON HENRY, AGR. B.,	- - - - -	University Farm.
Professor of Agriculture.		
WILLIAM TRELEASE, S. D.,	- - - - -	631 State St.
Professor of Botany.		

Professors of the Law Faculty:

HON. I. C. SLOAN, DEAN OF THE LAW FACULTY,	- - - - -	234 Langdon St.
Professor of Equity, Real Estate, Corporations and Wills.		
J. H. CARPENTER, LL. D.,	- - - - -	315 Wisconsin Ave.
Professor of Criminal Law and Contracts.		
WILLIAM F. VILAS, LL. B.,	- - - - -	12 E. Gilman St.
Professor of Practice, Pleadings and Evidence.		
HON. ROMANZO BUNN,	- - - - -	104 Langdon St.
Professor of Federal Jurisprudence.		
CLARK GAPEN, M. D.,	- - - - -	404 N. Carroll St.
Professor of Medical Jurisprudence.		

Instructors:

MRS. D. E. CARSON,	- - - - -	Ladies' Hall.
Mathematics. Principal of Ladies' Hall.		
ELLEN L. CHYNOWETH, A. M.,	- - - - -	527 State St.
German.		
FLORA ELIZABETH DODGE, A. B.,	- - - - -	310 W. Washington Ave.
French.		
CHARLES ISAAC KING,	- - - - -	Ladies' Hall.
Superintendent of the Department of Mechanic Arts.		
STORM BULL, MECH. E.,	- - - - -	16 N. Fairchild St.
Mechanical Engineering.		
CHARLES HENRY JAMES DOUGLAS, A. M.,	- - - - -	523 N. Carroll St.
Rhetoric and Oratory.		
OLIN BAILEY LEWIS, A. B.,	- - - - -	610 Langdon St.
Chemistry.		
JULIUS EMIL OLSON, B. L.,	- - - - -	316 N. Carroll St.
Scandinavian Languages.		
MILTON UPDEGRAFF, B. S., B. C. E.,	- - - - -	Observatory.
Assistant in Astronomical Observatory.		
FREDERICK GARLAND SHORT,	- - - - -	Agricultural Hall.
Agricultural Chemistry.		

LIBRARY COMMITTEE.

PRESIDENT BASCOM; PROFESSOR FREEMAN, *Secretary*; PROFESSORS ROSEN-STENGEL, HOLDEN AND IRVING.
THERESE S. FAVILL, - - - - - Library Attendant.

CLASS OFFICERS, 1884-85

SENIOR CLASS.

Classical Courses, - - - - - Professor Parkinson.
General Science Course, - - - - - Professor Irving.

JUNIOR CLASS.

Ancient Classical Course, - - - - - Professor Frankenburger.
Modern Classical Course, - - - - - Professor Allen.
General Science Course, - - - - - Professor Daniells.

SOPHOMORE CLASS.

Ancient Classical Course, - - - - - Professor Kerr.
Modern Classical Course, - - - - - Professor Rosenstengel.
General Science Course, - - - - - Professor Birge.

FRESHMAN CLASS.

Ancient Classical Course, - - - - - Professor Williams.
Modern Classical Course, - - - - - Mrs. Carson.
General Science Course, - - - - - Miss Dodge.
AGRICULTURAL STUDENTS, - - - - - Professor Henry.
ENGINEERING STUDENTS, - - - - - Professor Conover.
PHARMACY STUDENTS, - - - - - Professor Power.
SPECIAL STUDENTS, - - - - - Professors Kerr and Birge.
GREEK CLASS, - - - - - Professor Williams.

JANITORS.

PATRICK K. WELSH, - - - - - University Hall and Dormitories.
JAMES H. RIDER, - - - - - Science Hall.
JAMES M. ASHBY, - - - - - Ladies' Hall.
TIMOTHY PURCELL, - - - - - Library and Assembly Hall.
JOHN DOESCHER, - - - - - Washburn Observatory.
RICHARD T. DAVIS, - - - - - University Carpenter.

DEGREES CONFERRED.

COMMENCEMENTS 1884.

BACHELOR OF ARTS.

William Edward Aitchison,	Willis Haven Miner,
Clara Delia Baker,	William Beebe Monroe,
Harry Hamlin Beaser,	Harry Leonard Moseley,
Charles Ruggles Boardman,	James Crumbacker Officer,
Leslie Lyel Brown,	Marshall M. Parkinson,
Edward J. Dockery,	James A. Peterson,
Clarence John Hicks,	James R. F. Trottman,
Olin Bailey Lewis,	Fred Jackson Turner.

BACHELOR OF LETTERS.

Jerome Clarence Arpke,	Rose Fitch,
John Arthur Aylward,	Louis Coleman Haley,
Theron W. Bean,	Mary Lizzie Hand,
Curtis Asher Boorman,	Carolyn L. Howe,
James O. Buckley,	Alice Maxwell Lamb,
Sarah Amelia Clark,	Milton Orlup Nelson,
Florence Augusta Cornelius,	Julius Emil Olson,
Marie Emilie Dahle,	Julia Elizabeth Ray,
	James R. F. Trottman.

BACHELOR OF SCIENCE.

Florence Bascom, B. A., B. L.,	Albert J. Ochsner,
James A. Buckley,	Merial Lucinda Park,
John Melvin Clifford,	Edward Payson Pond,
Charles Frederick Dahl,	Frank S. Traverse,
Louis Falge,	Milton Updegraff,
Herman Fehr,	Lester Paul Utter,
Herman Grotophorst,	Aad J. Vinje,
Augustin Julius Hilbert,	Charlotte Von Suessmilch,
Mary Montague Howe,	Clyde Harvey Ward,
Adeline Eliza Keifer,	Martha Week.

BACHELOR OF CIVIL ENGINEERING.

McClellan Dodge,	William Franklin Duffy,
James Hopkins Dousman,	Milton Updegraff.

BACHELOR OF MECHANICAL ENGINEERING.

Joseph Dodge,	Charles Grant Wade,
Herman Fehr,	Mark A. Waldo,
	Edward Fay Wilson.

GRADUATE IN PHARMACY.

Leverett Edmund Brainerd, Charles Albert Foster,
John Henry Sherman.

BACHELOR OF LAW.

Levi Horace Bancroft,	Walter Francis Mason,
Seldon Bacon,	Henry Pratt Morse,
Julian Bennett,	John Ollis,
Rublee Alvah Cole, A. B.,	George B. Parkhill,
Albert Sheldon Cronk,	Albert B. Roeder,
Orson Eugene Curtis,	William B. Sterling,
Edward L. Farnsworth,	John Toohey,
William H. Flett,	Thomas James Walsh,
John Lewis Gilmore,	Charles A. Williams,
Arthur H. Goss,	Andrew Judson Sutherland,
Eugene William Helms,	Darwin Wilfred Smith, A. B.,
Charles Francis Lamb, A. B.,	Eugene L. Williams,
	David F. Simpson.

SECOND DEGREES.

MASTER OF ARTS.

(On examination.)

O. E. Hagen, A. B.—In Greek.
Mrs. Julia Clark Hallam, A. B.—In Greek.
Henry J. Taylor, A. B.—In Greek.

MASTER OF LETTERS.

(On examination.)

Nellie Cynthia Chase, B. L.—In German.
O. E. Hagen, B. L.—In English.

MASTER OF SCIENCE.

(On examination.)

G. W. Brown, B. S.—In Physics—*Excused from Thesis*.
Julius Nelson, B. S.—In Natural History.
A. M. Sawin, B. S.—In Mathematics.

CIVIL ENGINEER.

(On examination.)

Joshua Norris Sanborn, B. Mech. E.

HONORARY DEGREES.

DOCTOR OF LAWS.

Prof. Joseph Ficklin, Ph. D., University of Missouri.
Horace H. Morgan, A. M., Principal of High School, St. Louis, Mo.

DOCTOR OF PHILOSOPHY.

D. J. Whittemore, C. E., Chief Engineer C., M. & St. P. R'y, Milwaukee.
Emory McClintock, F. I. A., Actuary of Northwestern Mutual Life
Insurance Company, Milwaukee.

HONORS.

COMMENCEMENT, 1884.

OF THE FIRST GRADE.

Albert J. Ochsner, College of Arts.
Milton Updegraff, College of Arts.

OF THE SECOND GRADE.

Clara D. Baker, College of Letters.
Sarah A. Clark, College of Letters.
Herman Fehr, College of Arts.
Herman Grotophorst, College of Arts.
Alice M. Lamb, College of Letters.
James R. F. Trottman, College of Letters.
Julius E. Olson, College of Letters.
Fred J. Turner, College of Letters.
Aad J. Vinje, College of Arts.

IN SPECIAL STUDIES.

Clara D. Baker, Greek.
Florence A. Cornelius, French.
Herman Fehr, Mathematics.
Herman Grotophorst, German.
Augustin Julius Hilbert, Chemistry.
Alice M. Lamb, German.
Olin Bailey Lewis, Chemistry.
Albert J. Ochsner, Natural History.
Milton Updegraff, Mathematics.

GRADUATES.

Number of University Graduates, 1854-1884,	-	-	-	-	1,072
Ancient Classical Course,	-	-	-	-	216
Modern Classical Course,	-	-	-	-	110
General Science Course,	-	-	-	-	285
Normal Course, 1865-67,	-	-	-	-	25
Technical Courses,	-	-	-	-	58
Law School,	-	-	-	-	375
Pharmacy,	-	-	-	-	3
					1,072

UNIVERSITY STUDENTS.

RESIDENT GRADUATES.

Alice Maxwell Lamb, B. L.,	Madison,	202 N. Carroll St.
Conrad Martinus Conradson, B. M. E.,	Madison,	316 Wisconsin Ave.—2

SENIOR CLASS.

ANCIENT CLASSICAL COURSE.

Carrie Ella Baker,	Madison,	1200 University Ave.
Charles Ilsley Brigham,	Milwaukee,	Chi Psi House.
George Lincoln Bunn,	Madison,	104 Langdon St.
Lawrence Peterson Conover,	Dayton, O.,	502 N. Henry St.
Henry Church Hullinger,	Madison,	223 W. Gilman St.
William Harvey Miller,	Hazel Green,	404 N. Henry St.
Anna Burr Moseley,	Madison,	120 Langdon St.
Charles Fremont Niles,	Monroe,	610 Langdon St.
Frederic Augustus Pike, Jr.,	Oshkosh,	Chi Psi House. —9

MODERN CLASSICAL COURSE.

Charles Levi Allen,	Eau Claire,	438 Lake St.
Ethel Bushnell,	Omro,	Ladies' Hall.
Grace Clark,	Madison,	22 S. Webster St.
John C. Eaver,	Blue Mounds,	133 E. Johnson St.
John L. Erdall,	Madison,	107 S. Canal St.
Emma Goddard,	Monroe,	731 State St.
James Merrill Hutchinson,	Madison,	16 E. Wilson St.
Albert H. Long,	Gotham,	403 W. Mifflin St.
Mary Parkinson,	Madison,	803 State St.
Bertha Staples Pitman,	Madison,	135 W. Gorham St.
Benj. Stewart Smith,	Ashland,	133 E. Johnson St.
Edith Ballinger Updegraff,	Decorah, Iowa,	Ladies' Hall.
Albert Williams,	Hazel Green,	13 W. Clymer St.
Alice Lucretia Williams,	Madison,	109 W. Clymer St.
Harry Worthington,	Centralia,	531 State St. —15

GENERAL SCIENCE COURSE.

John William Blakey,	Shullsburg,	610 Langdon St.
Asa Gilbert Briggs,	Arcadia,	438 Lake St.
Charles David Fenelon,	Weyauwega,	427 Murray St.
John Comstock Gaveney,	Arcadia,	401 W. Gilman St.
Charles W. Gilman,	Gilmanton,	436 Lake St.
Elmer Dickson Matts,	Paoli,	401 W. Gilman St.
Elmer Hiram Parker,	Pleasant Valley,	640 State St.
Rose Eugenie Schuster,	Middleton,	604 State St.

Hugh Fred Schunck,	Toledo, O.,	701 Langdon St.
Mina Stone,	Reedsburg,	437 Francis St.
Byrd McKee Vaughan,	Grand Rapids,	436 Lake St.
Joseph Whitford Vernon,	Madison,	522 State St.
Elizabeth Agnes Waters,	Fond du Lac,	Ladies' Hall. —13

CIVIL ENGINEERING COURSE.

George Willard Baldwin,	Baldwin's Mills,	622 Francis St.
Patrick Henry Connolly,	Racine,	70 N. Dormitory.
Frank Wilber Holt,	Brooklyn,	31 N. Dormitory.
Albert Leopold Parman,	Mazomanie,	70 N. Dormitory.
Corydon Tyler Purdy,	Madison,	622 Francis St. —5

METALLURGICAL COURSE.

Howard Burton Smith,	Leon,	Psi Chi House.
Nels Marcus Thygeson,	Martelle,	813 University Ave.—2

MECHANICAL ENGINEERING COURSE.

Charles Isaac Earll,	Madison,	14 W. Gilman St.
August Lindemann,	Milwaukee,	438 Lake St.
George Edward Waldo,	Manitowoc,	640 State St.
Charles Marshall Wales,	Elkhorn,	640 State St.
William Henry Wasweyler,	Milwaukee,	525 Langdon St. —5

AGRICULTURAL COURSE.

Louis Herman Pammel,	La Crosse,	515 Lake St.
		—1

50

JUNIOR CLASS.

ANCIENT CLASSICAL COURSE.

Clarence Hickman Bennett,	Portage,	640 State St.
William Henry Hallam,	Dodgeville,	401 W. Gilman St.
Frederick Nathaniel Hooker,	Milwaukee,	Chi Psi House.
John Monroe Parkinson,	Madison,	802 State St.
Lynn Spencer Pease,	Montello,	505 Langdon St. —5

MODERN CLASSICAL COURSE.

*Katharine Allen,	Madison,	228 Langdon St.
Louis Royal Anderson,	Stevens Point,	701 University Ave.
Mary Francis Connor,	Token Creek,	238 W. Gilman St.
William Goward Coumbe,	Port Andrew,	519 Langdon St.
Sarah Wells Gallett,	Portage,	Ladies' Hall.
Florence Tyng Griswold,	Columbus,	803 State St.
George Carpenter Main,	Madison,	518 Wisconsin Ave.
Carrie Emma Morgan,	Appleton,	Ladies' Hall.
*Charles Edward Nichols,	Lodi,	414 Lake St.
Emma Ennever Nunns,	Madison,	20 W. Mifflin St.
George Sumner Parker,	Janesville,	515 Lake St.
Ella Spaulding,	Black River Falls,	Ladies' Hall.
Wilbur Stuart Tupper,	Evansville,	203 W. Gilman St.—13

*Six years' course.

GENERAL SCIENCE COURSE.

Eddie John Angle,	Madison,	414 Lake St.
Charles Lewis Beach,	Whitewater,	430 Lake St.
Samuel Anson Connell,	Menomonee Falls,	430 Lake St.
Julius Hortvet,	Baraboo,	311 W. Henry St.
Kate McDonald,	Trempealeau,	803 State St.
Otto John Schuster,	Middleton,	83 N. Dormitory.
Daniel Albert Siegfried,	Madison,	414 Lake St.
Clarence Elmer Ward,	Mazomanie,	433 Lake St.
Frederic Robert Weber,	Cedarburg,	515 Lake St. —9

CIVIL ENGINEERING COURSE.

William Henry Adamson,	Madison,	421 Lake St.
George William Brown,	Madison,	Washburn Observat'y.
Frank Fisher Foote,	Lodi,	424 Francis St.
Jonathan Phillips,	Mineral Point,	432 Francis St. —4

MECHANICAL ENGINEERING COURSE.

Franklin Gatfield Hobart,	Oak Creek,	604 State St.
Robert Closon Spencer,	Milwaukee,	713 State St.
Edward Otto Zwietusch,	Milwaukee,	713 State St. —3

AGRICULTURAL COURSE.

Edwin Horatio Park,	Dodge's Corners,	432 Lake St. —1
35		

SOPHOMORE CLASS.

ANCIENT CLASSICAL COURSE.

Alice Butterfield,	Madison,	107 W. Gorham St.
Oscar Hallam,	Dodgeville,	401 W. Gilman St.
Cornelius Rasmusson Hill,	De Forest,	114 S. Butler St.
Charles Marcius Morris,	Madison,	240 Langdon St.
Edward William Schmidt,	Madison,	341 Spaight St.
Warren Tomkins,	Albany,	444 Gilman St.
Rubertus Francesco Troy,	Madison,	1228 Spring St.
Pare Winston,	Foreston, Ill.,	831 State St. —8

MODERN CLASSICAL COURSE.

Ada May Brown,	Stevens Point,	Ladies' Hall.
Kate Coyne,	Madison,	716 Langdon St.
Oscar Henry Ecke,	Stevens Point,	420 Murray St.
Imogene Frances Hand,	Racine,	Ladies' Hall.
Ida Estelle Johnson,	Madison,	316 Wisconsin Ave.
Robert Kolliner,	Madison,	711 Langdon St.
Flora Lucretia Lawson,	Madison,	609 State St.
Sarah Margaret Lawson,	Madison,	609 State St.
Edward Marcellus Platt,	Manitowoc,	640 State St.
Juliet Claire Thorp,	Madison,	427 N. Butler St.
Laurel Elmer Youmans,	Mukwonago,	505 Langdon St. —11

GENERAL SCIENCE COURSE.

Harry Elmer Briggs,	Madison,	21 W. Clymer St.
Ferdinand Joseph Colignon,	Sturgeon Bay,	67 N. Dormitory.
Alfred Edwin Diment,	Madison,	1224 Spring St.
Frank Erastus Doty,	Madison,	21 W. Clymer St.
Richard Keller,	Sauk City,	416 Francis St.
Newton Ardeene Moe,	Union Grove,	535 State St.
John P. Munson,	Madison,	416 Francis St.
Eugenia Naffz,	Sauk City,	609 State St.
Peter Juul Noer,	Sand Creek,	420 Murray St.
Frank Bain Phelps,	Janesville,	153 W. Gorham St.
Claude Valentine Seeber,	Waterloo,	139 S. Butler St.
William Willis Strickland,	Ellsworth,	432 Lake St.
Arthur Edwin Thomas,	Dodge's Corners,	420 Murray St.
Frederick William Winter,	omah,	57 N. Dormitory.
Frank Levi Woodhouse,	Waupun,	713 State St. —15

CIVIL ENGINEERING COURSE.

Frank Ellis Bamford,	Milwaukee,	311 N. Henry St.
Erwin Marshall Bullfinch,	Juda,	56 N. Dormitory.
John Fay Ellis,	Evansville,	831 State St. —3

METALLURGICAL COURSE.

Walter Camp Parmley,	Hebron, Neb.,	713 State St. —1
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MECHANICAL ENGINEERING COURSE.

Charles Aldo Alderman,	Eau Claire,	701 Langdon St.
James Louis Carey,	Appleton,	432 Francis St.
William Richard O'Neill,	Milwaukee,	123 E. Gorham St.
William Richard Rosenstengel,	Madison,	435 Lake St.
Russell Humphrey Smith,	Chicago, Ill.,	424 Wisconsin Ave.
Arthur Jackson West,	Milwaukee,	519 Langdon St. —6

AGRICULTURAL COURSE

Warren Morton Perkins,	Columbus,	67 N. Dormitory. —1
45		

FRESHMAN CLASS.

ANCIENT CLASSICAL COURSE.

William Cairns,	Ellsworth,	432 Lake St.
Kirke Lionel Cowdery,	Elkhorn,	241 W. Gilman St.
Bert Drown,	Union,	
John Trustan McKinnon,	Rep. City, Neb.,	709 Univ. Ave.
Louise Marion McMynn,	Racine,	811 State St.
Nat Robinson,	Neenah,	531 Lake St.
Bertha Vernon Stiles,	Ottumwa, Ia.,	206 State St.
Mabel Strickland,	North'ton, Mass.,	233 Langdon St.
Mary Frances Winston,	Forreston, Ill.,	831 State St. —9

MODERN CLASSICAL COURSE.

Jessie Martha Cole,	Sheboygan Falls,	Ladies' Hall.
Mollie Bertrand Conklin,	Madison,	310 Brooks St.
Kate Alice Clements,	Stevens Point,	Ladies' Hall.
Julia Dalberg,	Madison,	317 State St.
Nellie Drown,	Union,	Ladies' Hall.
Fannie Farnsworth,	Sheboygan Falls,	Ladies' Hall.
Dennis Thomas Keeley,	Fox Lake,	213 Brooks St.
Frederick William Kelly,	Milwaukee,	620 Francis St.
Sophie Maie Lewis,	Madison,	207 Mifflin St.
Zera Wilson Monroe,	Monroe,	153 W. Gorham St.
Hattie Trayne Remington,	Baraboo,	647 Francis St.
Mame Benton Sarles,	Sparta,	Ladies' Hall.
Ambrose Burnside Winegar,	Clinton Junction,	153 Gorham St. —13

GENERAL SCIENCE COURSE.

J. Frank Allard,	Beaver Dam,	123 N. Butler St.
James Sylvester Bacon,	Waterloo,	213 Murray St.
Fredolin Beglinger,	Oshkosh,	438 Lake St.
William Edward Black,	Gotham,	519 Langdon St.
Charles Philip Bossert,	Milwaukee,	519 Langdon St.
Will Wilder Cutler,	Rolling Prairie,	444 W. Gilman St.
Emma Varian Drinker,	Kilbourn City,	Ladies' Hall.
William Emil Durr,	Milwaukee,	314 Langdon St.
Martin John Feeney,	Marshall,	539 State St.
Clinton Fulton,	Hudson,	620 Francis St.
Ferdinand August Geiger,	Madison,	512 Lake St.
Frank Lynch Gilbert,	Arena,	340 W. Mifflin St.
James Goldsworthy,	Mineral Point,	831 State St.
Cora Inez Hancock,	Columbus,	406 N. Henry St.
Otto Guido Robert Hohnbach, Jr.,	Milwaukee,	312 W. Clymer St.
Louis Herbert Jackson,	Ft. Sully, Dakota,	414 Lake St.
John Clement Jamieson,	Poynette,	28 N. Dormitory.
Edward Thomas Johnson,	Amherst,	213 Brooks St.
Nellie Kerr,	Black Earth,	901 W. Johnson St.
John Furman Lamont,	Unity,	932 W. Johnson St.
Harry David Latimer,	Delavan,	707 State St.
William Stanley McCorkle,	Twin Bluffs,	1029 W. Johnson St.
James McDonald,	Rochester,	311 W. Henry St.
William Martin,	Mt. Horeb,	340 W. Mifflin St.
Helene Merk,	Sauk City,	609 State St.
Lawrence Murphy,	Bluff Station,	340 W. Mifflin St.
Herman Elias Paulson,	Perry,	323 N. Butler St.
Arthur Emmet Ransom,	Unity,	932 W. Johnson St.
Walter Alexander Rogers,	Wauwatosa,	519 Langdon St.
Harry Luman Russell,	Poynette,	531 State St.
Bertram Welton Sippy,	Ithaca,	1029 W. Johnson St.

Lucius Melander Squire,	Poynette,	531 State St.
Charles Warren Turner,	Poynette,	28 N. Dormitory.
John Lane Van Ornum,	Racine,	939 University Ave.
Lyman Grover Wheeler,	Milwaukee,	414 Lake St.
Florence Fern Wilson,	Madison,	534 Lake St. —36

AGRICULTURAL COURSE.

Frank Paul Friday,	Hartford,	1029 Univ. Ave. —1
		—59

SPECIAL STUDENTS.

Samuel Breck Ackley,	Oconomowoc,	123 N. Butler St.
James Mark Austin,	Ellendale, D. T.,	319 Main St.
John J. Bach,	Milwaukee,	413 Lake St.
Carl M. Beebe,	Sparta,	414 Lake St.
Joseph Colt Bloodgood,	Nashotah,	611 Francis St.
Charles Haslam Bradley,	Madison,	424 W. Wash'ton Ave.
Samuel Leslie Brown,	Richland Centre,	403 W. Mifflin St.
De Witt Smith Clark,	Eau Claire,	701 Langdon St.
Niles Augustus Colman,	Greenbush,	709 University Ave.
Augusta J. Comley,	Madison,	429 W. Wilson St.
Harry Daniel Corning,	Kilbourn City,	433 Lake St.
Lucy Rebecca Dawson,	Viroqua,	Ladies' Hall.
Herbert John Draper,	Baraboo,	215 W. Wash'ton Ave.
Lulu May Fisher,	Madison,	438 Lake St.
Lemuel Morris Hancock,	Madison,	219 W. Gilman St.
Patrick Henry Hewitt,	Manitowoc,	1029 University Ave.
*John Martin Hill,	De Forest,	114 S. Butler St.
John D. Hullinger, Jr.,	Milton,	223 W. Gilman St.
George Aloysius Humpert.	Beloit,	401 W. Gilman St.
Charles Henry John,	Milwaukee,	611 Francis St.
Clara Allyn Jones,	Lancaster,	Ladies' Hall.
*Frank Joseph Kempter,	Alma,	325 W. Main St.
*George Washington Kempter,	Alma,	325 W. Main St.
William Archer Lake,	Viroqua,	540 State St.
Warren Lucas,	Menomonee,	543 State St.
Herman Frederick Lüders,	Sauk City,	27 N. Dormitory.
Cora Almira Markham,	Kilbourn City,	Ladies' Hall.
Charles Morehead McCoy,	Brooklyn,	831 State St.
Michael William McCrea,	Beaver Dam,	414 Lake St.
Patrick McGovern,	Elkhart,	413 Lake St.
Helen Eugenia Martin,	Spring Prairie,	803 State St.
John Harlan Martin,	Oregon,	219 W. Gilman St.
John Lawrence Millard,	Ripon,	430 Lake St.
J. Howard Morrison,	Elkhorn,	707 State St.
Gideon Ellis Newman, Jr.,	Cooksville,	416 Murray St.
*Herman Pammel,	La Crosse,	515 Lake St.
Theodore C. Peterson,	Moscow,	152 E. Gorham St.
William Albert Pierce,	Dodge's Corners,	432 Lake St.

*Joseph Horace Powers,	Boyne Falls, Mich.	1015 University Ave.
Emm [†] Jane Purdy,	Madison,	622 Francis St.
Alexander Hamilton Reid,	Alderly,	515 Lake St.
Joseph Rice,	Hillsboro,	515 Lake St.
James Dariens Ryder,	Waterloo,	139 S. Butler St.
Mary Rebecca Saxe,	Whitewater,	Ladies' Hall.
Henry Sprague Shedd,	Whitewater,	15 W. Gilman St.
Nellie Fairfield Shields,	Madison,	701 Langdon St.
Israel Shrimski,	Hudson,	620 Francis St.
Arthur Parks Silliman,	Hudson,	423 W. Gilman St.
Frances Ellis Slocum,	Madison,	414 Lake St.
Annie C. Stewart,	Madison,	2 N. Butler St.
Herbert Frank Stone,	Madison,	207 W. Gilman St.
Henry George Smieding,	Racine,	1029 W. Johnson St.
Lizzie Tinker,	Clinton,	Ladies' Hall.
Arthur Jackson West,	Milwaukee,	519 Langdon St.
Frederick Harvey Whitton,	Madison,	638 Langdon St.
Harriet Louise Winn,	Madison,	125 N. Butler St.
David Byron Worthington,	Centralia,	531 State St.—57.
Charles Allen Armstrong,	Boscobel,	534 State St.
†Frederick Dudley Arnold,	Portage,	610 Francis St.
William Elmer Bainbridge,	Mifflin,	420 Murray St.
Theodore Andrew Boerner,	Cedarburg,	611 Francis St.
†Peter Brodesser,	Milwaukee,	416 Murray St.
Elsie Lois Bristol,	Middleton,	15 E. Dayton St.
Eugene Edward Brossard,	Fall River,	North Dormitory.
†George Alfred Brown,	Madison,	316 W. Wash'ton Ave.
Isabelle Brown,	Stevens Point,	Ladies' Hall.
John Austin Bruce,	Madison,	311 E. Mifflin St.
George Angus Buckstaff,	Oshkosh,	525 Langdon St.
†George William Canner,	Milwaukee,	433 Lake St.
Frank Arthur Carr,	Madison,	749 Langdon St.
Leora Melissa Chase,	Sioux City, Ia.,	Ladies' Hall.
Clara May Chrisler,	Madison,	543 State St.
Henry Cummings,	Platteville,	711 Langdon St.
Mary Rebecca Dixon,	Ottumwa, Ia.,	206 State St.
Abbie Fiske Eaton,	Beloit,	Ladies' Hall.
John Fay Ellis,	Evansville,	831 State St.
Fannie Ellsworth,	Madison,	115 W. Gorham St.
Millie Christina Forsyth,	Oconomowoc,	Ladies' Hall.
John Huston Gabriel,	Monroe,	444 W. Gilman St.
Edwin Gattiker,	Baraboo,	416 Francis St.
Maud Gernon,	Madison,	Ladies' Hall.
Howard Greene,	Milwaukee,	Chi Psi House.
Samuel Frank Grubb,	Baraboo,	311 N. Henry St.
Délia Haner,	Sun Prairie,	406 N. Henry St.
Michael Harrington, Jr.,	Madison,	620 State St.

Charles Lewis Hover,	Mazomanie,	620 Francis St.
Lansil Winfield Jacobs,	Madison,	425 W. Wash. Ave.
William Foulkes Jones,	Rockland,	57 North Dormitory.
William Ernst Kramer,	Milwaukee,	Chi Psi House.
Bert Erastus Martin,	Eureka,	810 University Ave.
David William McKenna,	Madison,	148 S. Blair St.
Fred Phelps Meyer,	Lancaster,	640 State St.
Mary Johnson Newman,	Trempealeau,	749 State St.
Stella Dorinda Prentice,	Evansville,	Ladies' Hall.
William Hutchinson Putnam,	River Falls,	611 Francis St.
Mary Elizabeth Perkins,	Montello,	Ladies' Hall.
Thomas A. Polleys,	Centreville,	420 Murray St.
*George Ribenack,	Wausau,	416 Murray St.
Robert Mark Richmond,	Madison,	420 W. Wilson St.
Henry Harvoleau Roser,	Madison,	241 W. Gilman St.
Albert David Rundle,	Madison,	121 S. Hamilton St.
Gilbert Ernstein Roe,	Oregon,	701 University Ave.
*Albert Theodore Schroeder,	Redfield, D. T.,	519 Lake St.
Horace Jordan Smith,	De Pere,	611 Francis St.
Minnie Spaulding,	Black River Falls,	Ladies' Hall.
David Ellsworth Spencer,	Madison,	215 N. Carroll St.
Emorette Beebe Sutherland,	Waukau,	640 State St.
Mary Sylvia Tenney,	Madison,	126 Langdon St.
*George Langstaff Thayer,	Norwood P'k, Ill.,	525 Langdon St.
Elizabeth Veeder Thorp,	Madison,	427 N. Butler St.
Elmer Warren Walker,	Black Earth,	604 State St.
Steven Gano West,	Elkhorn,	241 W. Gilman St.
John Roland Wise,	Madison,	83 N. Dormitory.
*Platt Luther Wise,	Friendship,	54 N. Dormitory.
Annie Lincoln Wood,	Madison,	314 Langdon St.
Charles Wright,	Madison,	216 N. Carroll St. —59

DEPARTMENT OF PHARMACY.

SENIOR CLASS.

Charles Hamilton Avery,	Madison,	16 E. Mifflin St.
George Edward Burrall,	Dodgeville,	519 Langdon St.
Daniel Bernardino Collins,	Madison,	1236 Williamson St.
Emma Matilda Combacker,	Somerset,	831 State St.
Charles Frederick Dahl,	Orfordville,	610 Langdon St.
Willard Locke Frost,	Almond,	427 Murray St.
Frederick Hurlbut Gadsby,	Eau Claire,	416 Francis St.
Ole Carl Halverson,	Stevens Point,	701 University Ave.
William Julius Huck,	Milwaukee,	248 W. Gilman St.
Oscar August Kropf,	Madison,	128 Hancock St.
Frithiof Kumlien,	Albion,	1 W. Main St.
Manford Weston McMillen,	Johnson's Creek,	435 Murray St.
Edwin Naffz,	Madison,	109 King St.
Henry Fletcher Roberts,	Dodgeville,	519 Langdon St.

*In Engineering.

Henry Gottlieb Ruenzel,	Milwaukee,	248 W. Gilman St.
Frank Augustus Scheuber,	Erfurt,	435 Murray St.
Elizabeth Weston,	Necedah,	Ladies' Hall. —17

JUNIOR CLASS.

William Arthur Allen,	Eau Claire,	123 E. Gorham St.
Louis Phillip Altpeter,	Milwaukee,	539 State St.
Hiram Walter Baldwin,	Prairie du Sac,	1015 E. Gorham St.
Louis Alexander Bauman,	Racine,	939 University Ave.
Benjamin Farrar Carter,	Madison,	223 Wisconsin Ave.
Ferdinand Frederick Daubner,	Madison,	1015 E. Gorham St.
Charles Sumner DeLano,	Ripon,	630 Langdon St.
Jessie Elizabeth Dreutzer,	Sturgeon Bay,	Ladies' Hall.
John Godfrey Falck,	Morrison,	539 State St.
Frank Henry Fischedick,	Milwaukee,	539 State St.
Ole Granrud,	Hale,	710 University Ave.
Griff Lewis Hughes,	Rushford,	109 W. Main St.
William Frederick Kaiser,	Janesville,	539 State St.
Don Charles Henry McNeil,	Stoughton,	543 State St.
Eda Meinhardt,	Burlington,	Ladies' Hall.
Adolph Frederick Menges,	Madison,	203 N. Pinckney St.
David Willard North,	Busseyville,	21 N. Pinckney St.
Warren George Race,	Fredonia Station,	416 Francis St.
Fred Oal Ray,	Lake Mills,	218 Murray St.
Frank Augustus Rhyme,	Lake Geneva,	207 W. Gilman St.
Emma Robinson,	Kenosha,	Ladies' Hall.
Lewis Henry Sixta,	Manitowoc,	710 University Ave.
Clifton Olmsted Smith,	Beloit,	401 W. Gilman St.
Emil Weschcke,	New Ulm, Minn.,	416 Murray St.
Charles Edwin Wright,	Platteville,	711 Langdon St. —25

LAW CLASS.

SENIOR CLASS.

Peleg Briggs Clark,	Menominee,	438 Francis St.
Christian Doerfler,	Milwaukee,	222 W. Gilman St.
James Elsworth Durgin,	Tuftonboro, N.H.,	215 W. Wash. Ave.
Leander Frank Frisby,	Madison,	Chi Psi House.
Herman Grotophorst,	Black Hawk,	13 W. Clymer St.
Orra Lucas Hollister,	Dodge's Corners,	3 Livingstone St.
Mrs. Belle Case La Follette,	Madison,	405 W. Wilson St.
Thomas James Macmurray,	Madison,	110 W. Johnson St.
John Warren Marshall,	Green Bay,	17 S. Fairchild St.
Timothy Francis McCarthy,	Antigo,	150 W. Johnson St.
Edmund George McGilton,	Menominee,	206 State St.
Timothy Edward Ryan,	Pewaukee,	150 W. Johnson St.
Frederick M. Stephenson,	Menominee, Mich.,	222 S. Hamilton St.
Frederick Augustus Teall,	Eau Claire,	430 Lake St.
Edgar Isaac Thompson,	Whitewater,	335 W. Wilson St.

Louis Harvey Towne,	Edgerton,	534 State St.
George Henry Wahl,	Milwaukee,	223 W. Gilman St.
Michael Jefferson Wallrich,	Chippewa Falls,	215 W. Wash. Av. —18

JUNIOR CLASS.

Ellsworth Burnett Belden,	Milwaukee,	811 N. Henry St.
Edward J. Dockery,	Milwaukee,	640 State St.
Herman Fehr,	Milwaukee,	406 N. Henry St.
Joseph Matthew Hawthorne,	St. Croix Falls,	522 State St.
Edward Harris Hooker,	Milwaukee,	630 Francis St.
William Henry Jacobs,	Madison,	142 E. Gilman St.
Solomon Jones,	Town of Madison.	
Charles Fred Kaempfer,	Racine,	17 S. Fairchild St.
Leonard Kleeber,	Reedsburg,	430 State St.
William Penn Lyon,	Madison,	28 Langdon St.
Albert Bascom May,	Viroqua,	241 W. Gilman St.
Thomas Lauchlin McIntosh,	Reedsburg,	430 State St.
James Crumbacker Officer,	Springville,	72 N. Dormitory.
Wendell Wyman Paine,	Madison,	316 S. Henry St.
Levi James Perrin,	Escanaba, Mich.,	17 S. Fairchild St.
John D. Rowland,	Racine,	311 N. Henry St.
John Scanlin,	Oconto,	150 W. Johnson St.
Alfred Arrington Smith,	Madison,	222 W. Gilman St.
William Tillotson,	Madison,	108 Hancock St.
George Henry Vernon,	Middleton,	

—20

GREEK CLASS.

James Mark Austin,	Ellendale, D. T.,	319 Main St.
Joseph Colt Bloodgood,	Nashotah,	611 Francis St.
Charles Henry John,	Milwaukee,	611 Francis St.
Helen Eugenia Martin,	Spring Prairie,	803 State St.
John Harlan Martin,	Oregon,	219 W. Gilman St.
J. Howard Morrison,	Elkhorn,	707 State St.
Israel Shrimski,	Hudson,	620 Francis St.
Arthur Silliman,	Hudson,	423 W. Gilman St.
Herbert Frank Stone,	Madison,	207 W. Gilman St.
Henry George Smieding,	Racine,	1029 W. Johnson St.
Frederick Harvey Whitton,	Madison,	638 Langdon St.—11

Students present during part of 1883-4, entering after the issue of the catalogue of that year:

Peter Jacobson Eikeland	Madison
Henry Esch	Manitowoc.
L. E. Hagen	Rock Falls.
Katherine Hopkins	Madison.
Minnie Kingsley	Lodi.
Edward Hartley Kennion	Daresbury, Eng.
George Raab	Sheboygan.
Jennie Patten Robb	Mt. Sterling.
James H. Rogers	Milwaukee.—9

SUMMARY OF STUDENTS.

IN ATTENDANCE AT THE OPENING OF THE FALL TERM, 1884.

<i>Resident Graduates,</i>	-	-	-	-	-	-	-	2
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Senior Class —

Ancient Classical Course,	-	-	-	-	-	-	9
Modern Classical Course,	-	-	-	-	-	-	15
General Science Course,	-	-	-	-	-	-	13
Agricultural Course,	-	-	-	-	-	-	1
Civil Engineering Course,	-	-	-	-	-	-	5
Mechanical Engineering Course,	-	-	-	-	-	-	5
Metallurgical Engineering Course,	-	-	-	-	-	-	2
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							50

Junior Class —

Ancient Classical Course,	-	-	-	-	-	-	5
Modern Classical Course,	-	-	-	-	-	-	13
General Science Course,	-	-	-	-	-	-	9
Agricultural Course,	-	-	-	-	-	-	1
Civil Engineering Course,	-	-	-	-	-	-	4
Mechanical Engineering Course,	-	-	-	-	-	-	3
							—
							35

Sophomore Class —

Ancient Classical Course,	-	-	-	-	-	-	8
Modern Classical Course,	-	-	-	-	-	-	11
General Science Course,	-	-	-	-	-	-	15
Agricultural Course,	-	-	-	-	-	-	1
Civil Engineering Course,	-	-	-	-	-	-	3
Mechanical Engineering Course,	-	-	-	-	-	-	6
Metallurgical Engineering Course,	-	-	-	-	-	-	1
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							45

Freshman Class —

Ancient Classical Course,	-	-	-	-	-	-	9
Modern Classical Course,	-	-	-	-	-	-	13
General Science Course,	-	-	-	-	-	-	36
Agricultural Course,	-	-	-	-	-	-	1
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							59

Special Students,

In Agriculture,	-	-	-	-	-	-	5
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Pharmacy —

Senior class,	-	-	-	-	-	-	17
Junior class,	-	-	-	-	-	-	25
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							42

Law—

Senior class,	- - - - -	18
Junior class,	- - - - -	20
*Preparatory Greek class,	11.	
Total,	- - - - -	387
Students not in Catalogue of 1883-4,	- - - - -	9

*Also enumerated as Special Students.

COLLEGES OF ARTS AND LETTERS.

The courses of study in these colleges are arranged in accordance with the law of 1878, quoted on page 5 of this catalogue.

The College of Arts includes the General Science Course, and the Special Technical Departments of Agriculture, Pharmacy, Civil Engineering, Mining Engineering and Metallurgical Engineering, and Mechanical Engineering.

The College of Letters includes the Ancient Classical Course and the Modern Classical Course.

EXAMINATION OF CANDIDATES.

The regular examination of candidates for admission will be held on Thursday and Friday of the week, in June, preceding the annual commencement. Candidates should present themselves promptly at nine o'clock of the first day. Such candidates as are unable to be present at this time can be examined on the Tuesday and Wednesday preceding the opening of the fall term; but students are urged to present themselves at the regular examination, in order that, in event of failure upon any studies, they may have time to prepare themselves thoroughly upon these studies before the opening of the fall term. Otherwise they will be obliged to make up the deficiencies in the entrance examination, while crowded by the sufficiently difficult studies of the term itself.

The examination will be held in the following order:

FIRST DAY (June 18 and September 8).

9-1.— Ancient Classical.— Greek. History of United States and England.
Modern Classical.— Latin. Ancient History and Geography.
General Science.— Arithmetic. Geography. English.
2½-5.— Ancient Classical.— Mathematics.
Modern Classical.— English. Geography.
General Science.— German. Solid Geometry.

SECOND DAY (June 19 and September 9).

9-1.— Ancient Classical.— Latin. Ancient History and Geography.
Modern Classical.— German. History of United States and England.
General Science.— History. Algebra. Plane Geometry.
2½-5.— Ancient Classical.— English. Geography.
Modern Classical.— Mathematics.
General Science.— Natural Philosophy. Physiology. Botany.
Examinations for admissions will also be held on the Wednesday morning preceding the opening of the winter and spring terms.

TERMS OF ADMISSION.

All candidates for admission will be examined upon the following studies:

English — Reading, spelling, penmanship and grammar (including sentential analysis).

Mathematics — Arithmetic, elementary algebra and plane geometry.

History, etc. — Civil and political geography, physical geography, history of the United States.

In addition to the above mentioned branches, candidates will be examined in the following studies:

PREPARATORY GREEK CLASS.

Latin — Grammar, large print and paradigms. Any standard grammar may be used in preparation, but the revised edition of Allen and Greenough will be required in the class.

Cæsar, four books. Cicero, two orations. Sallust, Conspiracy of Catiline.

Ancient History — Barnes' Brief History of Ancient Peoples, or Anderson's Ancient History, or their equivalents. Candidates will be expected to draw from memory outline maps of the principal countries of the ancient world.

Modern History — Thalheimer's History of England, or its equivalent.

FRESHMAN CLASS.

ENGLISH EXAMINATION.

All candidates for admission to the Freshman class are notified that, in addition to the usual examination in English grammar and analysis, which is required of all students on entering, and which is intended to test the pupil's knowledge of the subject rather than his familiarity with any particular text book, each applicant will be required to give a specimen of his use of the English language by writing at least two pages on a subject assigned by the professor at the hour of the examination. Each applicant in 1885 will be assigned some character or event selected from one of the following works: Shakespeare's Merchant of Venice, Longfellow's Evangeline, George Eliot's Romola.

GENERAL SCIENCE COURSE.

Natural philosophy, solid geometry, physiology, botany, German (Sheldon's Short German Course, and twenty lessons German Reader). The amount of Latin required for entering the Freshman class, in the classical courses, may be substituted for German.

ANCIENT CLASSICAL COURSE.

Latin — Grammar and composition. The amount of Grammar is indicated by the two largest sizes of type in Allen and Greenough's Grammar; in composition, fifty-two lessons in the revised edition of Allen's Latin Composition.

Cæsar, four books. Sallust, Conspiracy of Catiline. Cicero, six orations. Virgil, six books.

Greek—Three books of Xenophon's *Anabasis*. Two books of Homer's *Iliad*, and Jones' *Composition*.

History—Ancient history and the history of England, as for the Greek class.

MODERN CLASSICAL COURSE.

All the studies required for entering the Ancient Classical Course, except that German is substituted for Greek, and solid geometry is required.

The examination in Latin will be upon the following points:

1. An accurate and ready knowledge of paradigms, including the knowledge of terms and general rules of etymology.

2. The oral translation of a passage from the first book of Cæsar, with the explanation and analysis of the indirect discourse.

3. The ability to translate into English an unfamiliar passage of easy Latin without the aid of grammar or dictionary.

4. The rendering of some simple English sentences into correct Latin.

5. The examination in syntax will be in connection with Cicero's First Oration Against Catiline.

6. The examination in prosody will be in connection with the sixth book of Virgil's *Æneid*.

The candidate is required to be able to scan fluently and correctly, and give the general rules of prosody.

Latin is pronounced according to the Roman method, described on page 7 of Allen & Greenough's Grammar; *v*, however, is allowed to have its English sound.

It is recommended that the books prescribed for special examination (the first book of Cæsar, the sixth book of Virgil and the oration against Catiline) be read slowly, with constant grammatical drill; the rest of the works required may be read as rapidly as is consistent with accuracy, in order to secure facility of translation and a ready and copious vocabulary.

Teachers engaged in preparing students for the university are reminded that nothing is of so vital importance as a thorough and ready knowledge of grammatical forms. Candidates often present themselves who have read the whole amount of Latin required, but who cannot inflect regular nouns and verbs. It is requested that there should be constant and continued drill upon these elements.

TECHNICAL COURSES.

ENGINEERING.

The requirements for commencing any engineering course are the same as those for entering the Sophomore class of the College of Arts.

AGRICULTURE.

Long Course—The requirements for admission are the same as those of the Freshman class, General Science Course.

Short Course—See statement under Course of Study, p. 35.

PHARMACY.

For the terms of admission to this course, see the announcement under Pharmacy in Departments of Study, p. 75.

SPECIAL STUDENTS.

Special students are those who have not yet obtained a standing in any regular course, or who, not desiring to graduate, wish to select their studies. Such students may enter at any time and take any study which they are prepared to prosecute to advantage, provided they can pass an examination in the English branches required for admission to the Freshman class, General Science Course. Any special student can, by examination in the studies required, enter at any time into any class.

Real equivalents will be taken for any of the above requirements and for any study in any portion of the college courses. Candidates for advanced standing in any college class must, in addition to the studies above named, pass examination in those previously pursued by the class which they propose to enter, or in their equivalents. No one can be admitted to the Freshman class under the age of fifteen years, nor to an advanced standing without a proportional increase of age.

One year of Greek, Latin, French or German may be substituted for any one of these three studies: solid geometry, physiology, botany.

Young women may pursue any course or elective study in the University, and the same degree is conferred upon them as upon the young men for the satisfactory completion of any course of study.

The entrance examinations of the University are not rigid. They are intended only to assure the University that the work required of the student has been done with fair success. Conditions are allowed in two studies; that is, time is given to make them up; but this cannot well be done when the remaining work is poorly done, or when the applicant knows nothing of these two studies. Those who receive catalogues should understand that the catalogue states the case correctly and finally.

HIGH SCHOOL AND NORMAL SCHOOL GRADUATES.

Any high school in the state, whose course of instruction covers the branches requisite for admission to one or more of the colleges of the University, may make application to be entered on its accredited list. On such application the University will send a professor to examine the course and methods of instruction in the school, and, on his favorable report, will enter it on the accredited high school list of the University. The graduates of high schools so entered will be received by the University into any of its courses for which they have been fitted, without further examination. This arrangement will hold good until the administration of the high school is changed, or until notice is given by the University of unsatisfac-

tory results. The necessary expenses attending the visit of the professor will be paid by the high school. The accredited list will be published each year in this catalogue. The University greatly desires a thoroughly good understanding with the high schools of the state, and hopes that this method may aid it in reaching that result.

A graduate of a State Normal School, or a student who has passed through the Freshman year of any college of good standing, may be admitted to the University as a special student without examination. Later he can apply for admission to any course and any class, and such examinations will then be assigned him as knowledge of his attainments may show to be necessary.

The certified standing of any student in the Normal Schools of this state will be accepted in the preparatory English work in place of an examination.

Those coming to the University from State Normal Schools, or from colleges, are advised to bring an authenticated record of their standing; but in all cases its value may be tested by actual examination.

Applicants for admission from other colleges must present certificates of honorable dismissal. The University is open to students from other states.

Any person holding a state certificate, limited or unlimited, in the state of Wisconsin, will be admitted to the University as a special student, without examination.

ACCREDITED HIGH SCHOOLS.

Madison High School, - - - - -	W. H. Beach, Principal.
Beloit High School, - - - - -	U. W. Lawton, Principal.
Monroe High School, - - - - -	N. C. Twining, Principal.
Allen's Academy (Chicago, Ill.), - - - - -	Ira W. Allen, Principal.
Markham's Academy (Milwaukee), - - - - -	Albert Markham, Principal.
Carroll College (Waukesha), - - - - -	W. L. Rankin, Principal.
Rochester Seminary, - - - - -	A. E. Schaub, Principal.
La Crosse High School, - - - - -	Albert Hardy, Principal.

FOR ANCIENT CLASSICAL AND GENERAL SCIENCE COURSES.

Oshkosh High School, - - - - -	R. H. Halsey, Principal.
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FOR MODERN CLASSICAL AND GENERAL SCIENCE COURSES.

Evansville High School, - - - - -	C. W. Merriman, Principal.
Milwaukee High School, - - - - -	J. J. Mapel, Principal.
Green Bay High School, - - - - -	J. C. Crawford, Principal.
Beaver Dam High School, - - - - -	Condé Hamlin, Principal.
Evansville Academy, - - - - -	J. E. Coleman, Principal.
Appleton High School, - - - - -	R. H. Schmidt, Principal.
Racine High School, - - - - -	A. R. Sprague, Principal.
Stevens Point High School, - - - - -	F. M. Cooley, Principal.
Neenah High School, - - - - -	A. J. Rote, Principal.
Berlin High School, - - - - -	E. J. Wiswall, Principal.

Fort Atkinson High School, - - - - J. Q. Emery, Principal.
 Edgerton High School, - - - - A. F. Du Mont, Principal.

FOR GENERAL SCIENCE COURSE.

Portage High School, - - - - W. G. Clough, Principal.
 Grand Rapids High School, - - - - G. D. Jones, Principal.
 Waterloo High School, - - - - J. A. Sheridan, Principal.
 Poynette High School, - - - - James Melville, Principal.
 Baraboo High School, - - - - C. W. Cabeen, Principal.

The following announcement is made by request of the School Board and Superintendent of the Madison Schools:

The Madison High School fits pupils for entrance to any of the courses of the University, and branches not strictly preparatory may be omitted by any member of the school. Candidates for admission will be examined upon arithmetic, English grammar, geography, U. S. history. Special stress is laid upon the first two branches. Students are admitted to advanced classes upon examination.

A special preparatory course of two years for the classical courses and one year for the scientific course has been laid out for the benefit of such students as are able to accomplish the work in that time.

Students are received and classified at any time, but it is preferred that they should present themselves at the opening of a term. Tuition is \$8.00 per term, there being three terms in the year.

Students recommended for admission to the University by the principal of the school are allowed to enter without examination. For further information address Clerk of School Board, Madison, Wis.

Attention is invited to the following law of the State, giving to graduates of the University the privilege of converting their diplomas into state certificates:

SECTION 337. * * After any person has graduated at the State University, and, after such graduation, has successfully taught a public school in this state for sixteen school months, the superintendent of public instruction shall have authority to countersign the diploma of such teacher, after such examination as to moral character, learning and ability to teach, as to the said superintendent may seem proper and reasonable. Any person holding a diploma granted by the board of regents of the State University, certifying that the person holding the same is a graduate of the State University, shall, after his diploma has been countersigned by the state superintendent of public instruction as aforesaid, be deemed qualified to teach any of the public schools of this state, and such diploma shall be a certificate of such qualification until annulled by the superintendent of public instruction.

POST GRADUATE STUDIES.

Bachelors of Arts, Letters and Science may continue their studies at the University under direction of the faculty, and take the master's degree. For the terms on which this is to be obtained see the article Degrees under General Information, p. 84.

COURSES OF STUDY.

RULES FOR ELECTIONS.

I. Each student must have at least three daily exercises; an additional study may be taken when the average standing of the student is 85 or upwards.

II. Elections for any term must be made before the close of the preceding term.

III. No elections can be changed after two weeks of the term have passed.

IV. Elections must be conformed to the time table.

V. The sciences are taught in long and in short courses, which, so far as possible, are kept separate. In the General Science Course, at least three terms of long course work are required in chemistry, or in physics, or in astronomy; and three terms in biology, in zoology, or in botany, or in mineralogy and geology together. At least two terms of long course work must be taken during the Senior year. Sciences not taken in long courses must be studied in short courses.

By a "term's work" is meant one exercise daily for one term. Unless otherwise stated, there is one exercise daily in each study.

VI. By consent of the faculty, studies in the technical courses may be substituted for studies in the general courses.

VII. Students may elect studies of other years than that to which they belong, by consent of the faculty, provided such elections be made in accordance with Rule IV.

VIII. Students entering the General Science Course may substitute the Latin required for entering the Modern Classical Course for the German required for entering their own course. They may also elect ancient languages in place of modern languages, provided they do so in accordance with Rule IV.

IX. Students will obtain blank election cards from their class officers, to whom the cards are to be returned. Students are advised to consult their class officers in making elections.

X. If fewer than six persons present themselves for any elective course, the formation of the class will be left to the discretion of the faculty and the professor in charge.

XI. Special students, in regard to any study which they elect, are held to the same requirements as regular students in the same study, unless special arrangement is made with the professor in charge of the department.

COLLEGE OF ARTS.

GENERAL SCIENCE COURSE.

FRESHMAN YEAR.

FIRST TERM.

Mathematics,	- - - - -	Higher Algebra.
French,	- Otto's Grammar and Roman d'un Jeune Homme Pauvre.	
German,	- - - - -	Review and Reader.

SECOND TERM.

Mathematics,	- - - - -	Algebra and Theory of Equations.
French, Joynes' French Plays and Roman d'un Jeune Homme Pauvre.		
German,	- - - - -	Reader.

THIRD TERM.

Mathematics,	- - - - -	Trigonometry.
French, Joynes' French Plays and Roman d'un Jeune Homme Pauvre.		
German,	- - - - -	Physikalische Geographie.

SOPHOMORE YEAR.

FIRST TERM.

Required —

- Analytical Geometry.
- Rhetoric.
- Botany or Zoology† (short course).

Elective —

- Biology.
- Zoology (short course).
- Zoology* (long course), - - - - - Protozoa to Mollusca.

Botany (course 3).

Botany (course 2).

Physiology.

Scientific German, Allgemeine Einfuehrung in die Naturwissenschaften.

schaften.

Advanced French and German.

Anglo-Saxon.

SECOND TERM.

Required —

- Mechanics or Calculus.‡
- Botany or Zoology† (short course).

Elective—**Biology.**

Zoology (long course), - - - - - Mollusca, Arthropoda, Tunicata.

Zoology (short course).

Botany (course 2).

Botany (course 3).

Calculus or Mechanics.

Physiology.

Scientific German, - - - - - Physiologie.

Advanced French and German.

Transitional English, - - - - - Three times a week.

THIRD TERM.

Elective—**Biology.**

Zoology (long course), - - - - - Vertebrata.

Botany (course 3).

Vertebrate Anatomy, || - - - - - Pisces, Amphibia, Reptilia.

Calculus.

Scientific German, - - - - - Botanik.

Advanced French and German.

Early English.

* Those electing the long course in zoology or botany must continue the study through at least two terms.

† Required only of students not electing the long course. Each of these short courses is a half study. The long course in biology covers both of these short courses and also counts as a long course science. Students electing either botany or zoology in long courses must take the other science as a short course, at least, before graduation; those electing none of these sciences must take *both* of these short courses before graduation. See biology, botany, zoology, pp. 66-68.

‡ Students not taking mechanics must take calculus for two terms and analytical mechanics one term. Those electing mechanics and calculus need not take analytical mechanics.

|| If elected, must be pursued for two terms. Must be preceded by at least one term of laboratory work in zoology.

JUNIOR YEAR.

FIRST TERM.

Required—**Physics.***Elective*—

Chemistry* (long course). General Chemistry, Lectures and Laboratory work.

Vertebrate Anatomy, - - - - - Aves, Mammalia.

Analytical Mechanics.†

Descriptive Geometry.

Scientific German, - - - - - Thierkunde.

Advanced French and German.

English Literature.

History.

Norse.

SECOND TERM.

Required—

Chemistry ‡ (short course).

Elective —

Physics (long course),	- - - - -	Electricity and Magnetism.
Chemistry (long course),	- - - - -	General Chemistry and Qualitative Analysis.
Mineralogy,	Blowpipe Analysis and Crystallography, Physical Mineralogy.	
Mathematics,	- - - - -	Modern Geometry and Geometry of three dimensions.
Scientific German,	- - - - -	Physik.
Advanced French and German.		
English Literature.		
History.		
Norse.		

THIRD TERM.

Elective —

Physics (long course),	- - - - -	Electrical Measurements.
Chemistry (long course),	- - - - -	Organic Chemistry and Qualitative Analysis.
Mathematics,	- - - - -	Quaternions.
Mineralogy,	- - - - -	Descriptive and Determinative Mineralogy.
Scientific German,	- - - - -	Chemie.
Advanced French and German.		
Constitutional Law.		
English Literature.		
History.		
Norse.		
Pedagogy.		

* If elected must be followed for at least two consecutive terms.

† Must be preceded by two terms of calculus.

‡ Required only of students not electing the long course.

|| Must be preceded by at least one term of chemistry.

SENIOR YEAR.

FIRST TERM.

Required —

Psychology.		
Geology (short course),	Lithology, Structural and Dynamical Geology ;	
three times a week.		

Elective —

Physics * (long course),	- - - - -	Magnetic Measurements.
Chemistry * (long course),	- - - - -	Quantitative Analysis.
Geology *† (long course),	- - - - -	Microscopic Lithology.
Mathematics,	- - - - -	Differential Equations.
Astronomy *‡ (long course).		
Scientific German,	- - - - -	Mineralogie.
Advanced French and German.		
Political Economy and International Law.		
Philosophy of Rhetoric.		

SECOND TERM.

Required —

Geology	- - - - -	Historical Geology; twice a week.
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Elective —

Physics * (long course), - - - - -	Theory of Heat.
Chemistry * (long course), Quantitative Analysis or advanced work in Experimental Chemistry.	
Paleontology.	
Mathematics, - - - - -	Differential Equations.
Astronomy * (long course).	
Scientific German, - - - - -	Geologie.
Advanced French and German.	
Deductive Logic. §	
Ethics. §	
English Literature.	

THIRD TERM.

Required —

Astronomy ¶ (short course).

Elective —

Physics (long course), - - - - -	Polarization of Light, Spectrum Analysis, Measurement of Wave Lengths.
Chemistry (long course), - - - - -	Same as second term.
Mathematics, - - - - -	Modern Algebra.
Economic Geology.	
Astronomy (long course).	
Scientific German, - - - - -	Astronomie.
Advanced French and German.	
English Literature.	
Esthetics and Natural Theology. §	
Inductive Logic. §	
Pedagogy.	

* At least one of these studies must be elected in each term.

† Must be preceded by at least one term of chemistry and two terms of mineralogy.

‡ Must be preceded by two terms of calculus and one of descriptive astronomy.

§ Required of all students who do not elect the long course.

¶ At least one of these studies must be elected in each term.

¶ Required of all students.

DEPARTMENT OF AGRICULTURE.

Students taking the Agricultural Course will pass the same entrance examinations as are required for the General Science Course. Upon completing the course they will receive the appropriate degree.

Those who may desire to enter as special students in Agriculture, or to take the short course, can do so upon passing a satisfactory examination in reading, spelling, penmanship, arithmetic, civil and descriptive geography, physical geography, grammar and history of the United States. Upon passing this examination the student may enter the Agricultural Course at the beginning of any term, and pursue studies in that course, or may enter the two years' course. Those taking the two years' course should enter at the opening of the fall term. A certificate of proficiency will be given to those completing this course.

Long Course.

FRESHMAN YEAR.

FIRST TERM.

Mathematics,	- - - - -	Higher Algebra.
German,	- - - - -	Review and Reader.
Machine Shop Practice (half study).		
Botany (course 2),	- - - - -	Lectures.

SECOND TERM.

Mathematics,	- - - - -	Algebra.
German,	- - - - -	Reader.
Machine Shop Practice (half study).		
Botany (course 2),	- - - - -	Lectures.

THIRD TERM.

Mathematics,	- - - - -	Trigonometry.
German,	- - - - -	Physikalische Geographie.
Machine Shop Practice (half study).		
Botany (course 2),	- - - - -	Forming Herbarium.

Themes and declamations throughout the course.

SOPHOMORE YEAR.

FIRST TERM.

Chemistry,	- - - - -	Lectures and Laboratory.
Cryptogamic Botany (course 2),	- - - - -	Laboratory.
Rhetoric.		

SECOND TERM.

Chemistry,	- - - - -	Qualitative.
Phænogamic Botany (course 5),	- - - - -	Laboratory.
Mechanics.		

THIRD TERM.

Chemistry,	- - - - -	Qualitative and Organic.
Horticulture,	- Economic Entomology, Cross Fertilization of Flowers.	
Land Surveying.		

JUNIOR YEAR.

FIRST TERM.

Chemistry,	- - - - -	Quantitative.
Physics.		
English Literature (half study).		
Physiology (half study).		

SECOND TERM.

Chemistry,	- - - - -	Quantitative.
Zoology (half study),	- - - - -	Laboratory.
Mineralogy,	- - - - -	Lectures and Laboratory.
Horticulture (half study),	- - - - -	Lectures and Laboratory.
English Literature (half study).		
Physiology (half study).		

THIRD TERM.

Chemistry, - - - - -	Agricultural Analysis.
Zoology, - - - - -	Anatomy of Domesticated Animals.
Constitutional Law.	

SENIOR YEAR.

FIRST TERM.

Agriculture, - - - - -	Stock Breeding, Draining.
Political Economy.	
Psychology.	

SECOND TERM.

Geology, - - - - -	General Lectures.
Agricultural Chemistry, - - - - -	Lectures.
Drawing.	
Forestry, - - - - -	Lectures and Recitations.

THIRD TERM.

Agriculture, - - - - -	Farm Book Keeping, Farm Management.
Agricultural Chemistry, - - - - -	Lectures.
Æsthetics.	

Theses are required for graduation.

Short Course.

FIRST YEAR.

FIRST TERM.

Chemistry, - - - - -	Lectures and Laboratory.
Physics.	
Botany (course 2), - - - - -	Lectures.
Machine Shop Practice (half study).	

SECOND TERM.

Chemistry, - - - - -	Qualitative.
Botany (course 2), - - - - -	Lectures.
Machine Shop Practice.	

THIRD TERM.

Botany (course 2), - - - - -	Forming Herbarium.
Horticulture (half study), - - - - -	Entomology.
Vertebrate Anatomy, - - - - -	Laboratory.
Drawing.	

SECOND YEAR.

FIRST TERM.

Agriculture, - - - - -	Stock Breeding, Draining.
Botany (course 5), - - - - -	Laboratory.
Physiology (half study).	

SECOND TERM.

Agricultural Chemistry, - - - - -	Lectures.
Botany (course 5), - - - - -	Laboratory.
Horticulture (half study), - - - - -	Lectures and Laboratory.
Physiology (half study).	

THIRD TERM.

Agriculture,	Farm Book Keeping, Farm Management.
Agricultural Chemistry,	Lectures.
Botany,	Field Work.

Agricultural students in the regular course take the long course in chemistry with the Junior and Senior classes of the General Science Course. In the short course, students take two terms only of chemistry. Physiology is taught by lectures and recitations, and zoology mainly by laboratory work with the use of a text book. Other subjects are included in both the long and short courses, and are taught by the appropriate professors. Fuller information concerning these studies will be found under the corresponding headings. In general, all the benefits derivable from the study of any subject taught in the University are freely placed at the disposal of all agricultural, as of all other students, subject only to such restrictions as are useful to insure a wise use of the student's time and energies.

DEPARTMENT OF CIVIL ENGINEERING.

FRESHMAN YEAR.

Students may elect this course at the beginning of the Freshman Year, and in that case will report for instruction in draughting at the middle of the first term.

The studies of this year are the same as those for the Freshman Year of the General Science Course.

In case the course is not elected until the Sophomore Year, the requirements for admission to the course are the same as those for entering the Sophomore Class of the General Science Course.

SOPHOMORE YEAR.

FIRST TERM.

Descriptive Geometry.	Elements of Construction.
Analytical Geometry.	Drawing.
Chemistry.	

SECOND TERM.

Descriptive Geometry.	Calculus.
Stereotomy.	Drawing.
Chemistry.	

THIRD TERM.

Surveying.	Chemistry.
Calculus.	Drawing.

JUNIOR YEAR.

FIRST TERM.

Analytical Mechanics.	Building Construction.
Physics.	Drawing.
Graphical Statics.	

SECOND TERM.

Thermodynamics.	Mineralogy.
Analytical Mechanics.	Elements of Construction.
Resistance of Materials.	

THIRD TERM.

Steam Engine.	Astronomy.
Resistance of Materials.	Drawing.
Mineralogy.	

SENIOR YEAR.

FIRST TERM.

Psychology.	Bridge Construction.
Theory of Structures.	Drawing.
Geology.	

SECOND TERM.

Geology.	Metallurgy.
Sanitary Engineering.	Drawing.

THIRD TERM.

Hydraulics.	Astronomy.
Economic Geology.	Drawing.

DEPARTMENT OF MECHANICAL ENGINEERING.

FRESHMAN YEAR.

The course of study for this year is the same as that for the Freshman year of the General Science Course, with the exception that 200 hours of Shop Work are required in the two last terms. If the course is elected at the beginning of the Sophomore year, the student will be required to make up these 200 hours of Shop Work.

SOPHOMORE YEAR.

FIRST TERM.

Descriptive Geometry.	Chemistry.
Analytical Geometry.	Drawing.
Elements of Machines.	

SECOND TERM.

Descriptive Geometry.	Calculus.
Elements of Machines.	Drawing.
Chemistry.	

THIRD TERM.

Elements of Machines.	Drawing.
Chemistry.	Shop Work.
Calculus.	

JUNIOR YEAR.

FIRST TERM.

Analytical Mechanics.

Drawing.

Physics.

Shop Work.

Elements of Machines.

SECOND TERM.

Analytical Mechanics.

Mineralogy.

Resistance of Materials.

Drawing.

Thermodynamics.

THIRD TERM.

Steam Engine.

Drawing.

Resistance of Materials.

Shop Work.

Mineralogy.

SENIOR YEAR.

FIRST TERM.

Psychology.

Drawing.

Steam Engine.

Shop Work.

SECOND TERM.

Machinery and Mill Work.

Drawing.

Metallurgy.

Shop Work.

THIRD TERM.

Astronomy.

Drawing (for Thesis).

Locomotives.

Shop Work.

Theses are required for graduation.

DEPARTMENT OF MINING AND METALLURGY.

The object of this department is to furnish instruction in those branches of science of which a thorough knowledge is essential to the intelligent mining engineer or metallurgist.

In view of the natural separation between the callings of the mining engineer and the metallurgist, and of the differences in the kinds of training required for the two professions, it is deemed best to mark out two distinct courses for this department; the Mining Course having mathematics, theoretical and applied mechanics, physics, civil engineering, draughting, mineralogy, geology and economic geology, as its principal studies, while the Metallurgical Course deals chiefly with chemistry and its applications. With the present arrangement, an able and diligent student may readily accomplish both courses.

To enter these courses, a knowledge of the studies pursued by the Freshman class of the General Science Course is required.

FRESHMAN AND SOPHOMORE YEARS.

Same as in Civil Engineering Course.

JUNIOR YEAR.

*Mining Engineering.**Metallurgy.*

FIRST TERM.

Physics, - - - - -	Deschanel and Lectures.
Chemistry, - - - - -	Quantitative Analysis.
Analytical Mechanics. - - - - - - -	Elective Study.
Drawing, - - - - -	Topographical.
Field Practice.	

SECOND TERM.

Mineralogy, Blowpipe Analysis, Crystallography and General Principles.	
Chemistry, - - - - -	Quantitative Analysis.
Resistance of Materials.	
Drawing.	

THIRD TERM.

Mineralogy, - - - - -	Descriptive and Determinative.
Assaying, - - - - -	Lectures and Laboratory Practice.
Zoology.	
Steam Engine—Rankine, - - - - - - -	Quantitative Analysis.
Drawing, - - - - -	Furnaces, etc.

SENIOR YEAR.

*Mining Engineering.**Metallurgy.*

FIRST TERM.

Geology, Lectures on Lithology, Structural and Dynamical Geology.	
Microscopic Lithology.	
Metallurgy, - - - - -	Refractory Materials, Fuels, Copper, Lead, etc.
Psychology.	
Drawing. - - - - -	Quantitative Analysis.
Field Practice.	

SECOND TERM.

Geology, - - - - -	Lectures on Historical Geology.
Paleontology.	
Metallurgy, - - - - -	Iron and Steel.
Engineering. - - - - - - -	Quantitative Analysis.

THIRD TERM.

Economic Geology, - - - - -	Lectures.
Engineering. - - - - - - -	Quantitative Analysis.
Railroad Engineering. - - - - - - -	Elective Study.
Drawing.	

DEPARTMENT OF PHARMACY.

The aim of this department is to furnish a thorough, practical education and training in the science and art of Pharmacy, and therefore includes instruction in those branches of science most intimately related to the practice of this profession.

The course extends over a period of two years, embracing the fall and winter terms of each academic year, with lectures, recitations and practical laboratory work throughout the course. The present departments and divisions of study are as follows:

FIRST YEAR.

Practical Pharmacy and Pharmaceutical Chemistry.

Botany (course 2).

Inorganic Chemistry and Chemical Physics.

Qualitative Chemical Analysis.

SECOND YEAR.

Materia Medica (Pharmacognosy).

Pharmaceutical Botany (course 6).

Organic Chemistry.

Quantitative Chemical Analysis and Chemical Toxicology.

Pharmacopoeial and Chemical Preparations.

For further details relating to the requirements and scope of this department, see statement under Pharmacy, in Departments of Study.

COLLEGE OF LETTERS.

This includes two courses, in both of which Latin is a required study. The *Ancient Classical Course* also requires Greek; the *Modern Classical Course* has German or French in place of Greek.

In the Junior and Senior years there are but two required studies for each term; for the third study an election will be made, which will be for the whole year, unless otherwise specified.

ANCIENT CLASSICAL COURSE.

FRESHMAN YEAR.

FIRST TERM.

Latin,	-	-	-	Cicero de Senectute.	Livy begun.
Greek,	-	-	-	-	Homer's Odyssey.
Mathematics,	-	-	-	-	Higher Algebra.

SECOND TERM.

Latin,	-	-	-	-	Livy.
Greek,	-	-	-	-	Lysias.
Mathematics,	-	-	-	-	Solid Geometry.

THIRD TERM.

Latin,	-	-	-	Livy.	Three times a week.
Greek,	-	-	-	Lysias.	Twice a week.
Mathematics,	-	-	-	-	Trigonometry.
Botany (course 1).	-	-	-	-	-

Themes and declamations and Latin and Greek composition throughout the year.

SOPHOMORE YEAR.

FIRST TERM.

Latin,	-	-	-	-	Horace.
Greek,	-	Philippics of Demosthenes.	-	Goodwin's Moods and Tenses.	-
Mathematics (elective),	-	-	-	-	Analytical Geometry.
Anglo-Saxon (elective).	-	-	-	-	-

SECOND TERM.

Latin,	-	-	-	-	Tacitus.
Greek,	-	-	-	-	Tragedy.
Rhetoric.	-	-	-	-	-

THIRD TERM.

Latin, - - - - -	Plautus.
Greek, - - - - -	Lyric Poetry.
Early English, - - - - -	Chaucer's Canterbury Tales.

Those who have stood as high as 85 in the languages during their Freshman year will be allowed to substitute the mathematics, the biology, the zoology, or the botany of the General Science Course for one of their regular studies. In the first term any branch for which the student is fitted may be elected in place of mathematics.

JUNIOR YEAR.

FIRST TERM.

Required Studies —

American History, - - - - -	Twice a week.
English Literature, - - - - -	Three times a week.
Physics, - - - - -	Deschanel and Lectures.

SECOND TERM.

American History, - - - - -	Twice a week.
English Literature, - - - - -	Three times a week.
Chemistry, - - - - -	Lectures.

THIRD TERM.

Constitutional Law.**Zoology.***Elective Studies* —

1. **Latin**, as a half study. Selections from the Latin Poets.
2. **Greek**, as a half study. The *Protagoras* of Plato. Selected Odes of Pindar.
3. **French**. *First term*, Otto's Method, *Roman d'un Jeune Homme Pauvre*; *Second term*, Joynes' French Plays; *Third term*, *La Petite Fadette*. (If elected, must be taken for the year.)
4. **German**. *First term*, Sheldon's Short German Grammar and Rosengstengel's German Reader; *Second term*, *Iphigenie auf Tauris*; *Third term*, Lessing's *Laokoon*.
5. **Norse**. *First term*, Peterson's Grammar, Anderson's *Julegave*; *Second term*, Björnson; *Third term*, Björnson, Lectures on Scandinavian Literature.
6. **Anglo-Saxon**.
7. **History**. Course 1 (twice a week). Ancient Institutions. *Third term*, Ancient Mythology and Art. Course 2 (three times a week). Dynastic History.
8. **English Literature**. Shakespeare Course, American Prose Writers.
9. **Political Science**. *First term*, Political and Constitutional Development of England. *Second term*, Political and Constitutional Development of the United States.

10. Physics.

* * * As the elective courses in physics and English literature do not begin until the second term, those who intend to elect either of these branches will choose some other elective the first term.

11. Chemistry. Those who elect this branch will take some other elective study the second term in place of the required chemistry of that term. They can also, if they choose, change to **Mineralogy** the second or third term, or both; and those who make this change will be allowed to elect the long course in geology during the Senior year.

12. Mathematics. *First term*, Analytical Mechanics; *Second term*, Modern Geometry and Geometry of three dimensions; *Third term*, Quaternions.

13. Botany (course 4).

14. Biology.

15. Third term, Pedagogy.

SENIOR YEAR.

FIRST TERM.

Required studies —

Psychology.

Political Economy and International Law.

SECOND TERM.

Ethics.

Logic,

Deductive.

THIRD TERM.

Astronomy (short course).

During this term two studies are elective.

Elective studies —

1. Latin. **2. Greek.** **3. French.** **4. German.** **5. English Literature.** **6. Anglo-Saxon.**

The same as in the Junior year, the two classes reciting together.

7. Icelandic. *First term*, Vigfusson & Powell's Grammar and Reader; *Second term*, The same; *Third term*, Elder Edda, Lectures on Scandinavian Literature.

8. History. *First term*, Medieval Institutions; *Second term*, The English Constitution; *Third term*, History of Civilization.

9. Physics.

10. Chemistry.

11. Geology. This must be preceded by at least three terms of Chemistry and Mineralogy.

12. Mathematics. *First and Second terms*, Differential Equations; *Third term*, Modern Algebra.

13. Astronomy (long course), may be elected for the year by students who have taken two terms of calculus and one term of descriptive astronomy.

14. Botany (course 4).

There are also the following special electives for the several terms:

First term. Microscopic Lithology. This must be preceded by mineralogy.

First term — Philosophy of Rhetoric.

Third term — Ästhetics and Natural Theology, Inductive Logic.

Second and Third terms — Mineralogy. This must be preceded by one term of chemistry.

Second term. Paleontology. This must be preceded by one term of zoology.

First and Second terms. Geology, short course.

Third term. Pedagogy.

MODERN CLASSICAL COURSE.

FRESHMAN YEAR.

FIRST TERM.

Latin,	-	-	-	-	Cicero de Senectute.	Livy begun.
German,	-	-	-	-	-	Review and Reader.
Mathematics,	-	-	-	-	-	Algebra.

SECOND TERM.

Latin,	-	-	-	-	-	-	Livy.
German,	-	-	-	-	-	-	Reader.
Mathematics,	-	-	-	-	-	-	Algebra.

THIRD TERM.

German,	-	-	-	-	Reader of German Literature.	
Mathematics,	-	-	-	-	-	Trigonometry.
Botany (course 1).						

Themes and declamations, and Latin and German composition throughout the year.

SOPHOMORE YEAR.

FIRST TERM.

Latin,	-	-	-	-	Horace.	Three times a week.
German,	-	-	-	-	Reader of German Literature.	Twice a week.
French,	-	-	Otto's Method.	Roman d'un Jeune Homme Pauvre.		
Mathematics (elective),	-	-	-	-	Analytical Geometry.	
Anglo-Saxon (elective).						
Greek (elective).						

SECOND TERM.

Latin (elective),	-	-	-	-	Horace.	Twice a week.
Greek (elective).						
Transitional English (elective),	-	-	-	-	Three times a week.	

German,	- - -	Reader of German Literature.	Twice a week.
French,	- - - -		Joynes' French Plays.
Rhetoric.			

THIRD TERM.

Latin,	- - - -	Tacitus.	Twice a week.
German,	- - -	Reader of German Literature.	Three times a week.
French,	- - - -		La Petite Fadette.
Early English,	- - -		Chaucer's Canterbury Tales.

Those who have stood as high as 85 in the languages during the Freshman year will be allowed to substitute the mathematics, the biology, the zoology, or the botany of the General Science Course for one of their regular studies. In the first term any branch for which the student is fitted, may be elected in place of mathematics. In the second term transition English may be elected in place of Latin.

JUNIOR YEAR.

FIRST TERM.

Required Studies —

American History,	- - - -	Twice a week.
English Literature,	- - - -	Three times a week.
Physics.		

SECOND TERM.

English Literature,	- - - -	Three times a week.
American History,	- - - -	Twice a week.
Chemistry,	- - - -	Lectures.

THIRD TERM.

Constitutional Law.

Zoology.

Elective Studies —

1. Latin, as a half study. Selections from the Latin Poets.
2. French, as a half study. Otto's French Conv. Grammar, *Cinq Mars*. (If elected, must be taken for the year.)
3. German, as a half study. *First term*, Wilhelm Tell; *Second term*, Hermann and Dorothea; *Third term*, Marie Stuart.
4. Norse. *First term*, Peterson's Grammar, Anderson's Julegave; *Second term*, Björnson; *Third term*, Björnson, Lectures on Scandinavian Literature.
5. Anglo-Saxon.
6. Greek.
7. History. Course 1 (twice a week), Ancient Institutions; *Third term*, Ancient Mythology and Art. Course 2 (three times a week), Dynastic History.
8. English Literature. Shakespeare Course, American Prose Writers.
9. Political Science. *First term*, Political and Constitutional Development of England; *Second term*, Political and Constitutional Development of the United States.

10. Physics.

. As the elective courses in physics and English literature do not begin until the second term, those who intend to elect either of these branches will choose some other elective for the first term.

11. Chemistry. Those who elect this branch will take some other elective study the second term in place of the required chemistry of that term.

12. Mineralogy. Students who elect chemistry can, if they choose, change to mineralogy the second or third term, or both; and those who make this change will be allowed to elect the long course in geology during the Senior year.

13. Mathematics. *First term*, Analytical Mechanics; *Second term*, Modern Geometry and Geometry of three dimensions; *Third term*, Quaternions.

14. Botany (course 4).

15. Biology.

16. Third term, Pedagogy.

SENIOR YEAR.

FIRST TERM.

Required Studies —

Psychology.

Political Economy and International Law.

SECOND TERM.

Ethics.

Logic,

Deductive.

THIRD TERM.

Astronomy (short course).

During this term two studies are elective.

Elective Studies —

1. Latin. **2. English Literature.** **3. Anglo-Saxon.** The same as in the Junior year, the two classes reciting together.

4. French, as a half study; *First term*, Howard's Aid to French Composition, Ursule Mirouet; *Second term*, Travilleurs de la Mer; *Third term*, the same. (If elected, must be taken for the year.)

5. German, as a half study; *First term*, Faust; *Second and Third terms*, Literaturgeschichte.

6. Icelandic. *First term*, Vigfusson & Powell's Grammar and Reader; *Second term*, the same; *Third term*, Elder Edda, Lectures on Scandinavian Literature.

7. Greek.

8. History. *First term*, Medieval Institutions; *Second term*, The English Constitution; *Third term*, History of Civilization.

9. Physics.

10. Chemistry.

11. **Geology.** This must be preceded by at least one term of chemistry.
12. **Mathematics.** *First and second terms*, Differential Equations; *Third term*, Modern Algebra.
13. **Astronomy** (long course), may be elected for the year by students who have taken two terms of calculus and one term of descriptive astronomy.
14. **Botany** (course 4).
15. **Biology.**

There are also the following special electives for the several terms:

First term—**Philosophy of Rhetoric.**

Third term—**Esthetics and Natural Theology, Inductive Logic.**

Second and third terms—**Mineralogy.**

First term—**Microscopic Lithology.** This must be preceded by Mineralogy.

First and second terms—**Geology** (short course).

Second term—**Paleontology.** This must be preceded by one term of Zoology.

Third term—**Pedagogy.**

SIX YEARS' COURSE.

Those who wish to devote to music or any similar pursuit the time for an entire study, will be allowed to take two studies at a time. For such students the Modern Classical Course has been extended so as to cover six years, as follows:

FRESHMAN YEAR.

First Term—Latin. German.

Second Term—Latin. German.

Third Term—German. Botany.

FIRST SOPHOMORE YEAR.

First Term—Latin and German. Higher Algebra.

Second Term—Latin and German. Algebra.

Third Term—Latin and German. Trigonometry.

SECOND SOPHOMORE YEAR.

First Term—French. Elective Study.

Second Term—French. Rhetoric.

Third Term—French. Early English.

FIRST JUNIOR YEAR.

First Term—Physics. Elective Study.

Second Term—Chemistry. Elective Study.

Third Term—Zoology. Elective Study.

SECOND JUNIOR YEAR.

First Term—English Literature and American History. Elective Study.

Second Term — American History and English Literature. Elective Study.

Third Term — Constitutional Law. Elective Study.

SENIOR YEAR.

First Term — Psychology. Political Economy, etc.

Second Term — Ethics. Logic.

Third Term — Astronomy. Elective Study.

The studies of the Ancient Classical and General Science Courses may be extended in the same way, by consultation with the class officers.

PREPARATORY GREEK CLASS.

FIRST TERM.

Greek, - Goodwin's Grammar and Jones' Composition (twice a day).
Latin, - - - Cicero's Select Orations. Allen's Composition.

SECOND TERM.

Greek, - - Xenophon's Anabasis and Jones' Composition.
Latin, - - - Virgil's *Æneid*. Latin Prosody. Composition.

THIRD TERM.

Greek, - - Xenophon's Anabasis and Homer's Iliad. Composition.
Latin, - - - - - Virgil's *Æneid*. Composition.

TIME TABLE—FALL TERM, 1884.

	8-9.	9-10.	10-11.	11-12.	12-1.	P. M.
SENIOR CLASS		Chemistry. Microscopic Lithology, M., W., F.			† German, { For be- † French, { gimmers.	
		Political Economy.	Geology, M., W., F. Icelandic. History. Rhetoric. German, Tu., Th. French, M., W., F.	Psychology.	Latin, M., W., F. Greek, Tu., Th. Anglo-Saxon.	Physics. Astronomy.
JUNIOR CLASS		Am. History, Tu., Th. English Literature. M., W., F. Analytical Mechanics.	Physics.	French, Tu., Th. German, M., W., F. History. Norse.	Anglo-Saxon. Greek, Tu., Th. Latin, M., W., F. † German, { For be- † French, { gimmers. Descriptive Geometry. Differential Equations.	Chemistry. Vertebrate Anatomy.
SOPHOMORE CLASS... Physiology	Physiology M., W., F.	‡ French. † Latin. * Rhetoric.	†‡ Math. and Mech. * German.	† Greek. * Anal. Geom. ‡ Latin, M., W., F. ‡ German, Tu., Th.	Anglo-Saxon. Botany, M., W., F.	Biology. Zoology. Zoology (Short Course), Tu., Th.
FRESHMAN CLASS....		* Mathematics. † Greek. ‡ German.	* French. ‡ Mathematics. † Latin.	‡ Latin. * German.	* Mathematics.	

* General Science Course.

† Ancient Classical Course.

‡ Modern Classical Course.

TIME TABLE—WINTER TERM, 1885.

	8-9.	9-10.	10-11.	11-12.	12-1.	P. M.
SENIOR CLASS		Paleontology, M., W., F. Logic.	Geology, Tu., Th. German, M., W., F. French, Tu., Th. Icelandic. History. Transition English.	Ethics.	English Literature. + German. + French. Latin, Tu., Th. Greek, M., W., F.	Physics. Chemistry. Differential Equations. Astronomy.
JUNIOR CLASS		English Literature, M., W., F. American History. Tu., Th.	Chemistry, (Short Course).	French, M., W., F. German, Tu., Th. Norse. History.	Latin, Tu., Th. Greek, M., W., F. + French. + German. English Literature. Mod. Geometry, M., W., F.	Chemistry.
SOPHOMORE CLASS...	Physiology. M., W., F.	† Latin. ‡ French.	* Calculus. † Greek. ‡ Rhetoric. * German.	* Mechanics. † Rhetoric. ‡ Latin, Tu., Th., or English. ‡ German, M., W., F.	Botany, M., W., F.	Biology. Zoology. Zoology, (Short Course), Tu., Th.
FRESHMAN CLASS....		* Mathematics. † Greek. ‡ German.	* French. † Latin. ‡ Mathematics.	* German.	† Latin. † Mathematics.	

* General Science Course.

† Ancient Classical Course.

‡ Modern Classical Course.

TIME TABLE — SPRING TERM, 1885.

	8-9	'9-10.	10-11.	11-12.	12-1.	P. M
SENIOR CLASS	Logic.	Geology. French, Tu., Th. German, M., W., F. History. Icelandic.		Physics. English Literature. Latin, Tu., Th. Greek, M., W., F. † German. † French.	Astronomy.	Chemistry. Astronomy.
JUNIOR CLASS.....	Zoology, (Short Course.)	Constitutional Law.		Mineralogy. French, M., W., F. German, Tu., Th. History. Norse.	Quaternions.	Chemistry.
SOPHOMORE CLASS...	‡ French. Zoology, (Short Course.) † Latin.	* Calculus. † ‡ English. † Greek.	* German. † Latin. ‡ German, M., W., F.	‡ Latin, Tu., Th.		Biology. Zoology. Vertebrate Anatomy.
FRESHMAN CLASS....	† Mathematics. ‡ German.	* German. † ‡ Botany.	‡ Mathematics. * French.	* Mathematics. † Latin, M., W., F. † Greek, Tu., Th.		

* General Science Course.

† Ancient Classical Course.

‡ Modern Classical Course.

DEPARTMENTS OF STUDY.

PHILOSOPHY — PRESIDENT BASCOM —

Five recitations of a term each, are devoted to philosophy, to wit: one to deductive and one to inductive logic; and three to psychology, ethics, æsthetics and natural theology. The time is abundant and the course correspondingly complete.

In psychology the President uses the new edition of his own work. The aim of the recitation is to give the present conclusions on living questions in philosophy, and to prepare the mind for the slow formation of an opinion concerning open points, and for the clear apprehension of settled facts. While the text-book guides and steadies the discussion, and gives a frame-work of thought for the memory, much matter is incidentally introduced for the fuller presentation of opposing views, and the further enforcement of those offered. In the course of the recitations, subjects in philosophy are assigned to be discussed historically in essays before the class. The library is well provided with works of philosophy, and the students are urged to read systematically in connection with the work in the recitation room. Leading historical facts in philosophy are brought before the class by lectures, and at least a partial knowledge of influential systems is secured. Free discussion and inquiry are had in the class room. The effort is not so much to control belief, as to secure its best conditions. The recitation is ordered in reference to the present state of philosophy, and existing facts are made to run back into the history of philosophy. The opposite method requires more time and has, for the beginner, less interest. On the whole, we regard the proper starting point of inquiry to be the facts before us. Ethics follows psychology, and natural theology and æsthetics follow ethics. While the hard work is done, and the leading principles are established in psychology, substantially the same method is pursued in each of these branches. In ethics and natural theology the ruling idea is freedom of discussion, with a full presentation of opposing views. We believe this to be the best and safest way for the formation of firm yet flexible opinions. Æsthetics is taught with extended illustrations, and the purpose is to bring delicacy to the perceptions and culture to the feelings.

LOGIC — PROFESSOR PARKINSON —

The course in logic extends through the second and third terms of the Senior year. The first of these terms is given to deductive logic, chiefly, and the last to inductive. Deductive logic is a required study in the College of Letters, and an elective in the College of Arts. Inductive logic is an elective in both colleges.

TEXT-BOOKS.— Jevons' Deductive Logic; Fowler's Inductive Logic.

THE SCIENCE AND ART OF TEACHING — PROFESSOR STEARNS —

During the year 1885-86 the following courses will be offered in this department.

I. *Fall Term*: Educational Praxis, including school economy, organization, management and methods of teaching; lectures and recitations; Text-books; Fitch's Lectures on Teaching; Bain's Education as a Science.

II. *Fall Term*: The Theory of Teaching; a study of the psychological basis of methods, with a view to developing a rational criticism of educational processes. Courses of study: educational values; lectures and recitations; Text-books; Sully's Outlines of Psychology; Bain's Education as a Science.

III. *Spring Term*: The history of educational theories and practices in Europe and America; lectures and recitations. Text-books: Browning's History of Educational Theories; Quick's Essays on Educational Reformers.

IV. *Spring Term*: Superintendence; comparative study of education in different states; educational problems; special studies.

The design of the first course is to introduce the student to the practical problems of the school room, and to develop helpful methods of thinking about them. This, with the third course, which aims to acquaint him with the chief currents of thought on education, and the most important experiments which have been tried, will constitute a proper preparation for the work of teaching. The second and fourth courses aim to develop a basis for rational criticism upon educational work, and to promote comparative study of schemes of organization, superintendence, etc.

1884-1885.

In the Spring Term of the present year a course of lectures and recitations will be given, covering in part the first and third courses indicated above.

HISTORY — PROFESSOR ALLEN —

All persons entering the University are examined in United States history. Candidates for the Freshman class of the College of Letters are examined also in ancient history and geography, and the history of England.

American history is required for the classical students in the two first terms of the Junior year, as a half study, alternating with English literature. There are three elective courses in history, two for the Junior class and one for the Senior class. The two Junior courses rank each as a half study, the two together making one full study.

COURSE I. Twice a week — History of ancient institutions, designed for classical students only. *First term* — History of Greek and Roman institutions. *Second term* — The Roman constitution. *Third term* — Ancient mythology and art.

COURSE II. Three times a week — Dynastic and territorial history, carried through the year.

COURSE III. For Seniors, or those who have had Course II, or its equivalent. *First term* — Medieval Institutions. *Second term* — The English constitution. *Third term* — History of civilization.

The method of instruction varies with the subject and the class. In most cases a text-book is used as a basis of instruction. Wherever it is possible, special topics are assigned to the members of the class, to be looked up in books of reference, and presented orally. In some departments the work is principally by lectures, the substance of which is required to be written out in blank books. Courses of historical reading are laid out for the members of the class, and of the Seniors written essays are required. Historical charts or maps are constantly used, and in Course II, map drawing forms a regular part of the work.

TEXT-BOOKS.—*For Course I*—Leighton's History of Rome. Seeman's Classical Mythology. *For Course II*—Labberton's Historical Atlas. Freeman's History Primer of Europe. Allen's History Topics. *For Course III*—Smith's History of English Institutions. Guizot's History of Civilization.

CIVIL POLITY AND POLITICAL ECONOMY — PROFESSOR PARKINSON—

CONSTITUTIONAL LAW.—At the beginning of the third term of the Junior year a short course of lectures is given upon general constitutional law, dwelling more especially upon the English Constitution—its gradual formation and distinguishing characteristics. It is aimed in these lectures to prepare the way for the study of the constitution of the United States, which subject is taken up at their conclusion and continued, by recitation or lecture daily, through the term. The constitution is investigated in no party spirit, but in that of free inquiry. Special attention is given to important cases involving vital principles of constitutional law, and to the adjudications upon them by the highest judicial tribunals. It is designed, in the study of the constitution and throughout this department, to give instruction that shall be practical in the highest sense of the term, and which cannot but be of immediate service to that large class of graduates who pass at once from the academic to the law department of the University. Constitutional law, during the third term of the Junior year, is a required study for the students in the College of Letters, and an elective for those in the General Science Course.

In 1884-5, there will be offered as electives in the first term, to the Seniors, Constitutional Law (advanced work); and to the Juniors, the Political and Constitutional Development of England; to the Juniors in the second term, the Political and Constitutional Development of the United States.

POLITICAL ECONOMY.—This subject is taken up at the beginning of the Senior year and continued, with four exercises a week, to the close of the first term. It is taught with the aid of an appropriate text-book and works of reference, supplemented largely by lectures and discussions upon the more important topics. It is designed to treat the science, not as an isolated one, but as intimately connected with that of government, and as closely bearing upon the welfare and interdependence of nations as well as of individuals. In 1884-5 some advanced work will be offered in Political Economy as an elective.

INTERNATIONAL LAW.—This subject is at present taught wholly by lectures. It extends, one lecture a week, over the first term of the Senior

year. The aim is to present the outlines of the science in as complete a manner as possible in the time allotted, and to note any modifications or advances made from time to time in the recognized law of nations. Both political economy and international law are required of students in the College of Letters, but are elective for those in the College of Arts.

TEXT-BOOKS.—Cooley's Constitutional Law; Walker's Political Economy.

GREEK — PROFESSORS KERR and WILLIAMS —

The study of Greek extends through the whole of the Ancient Classical Course, being elective during the Junior and Senior years. Students in other courses may elect any authors which they are prepared to read with advantage, either in the elementary Greek class or in the college classes.

BEGINNERS IN GREEK.—The course in elementary Greek is established for the benefit of three classes of students: (1) Those who desire to complete in a single year their preparation for the Freshman class, Ancient Classical Course. Such students can get, in the time specified, the required Greek grammar and composition, and can easily read three books of the *Anabasis* and two books of the *Iliad*; (2) Students of the Modern Classical Course who wish to take elementary Greek as an elective study. For these the course provides five or more recitations a week, according to their preference; (3) Special students who elect Greek as a full study for a year or more.

FRESHMAN CLASS.—The course for the first college year includes a study of the Homeric Poems with reference to a critical knowledge of the Epic dialect and the interpretation of the Greek mythology. In the Winter and Spring terms the orations of Lysias are studied to give, by an extended course in one author, facility in translating pure Attic prose. The class have frequent exercises in Greek composition throughout the year.

SOPHOMORE CLASS.—The Sophomore year is given to the study of Greek oratory, tragedy and lyric poetry. The Philippics of Demosthenes, or their equivalent, are read and analyzed, and are illustrated by instruction in Athenian politics and Grecian antiquities. The work in dramatic and lyric poetry consists in the reading and analysis of the *Medea* of Euripides and selections from the Greek Anthology, or their equivalents.

The study of the difficult principles of Greek syntax is continued during the year, but only as subordinate and incidental to the study of the authors themselves.

JUNIOR AND SENIOR CLASSES.—The last two years are given to Greek philosophy, dramatic and lyric poetry and oratory. The object of the course is to give the student a comprehensive knowledge of Greek literature, and show him the power of the language as a medium of thought.

The foregoing courses provide for five daily recitations, three of which are conducted by Professor Kerr, and two by Professor Williams.

TEXT-BOOKS.—Goodwin's Greek Grammar; Goodwin's Greek Moods and Tenses; Jones' Greek Prose Compositions; Boise's Exercises in Greek Syntax; Jebb's Greek Literature, and standard American editions of the Greek classics.

LATIN — PROFESSORS ALLEN and HERITAGE —

The required course in Latin consists, for the Ancient Classical Course, of six terms, in one of which (the third term of the Freshman year) Latin occupies the place of a half study, alternating with Greek. In the Modern Classical Course, Latin is omitted in the third term of the Freshman year, and is a half study during the Sophomore year, alternating with German; in the second term, elective with Anglo-Saxon. During the Junior and Senior years, Latin is elective as a half study.

During the Freshman year the chief object is to enlarge and confirm the knowledge of the language by constant grammatical drill, and by weekly exercises in writing Latin. In the following years it is the intention, without neglecting grammatical training, to pay special attention to the subject-matter of the books read, and their place in the history of literature.

As a course in Roman literature, the work of these six terms — taken in connection with the books read before entering — is designed to embrace all the leading classes of composition, and most of the authors of first rank.

The work of the Freshman year is: first, one of Cicero's lesser works — for the present year, his "Cato Major" (*De Senectute*); for the rest of the year, Livy. There are weekly exercises in composition. The authors read in the Sophomore year of the Ancient Classical Course are: first term, Horace; second term, Tacitus (the present year his smaller works); third term, Plautus or Terence (the present year, the *Mostellaria* and *Trimnus* of Plautus). In the Modern Classical Course (as a half study), Horace is read two terms, and Tacitus the third term. At the close of each year there is a written examination, designed to test the student's practical acquaintance with the language.

The elective course in Latin covers two years; but only one year's course is pursued at a time, as the Seniors and Juniors recite together. The present year's course consists of Crowell's Selections from the Latin Poets, in connection with a course in Roman Literature.

TEXT-BOOKS.— For the several authors no special editions are required: Allen and Greenough's Latin Grammar; Allen's Latin Composition; F. D. Allen's Remnants of Early Latin; Bender's History of Roman Literature.

FRENCH — PROFESSOR OWEN, assisted by MISS DODGE —

Elementary.

Students of the Modern Classical Course are required to pursue the study of French during Sophomore year, reciting once daily. The same amount of work is required of Freshman in the General Science Course. Students of the Ancient Classical Course may elect the same amount during Junior or Senior year. Other students may join any of these three classes, with this proviso, that the last class, receiving instruction based upon the Latin language, may be entered only by those possessing a fair knowledge of that tongue.

Since many students wish to obtain merely a reading knowledge of French, the elementary instruction is directed to reading only. As soon as possible, the time of recitation is wholly devoted to authors selected for their grammatical difficulties. At the same time vocabulary is acquired by

the reading, out of the class, for examination, of a large amount of easy French. Students are expected at the end of the year to read with sufficient ease and accuracy to make a practical use of French in the prosecution of their other studies.

The text-books are Otto's French Conversation Grammar, Joynes' French Plays (read in the class room), *Le Roman d'un Jeune Homme Pauvre* of Octave Feuillet (mainly read out of the class room) and *La Petite Fadette* of George Sand (entirely read outside).

Advanced.

Second Year.—During this year, the student's attention is directed to writing French. Also a course of short lectures on philology is given in the French language; and so far as practicable, French is from this point made the medium of instruction. The class room text-book is Otto's French Conversation Grammar. Out of the class the *Cinq Mars* of Alfred de Vigny is read for examination. An extra hour weekly is given by Miss Dodge to reading and speaking with students who desire the exercise.

Third Year.—The student's effort is now applied to speaking. To this he is introduced by oral translations from Howard's Aids to French Composition. A course of lectures is held in French on the early literature of the language, and out of the class are read the *Ursule Mirouet* of Balzac and *Les Travailleurs de la Mer* of Victor Hugo.

All books read out of the class are furnished with ample notes on idiomatic and syntactical difficulties. An extra hour weekly at the professor's house is given to reading and speaking with students who desire the work.

In all cases French must be elected by years and not by terms.

GERMAN—PROFESSOR ROSENSTENGEL, assisted by MISS CHYNOWETH and MR. OLSON—

For admission to the Freshman classes, candidates must be prepared to pass a thorough examination on German grammar.

MODERN CLASSICAL COURSE.—German is a required full study during the Freshman, a required half study during the Sophomore, and an elective half study during the Junior and Senior years. Freshman year: 1. Review of the grammar. 2. Reading, and above all practice in conversing in German. 3. Composition. Sophomore year: The work of the first year is continued. German becomes now the language of instruction, and remains such during the succeeding years. Junior and Senior years: 1. Reading of classical works. 2. Composition. 3. Exercises in declamation; and 4. Discourses. In the last year lectures are delivered in German on the principal periods of German literature, and on the most important classic works.

GENERAL SCIENCE COURSE.—German is a required full study during the Freshman year, and an elective half study during the Sophomore, Junior and Senior years. In this course no attempt is made to teach German conversation or German literature exhaustively. The aim is rather to impart an accurate knowledge of grammatical principles, fluency of expression in translation and readiness in understanding German authors, that the

student may be prepared to pursue his researches in the realm of German scientific literature at will. Freshman year: 1. Thorough drill in German grammar. 2. Exercises in reading and translating. 3. Written work, prepared and extemporaneous. In the Sophomore, Junior and Senior years the "Naturwissenschaftliche Elementarbuecher" (science primers) are used. If preferred, in the Junior and Senior years elections may be made of classical reading.

ANCIENT CLASSICAL COURSE.—German is an elective full study during the Junior or Senior year. The aim is to impart a reading knowledge of the language in a very short time. For this reason no attempt is made either at conversation or to teach the grammar exhaustively, but the course embraces a few standard works in prose and poetry.

German-Americans, i. e., those who are not obliged to study the rudiments of their mother tongue, may, in place of the regular courses, elect the following: First year: 1. Grammar. The student must learn to think in his own language, to study it critically, and to use it with perfect accuracy. 2. Reading of the best lyric poems, and the ballads of Goethe, Schiller and Uhland. The aim is to learn to read with intelligence and understanding. 3. Introduction into an accurate etymological analysis. Second year: 1. Classical works. These are read outside of the class room, and are used in the class by narration, conversation and essays, in order to familiarize the student with the intellectual life of his ancestors. 2. Exercises in free discussion, and in the composition of German essays. 3. The most important points of poetics, to facilitate the acquiring of a complete knowledge and consequent enjoyment of the works read. Third year: 1. Modern literature. 2. Treatises by the student. Fourth year: Lectures on the history, theory and philosophy of the German language, and on German literature. The aim is that the student may be not only thoroughly instructed, but also incited to further investigation. Those who complete this course satisfactorily will be recommended as teachers of German.

TEXT-BOOKS.—Sheldon's Short German Grammar; Rosenstengel's Lessons in German Grammar, German Reader and Reader of German Literature; Naturwissenschaftliche Elementarbuecher; German classics by Buchheim, Hart or the Hempel's editions; Fluegel's Practical Dictionary, second part.

SCANDINAVIAN LANGUAGES — MR. OLSON —

The Scandinavian languages (Norse, Swedish, Danish and Icelandic) are offered as optional studies in the Freshman and Sophomore years, and as elective in the Junior and Senior years.

It is expected that sufficient knowledge of Modern Norse can be acquired from one year's instruction to enable the student to read with comparative ease the best modern authors. This year's work serves also as a good foundation for the study of Old Norse or Icelandic.

One year's instruction is offered in Icelandic, from which, besides obtaining a fair reading knowledge of the language, the student will become acquainted with early Scandinavian history, and will also be enabled to

form an independent opinion as to the historical worth and literary merit of the Old Norse sagas.

The Scandinavian department of the University library affords excellent advantages to students pursuing these studies.

TEXT-BOOKS.—In Modern Norse: Peterson's Norwegian-Danish Grammar and Reader. Selections in prose and poetry are read. In Icelandic: Icelandic Prose Reader with Notes, Grammar and Glossary by Dr. Gudbrand Vigfusson and F. York Powell.

ENGLISH LANGUAGE AND LITERATURE—PROFESSOR FREEMAN—

The studies in the department of English are arranged as follows;

SOPHOMORE YEAR.

Fall term—1. English Language and Literature, - Anglo-Saxon Period.

Winter term—2. English Language and Literature, - Transition Period.

Spring term—3. English Language and Literature, - XIVth Century.

JUNIOR YEAR.

Fall term—4. General Course in English Literature, - Three times a week.

Winter term—4. General Course in English Literature, Three times a week.

Winter term—5. Study of English Masterpieces, Sir Thos. More to Tennyson.

Spring term—6. Study of English Masterpieces, - American Poets.

SENIOR YEAR.

Winter term—7. Study of English Masterpieces, The Shakespeare Course.

Spring term—8. Study of English Masterpieces, American Prose Writers.

All the courses are elective except courses 3 and 4, which are required for students of the classical courses.

Courses 1, 2, 3 and 4 are given every year; the others in alternative years—5 and 6 in 1885-6, 7 and 8 in 1884-5. The last four may be taken by either Seniors or Juniors. Course 4 extends as a half study through the Fall and Winter terms.

Course 5 includes Sir Thomas More's Utopia, Roger Ascham's Schoolmaster, Sir Philip Sydney's Defense of Poetry, Spenser's Fairy Queen, Bacon's Essays, Milton's Areopagitica, Pope's Rape of the Lock, Burke's French Revolution, Tennyson's Princess.

Course 6 consists of the direct study of the poems of Longfellow, Whittier, Holmes and Lowell.

Course 7 consists of the direct study of Midsummer Night's Dream, Richard III, Merchant of Venice, Henry IV (Parts I and II), As you Like It, Twelfth Night, Hamlet, Othello, Macbeth, The Tempest.

Course 8 consists of the direct study of the prose writings of Hawthorne, Irving, Longfellow, Lowell, Thoreau and Emerson.

RHETORIC AND ORATORY—PROFESSOR FRANKENBURGER, assisted by

MR. DOUGLAS—

In the Senior year the philosophy of rhetoric, three times a week, and elocution twice a week, together constitute an elective study in all the

courses. The text-book in Rhetoric is Hill's Science of Rhetoric. In elocution the class will use "Macbeth" and "Othello," with lectures.

In the fall term of the Sophomore year of the General Science Course, rhetoric is a required study for the term. The text-books are Hill's Principles of Rhetoric, and Abbott's How to Write Clearly.

The Sophomores of the classical courses study rhetoric during the winter term, using the same text-books as those used by the scientific division.

Each member of the Freshman and Sophomore classes is required to have six essays and six declamations during the year. Private rehearsals precede public declamation, and each student has personal criticism passed upon his essay, after it has been read to the class.

Each member of the Junior and Senior classes has five essays and one chapel-stage oration. Class debates frequently take the place of essays.

In addition to the above class exercises there are three rhetorical exercises in each term, at which time all the students in the university are present. At this exercise are given those chapel-stage orations of the Juniors and Seniors, and those essays and declamations of the Freshmen and Sophomores which possess special merit.

Students write a portion of the time upon assigned themes.

Instruction is given in elocution once a week to the Freshman class. In the Senior, Junior and Sophomore years, elocution is optional. To those who desire it, instruction is given once a week.

This department is supplemented by work in the literary societies. These are five in number, two supported by the young women and three by the young men.

MATHEMATICS — PROFESSOR VAN VELZER, assisted by MRS. CARSON —

All students entering the University must pass a thorough examination in arithmetic, in higher algebra through quadratic equations, and in plane geometry; those entering the Modern Classical or General Science Course, must, in addition to the above, pass in solid geometry. In the Ancient and Modern Classical Courses the required mathematics ends with trigonometry, in the General Science Course with analytical geometry, and in the Engineering Courses with calculus, but all students have the privilege of electing the higher branches.

To students who elect mathematics in the Junior and Senior years, and also to post-graduates and special students, instruction will be given in the more advanced portions of the studies of the course, and also, whenever desired, in any of the following subjects: Higher plane curves, geometry of three dimensions, differential equations, spherical harmonics, elliptic functions, theory of functions, theory of numbers, quantics and quaternions.

The effort is made to secure a thorough acquaintance with the principles of mathematics and facility in their application. A general examination is held at the close of each term, and in addition frequent preliminary examinations are held which extend to previous as well as current work. Reviews are also frequent which are intended to increase the student's familiarity with the subject and to give him a general view of those topics which have already been treated in detail.

TEXT-BOOKS.—Loomis' Algebra, Wentworth's Geometry, Wheeler's Trigonometry, Loomis' Analytical Geometry, Byerly's Differential Calculus, Byerly's Integral Calculus, Boole's Differential Equations, Hardy's Quaternions.

ASTRONOMY — PROFESSOR HOLDEN —

The Washburn Observatory is open to visitors on the first and third Wednesdays of each month, from 7:30 to 9:00 P. M., if the nights are clear. All students of the University are invited to come at these times.

The required astronomy (short course) is taught by daily recitations during the spring term of the Senior year (12 to 1 P. M.). This course should be elected during the spring term of the Junior year by students who desire to take the longer course. The text-book is Newcomb & Holden's *Astronomy — American Science Series, "Briefer Course."*

The long course in astronomy may be elected by any student who has previously studied the calculus, and who has passed a satisfactory examination in the required astronomy. If elected, it must be followed for the three terms of the Senior year (2 to 4 P. M.). The course consists of two parts—theoretical and practical. The first is taught from text-books, of which Chauvenet's *Spherical and Practical Astronomy*, and Watson's *Theoretical Astronomy*, are the most important.

Students must first become familiar with the theory of instruments and with the main principles of theoretical astronomy, and of astronomical computations. As soon as they are sufficiently advanced, a regular plan of work with some one or more of the excellent instruments of the Students' Observatory will be laid out for them, which they are expected to follow with diligence. Each student is required to make and reduce the ordinary meteorological observations.

The Students' Observatory is in a separate building, and it is very completely equipped with a 6-inch refractor, by Alvan Clark & Sons, a 3-inch combined zenith telescope and transit, by Fauth & Co., a Spencer and Browning sextant, and mean time and sidereal chronometers. Any independent work of sufficient importance done by students will be printed in the *Publications of the Washburn Observatory*, authorized by law.

Post-graduate students will be received in the observatory on the footing of assistants, and will take part in the regular series of observations with the large equatorial or with the meridian circle, at the same time that they continue their theoretical studies. The instruments of the Students' Observatory afford every facility for independent work.

PHYSICS — PROFESSOR DAVIES —

The required course in physics consists of attendance upon a series of experimental lectures, at which the student is expected to make notes of all the new points presented. Deschanel's *Natural Philosophy* is used as the basis of this course and for study. In addition to the required course, students are allowed an election of either of two long courses, one mathematical, the other experimental. The mathematical course consists of daily recitations from the following treatises: Clausius or Baynes on Thermodynamics, Cumming or Clerk Maxwell on Electricity and Magnetism, Tod-

hunter's Spherical Harmonics, Lamb's Hydrodynamics, Donkin on Sound, Glazebrook on Light.

The experimental course consists of work done in the physical laboratory so far as the appliances on hand will permit, combined with frequent reviews from Clerk Maxwell on Heat, Sylvanus Thompson on Electricity and Magnetism, Helmholtz on Sound, Watts and Lommel on Light. Pickering's Physical Manipulation and Kohlrausch's Physical Measurements are also used by the students in this course.

CHEMISTRY — PROFESSOR DANIELLS —

PROFESSOR VAN HISE in charge of qualitative laboratory.

LONG COURSE.—This course consists of a daily exercise throughout the year, and may be continued two years, at the option of the student. The course is intended to be so thorough as to give an accurate training in the science, which will be of value for its own sake, while at the same time, the design is to make it so practical that it shall be of special service to those intending to become physicians, engineers, metallurgists or practical chemists.

Descriptive Chemistry.—Instruction in inorganic chemistry is given by lectures, with free use of the text-book, and by laboratory practice during the Fall term. During the Spring term, a course of lectures is given on chemical philosophy, and the chemistry of the carbon compounds.

Qualitative Analysis is begun on the completion of the lectures on inorganic chemistry. The course includes the analysis of fifty solid substances, containing not more than one base and one acid each, and of forty complex substances, most of which are ores, minerals or substances used in the arts. In the analysis of complex compounds, the separation, as well as the detection of the different bases and acids present, is required. Laboratory work is accompanied by frequent lectures and reviews. Exercises in stoichiometry and chemical problems are required throughout the year.

Quantitative Analysis.—Students are taken into the quantitative laboratory as soon as they have completed the course in qualitative analysis. Substances of known composition are first analyzed, that the accuracy of each student's work may be tested by comparing his results with the known percentages. When skill and accuracy in manipulation sufficient to secure correct results have been acquired, substances more difficult of analysis are given, as minerals, ores, crude metals, fertilizers, commercial and technical products. Each student makes duplicate analyses of every substance, which, with those made by other students, verify the accuracy of his work. Volumetric analysis is also taught, and volumetric methods are used in the laboratory, when they are more expeditious or more accurate.

Students intending to become physicians will, upon completing the course in qualitative analysis, be given special facilities for urine analysis, the detection of poisons, and the analysis of foods, drugs, etc.

To those desiring to become teachers of science, and who have completed the course in qualitative analysis, an advanced course in experimental chemistry will be given.

The text-books in this course are: Richter's Inorganic Chemistry; Pinner's Organic Chemistry; Fresenius' Qualitative Chemical Analysis, and Fresenius' Quantitative Chemical Analysis.

Both the qualitative and quantitative laboratories are large, conveniently arranged, well ventilated and well lighted, supplied with gas, running water, and all necessary apparatus and fixtures. Each student is provided with a convenient table, shelves, drawers and cupboard, and is supplied with a complete outfit of apparatus and chemical reagents.

SHORT COURSE.—This course consists of twelve weeks' instruction, principally by lectures, in inorganic and organic chemistry. It is intended only to give an outline of the science, with some knowledge of the general principles governing chemical changes. The text-book used is Clarke's Elements of Chemistry.

GEOLOGY AND MINERALOGY—DR. IRVING—

The courses in these studies are arranged as follows:

Study,	Weekly hours.	Term.	Year.	Total hours.
Blowpipe Analysis.....	10	Winter, first half....	Junior.....	50
Crystallography	5	Winter, second half....	Junior.....	20
Mineralogy —				
(General Principles).....	5	Winter, second half....	Junior.....	15
Mineralogy —				
(Descriptive and Determinative).....	10	Spring.....	Junior.....	110
Geology.....	{ 3	Fall		
(General Lectures).....	{ 2	Winter }	Senior.....	60
Lithology (Microscopic).....	4	Fall	Senior.....	60
Paleontology.....	3	Winter	Senior.....	36
Economic Geology.....	5	Spring.....	Senior.....	40

Of these studies the long course in Mineralogy and Geology includes the Blowpipe Analysis, Crystallography, Mineralogy (both terms), Geology (General Lectures, both terms), and either one or both of Lithology or Paleontology. The short course in Geology includes the general lectures of the Fall and Winter terms.

BLOWPIPE ANALYSIS is taught in the laboratory, the student working two consecutive hours daily, first on known and then on unknown substances. At least one term of chemistry is a prerequisite to this study. The text-book at present in use is Brush's Blowpipe Analysis.

CRYSTALLOGRAPHY is taught by daily recitations, with study of large wall charts and glass and wooden models. The text-book is Dana's Text-Book of Mineralogy. The instruction in this subject is at present given by Professor Van Hise.

MINERALOGY follows directly on the Crystallography. The general principles are taught by recitations and lectures. Descriptive and determinative mineralogy are taught in the laboratory, two hours' daily attendance being required. A collection of some six hundred minerals is deposited in the laboratory, and is constantly accessible to the student. A larger and fairly good collection is displayed in the mineralogical cabinet. At least one term of chemistry and the blowpipe analysis and crystallography, as above, are prerequisites. Text-books as above.

GEOLOGY.—The general course of lectures, on Mondays, Wednesdays and Fridays of the Fall term, and Tuesdays and Thursdays of the Winter term, covers lithology and structural, dynamical and historical geology, in the order named. The students are required to write out notes on the lectures, and present them from time to time for inspection. Recitations are held upon the lectures, which are illustrated by numerous lantern projections and specimens. There is a good collection of rocks and fossils, especially from the older formations, in the cabinet. Prerequisites to this course are at least one term each of chemistry and zoology. Students who have not had mineralogy are given some extra instruction on that subject. As a text-book, the student is allowed to provide himself with Geikie's Text-Book of Geology, Le Conte's Elements of Geology, or Dana's Manual of Geology, preferably the first named.

MICROSCOPIC LITHOLOGY.—Instruction in this new and rapidly advancing branch of geology has been given in the University since 1879, by daily exercises during the first half of the Fall term, but heretofore to nearly all students in the geology course. The number of microscopes being limited, however, it has been necessary heretofore to instruct several sections each day. Experience having shown this not to be a good arrangement, the class is now limited to the number of microscopes (now six), and the study continues throughout the term. Each student has a microscope assigned to his exclusive use, and is free to devote all the time to it he can throughout the term, the instructor being present in the laboratory two consecutive hours two days in each week. There are several collections of thin sections accessible to the student, for the most part with the corresponding hand specimens, including in all some 2,700 sections. Besides this, after some practice, the student makes and describes a number of thin sections himself. The courses in physics, chemistry, crystallography and mineralogy are prerequisites. Professor Van Hise at present gives part of the instruction in this subject.

PALEONTOLOGY.—This is an expansion, for such students as elect it, of the course in historical geology in the Winter term. The instruction is by recitation and handling of fossils in the laboratory. One term, at least, of zoology is a prerequisite. Text-book, Nicholson's *Ancient Life History of the Earth*.

ECONOMIC GEOLOGY is taught in a series of about forty lectures during the Spring term of the Senior year. The course includes a discussion of the nature and origin of ore deposits in general; the composition, properties, modes of occurrence, geological and geographical distribution of the ores of each of the metals; the same with regard to each of the non-metallic useful substances; mineral springs, artesian wells and water supply; the origin and geological relations of soils.

BIOLOGY — PROFESSORS BIRGE and TRELEASE —

The course in biology extends over one year, occupying eleven hours per week. It is designed to give an elementary knowledge of both botany and zoology, with laboratory work in both sciences, and to serve as an introduction to advanced work in either direction. The study may be taken by

those students who wish a more general course than is given in the long courses in either zoology and botany, and may properly precede advanced work in systematic botany or zoology, histology, animal or vegetable, anatomy of vertebrates or invertebrates. All students who wish to make biological science the main work of their course will begin by taking this study.

The lectures are arranged as follows:

<i>First Term.</i> —Botany. Course 2,	- - -	Three times a week.
Zoology. Course 3,	- - -	Twice a week.
<i>Second Term.</i> —Botany. Course 2,	- - -	Three times a week.
Zoology. Course 3,	- - -	Twice a week.
<i>Third Term.</i> —Zoology. General Principles,	- - -	Twice a week.

In this term the student will form an herbarium.

The number of students is at present limited by that of microscopes in the laboratories.

This course includes the required short courses in botany and zoology, and also makes a long course science.

TEXT-BOOKS.—Huxley and Martin's Biology, Bessey's Botany, Gray's Manual.

ZOOLOGY — DR. BIRGE —

The courses in this department are arranged as follows:

Course 1. General Zoology (long course),	10 hours weekly, 3 terms.
Course 2. General Zoology (short course),	5 hours weekly, 1 term.
Course 3. General Zoology (short course), for students of the General Science course.	2 hours weekly, 2 terms.
Course 4. Vertebrate Anatomy,	10-15 hours weekly, 2 terms.
Course 5. Histology,	10-15 hours weekly, 3 terms.
Course 6. Physiology,	3 hours weekly, 2 terms.
Course 7. Embryology,	10-15 hours weekly, 1 term.
Course 8. Theoretical Zoology, about thirty lectures every other year.	

To be given in 1884-5.

Courses 1, 2, 3, 6, 8, include lectures and recitations, and can be elected by any student. Courses 4, 5, 7, are laboratory courses only, and can be taken only by special arrangement with the teacher. The work is distributed through the year according to the following plan:

First Term.—Course 1. Protozoa to Mollusca.

Course 3. Comparative Physiology.

Course 4. Aves and Mammalia.

Course 5. Preparation of Specimens.

Course 6. Recitations.

Second Term.—Course 1. Mollusca, Arthropoda, Tunicata.

Course 2. Classification.

Course 5. Chiefly Study of Preparations.

Course 6. Recitations.

Third Term.—Course 1. Vertebrata.

Course 4. Pisces, Amphibia, Reptilia.

Course 5. Advanced Work in Preparation.

Course 2. Daily Recitation.

Courses 2 or 3 are required of all students who do not take course 1, and students in course 1 attend the lectures of course 3. Course 4 is intended for students who wish a more extended knowledge of the vertebrates than is given by one term's work. It must be preceded by two terms of course 1, and may be continued with histological or other work through two additional terms.

Course 5 is designed for future students of medicine, who are required to prepare and study specimens of the normal tissues and organs of the rabbit or cat, and to prepare a series of specimens to illustrate the microscopic anatomy of some animal assigned to them for study.

Course 6 is illustrated by a skeleton, and by Auzoux' models of brain, eye, ear and heart. Course 7 must be preceded by course 5, and if entered upon must be completed, even if more than the prescribed time is needed. Courses 4, 5, or 7 should be elected only by students who intend to devote a large amount of time to their prosecution.

The University has a full collection of specimens to illustrate course 1, and for use in the laboratory. A number of Blaschka glass models have recently been added to the cabinet.

TEXT-BOOKS.—Packard's Zoology, Orton's Comparative Zoology, Huxley's Anatomy of Vertebrates, Brooks' Hand-Book of Invertebrate Zoology, Klein's Elements of Histology, Martin's The Human Body, Foster and Balfour's Embryology.

BOTANY — PROFESSOR TRELEASE —

1. Elementary short course,	-	-	-	5 hours weekly, 1 term.
2. Advanced short course,	-	-	-	3 hours weekly, 3 terms.
3. Long course,	-	-	-	10 hours weekly, 3 terms.
4. Botanical Analysis,	-	-	-	5 hours weekly, 1 or 2 terms.
5. Agricultural Botany,	-	-	-	10 hours weekly, 3 terms.
6. Pharmaceutical Botany,	-	-	-	3 hours weekly, 1 term.

The work is distributed through the year as follows:

Fall Term —

Course 2. Lectures on physiological botany.

Course 3. Course 2, with 7 hours' laboratory work per week, on Histology and Cryptogams.

Course 4. Fall flowers and Ferns.

Course 5. Laboratory work on Cryptogams.

Winter Term —

Course 2. Lectures on Systematic Botany.

Course 3. Course 2, with 7 hours' laboratory work for week, on Phænogams.

Course 4. Ferns and Grasses.

Course 5. Weeds and Grasses.

Course 6. Officinal Plants.

Spring Term —

Course 1. Daily recitations or lectures; formation of herbarium.

Course 2. Formation of herbarium.

Course 3. Lectures and laboratory work in cross-fertilization, 7 hours per week; formation of herbarium.

Course 1 is for beginners. Courses 2-6 follow course 1 or its equivalent in preparatory work.*

Advanced students may select particular groups of plants for study in the fall and winter, or make collections of weeds, medicinal plants, etc., in the spring and summer.

TEXT-BOOKS.—Course 1: Kellerman's Elements of Botany, Kellerman's Plant Analysis. Courses 2-3: Gray's Lessons and Manual, Bessey's Short Course in Botany. Course 4: Gray's Manual.

HORTICULTURE — PROFESSOR TRELEASE —

This study requires, as preparatory, the lectures on general botany, given in the Freshman year (course 2).

In the spring term of the Sophomore year two courses are given; one, in economic entomology, consisting of two lectures a week on injurious and beneficial insects, supplemented by laboratory and field work; the other, in the cross-fertilization of plants, consisting of three lectures a week on the general subject of plant fertilization, together with laboratory work on instructive flowers and experiments in crossing, so far as these are practicable, to the extent of six hours per week. Students in the short course attend the lectures on entomology in the third term of the first year, and omit the work in cross-fertilization.

In the winter term of the Junior year the study is continued by a course of reading, from a text-book on horticulture, and Darwin's Animals and Plants under Domestication, and selected articles, accompanied by lectures on the origin of cultivated plants, and the practical applications of the principles of vegetable physiology; and laboratory work on the cell structure of plants. In the short course this work comes in the second year.

FORESTRY — PROFESSOR TRELEASE —

This subject is taken up by the students of the long course in agriculture in the winter term of the Senior year, the class reading and discussing a text-book, and selected articles on special portions of the subject. Lectures are also given on the fungi and insects which attack forest trees.

TEXT-BOOK.—Hough's Forestry.

CIVIL AND MECHANICAL ENGINEERING — PROFESSOR CONOVER, assisted by MR. BULL —

The studies common to the Civil and Mechanical Engineering Courses are descriptive geometry, analytical mechanics and the resistance of materials.

DESCRIPTIVE GEOMETRY is taught by daily exercise in class and draughting room; the latter comprising two hours spent in the precise construction of special problems under the direction of the instructor.

THE ELEMENTS OF ANALYTICAL MECHANICS are taught by daily recitation from text-books and by the solution of numerous problems suited to illustrate principles and their application.

*An exception is made in the case of Pharmacy students.

THE RESISTANCE OF MATERIALS is taught by text-books and lectures and by the application of the methods to the determination of the dimensions of the parts of actual structures and machines.

DRAUGHTING.—Instruction in draughting commences with the course of special study in the Sophomore year, and is continued in daily exercises of two hours each, throughout the course. The students are first taught the use of draughting instruments, and the simpler draughting operations. The principles of descriptive geometry, taught in the class room, are then further illustrated and enforced by a progressive series of special problems, including projections and intersections of lines, surfaces and solids, and problems in shades, shadows, perspective and isometric projection, which the students are required to solve, and carefully and exactly execute. These are followed in due order by instruction in shading and tinting with pen and brush, in India ink and water colors.

Students in civil engineering are specially instructed during the winter term of the Sophomore year in the draughting of stereotomy problems and the preparation of detailed drawings for masonry structures, and during the spring term in the platting of land and topographical surveys from the field notes, while during the Junior year they are required to make finished topographical drawings. During the Junior year, the time set apart for draughting is mainly devoted to the computation by graphical and analytical methods of the stresses on bridges and roofs, the study of their design and the preparation of detailed drawings, while a like plan is pursued in connection with the studies of the Senior year.

Students in mechanical engineering are specially instructed in making free hand sketches of machinery. In connection with the course of instruction in the elements of machines, they spend from two to four hours daily for five terms in making finished colored drawings, and tracings of detailed drawings, of a very large number of machines. During the remaining four terms, a like time is spent in making finished drawings of steam-engines and their appurtenances, hydraulic motors and milling machinery.

THEORY OF STRUCTURES.—The application of both the analytical and graphical methods is taught by lecture, and by actual computation under the direction of the instructor; and numerous detailed drawings of each class of structures must be executed by each student, part of them from sketches, made by the student, of the actual structures, and part selected from a large collection of drawings owned by the institution.

HYDRAULICS AND HYDRAULIC MOTORS.—The principles of hydraulics and their application to the design and construction of hydraulic motors and machinery are taught by text-book and lectures, and by study and execution of numerous drawings by the student.

SANITARY ENGINEERING AND WATER WORKS CONSTRUCTION are taught in the same manner.

RAILROAD ENGINEERING is taught by lectures and by practice with the instruments in the field and computation in the drawing room.

During the Senior year excursions are made from time to time for the purpose of examining structures and machinery of various kinds, and the students are required to make reports upon the same.

FIELD PRACTICE.—The field practice in land surveying and engineering geodesy gives to each student such training as to render him expert in the use of the chain, rod, magnetic and solar compass, level, transit and plane table.

SHOP PRACTICE.—Students in mechanical engineering are required to spend two hours daily in the machine shop, working under the direction of the Superintendent. This work commences in the second term, Sophomore year, and continues throughout the year.

Theses are required for graduation, which may be either complete discussions of existing structures, machines or processes, or of designs original with the student.

METALLURGY AND ASSAYING — PROFESSOR VAN HISE —

METALLURGY is taught during the fall and winter terms of the Senior year, to students of the several technical courses. Greenwood's and Bauermann's Manuals are used as the ground-work of the course, which is illustrated by charts, lantern slides, collections of ores, technical products, etc. The subjects taken up in order are: general principles, fuels, furnaces, metallurgy of iron, steel, copper, lead, silver, gold, antimony, arsenic, tin, platinum, etc. Excursions are made to smelting establishments with the instructor, and memoirs descriptive of actual operations are required. Furnace construction is taught in the draughting room.

ASSAYING is taught during the spring term of the Junior year to students of the courses in metallurgy and mining engineering, and to such others as may so elect. The course includes about ten lectures on the theory and practice of assaying, the remainder of the work being in the laboratory. There the student is given ores of silver and gold, which he assays in duplicate by both crucible and scorification methods, the whole number of assays made being about one hundred. The assay of gold and silver bullion then follows, after which the lead assay completes the course. The assay laboratory is provided with tables for thirty students, six crucible furnaces, two roasting furnaces, two large muffle furnaces for cupellation and scorification, Blake crusher, bullion rolls, bullion assay apparatus, etc. The laboratory work generally extends into the fall term, and the student who satisfactorily completes the course is an expert in assaying.

TEXT-BOOKS.—Greenwood's Manual of Metallurgy, Bauermann's Metallurgy of Iron, Rickett's Notes on Assaying.

PRACTICAL MECHANICS — MR. KING —

The course in mechanical engineering was established in 1877, and with it was commenced, as a prime requisite, the fitting up of a proper machine shop, wherein instruction in practical mechanics and machine construction might be given, in connection with that in the class room.

The shop is a large, well lighted room, 38 by 40 feet, 14 feet high, in the basement of Science Hall. The equipment of machinery and tools is all after the latest and most approved practice, and consists of a Seller's planer, three engine lathes, a hand lathe, a Brown and Sharp's milling machine, a grinding lathe for grinding hard surfaces, a Fox lathe for screw and brass work, a portable boring and drilling machine, a Fitchburg

upright drill, a Slate sensitive drill with Brown and Sharp centering attachment, a Jones and Lamsen engine lathe with "turret head" for making screws, etc., a Grant and Bogert engine lathe, and a Reed engine lathe, with conveniently placed and arranged work benches, vises, etc., and a collection of taps, dies, twist drills, fluted reamers, etc. It has also received and put in place a Stowe flexible shaft and attachment, the gift of Mr. George W. Burnham, of Philadelphia. The motive power is furnished by a 30-horse power Crane Bros. steam-engine.

Ten hours' work is required each week throughout the course. The method of instruction is modeled after the Russian system, and that of the Worcester, Mass., Institute of Industrial Science.

During the coming year a considerable quantity of apparatus will be constructed for the department of Physics. It is also designed to construct, as fast as possible, working models of machinery for the purpose of instruction, and each student, before graduating, will be required to design and construct one or more of these models.

The Sweet lathe, finished during the past year, will remain in the shop for the ensuing year.

AGRICULTURE — PROFESSOR HENRY —

Agriculture proper is taught during the fall and spring terms of the Senior year.

The fall term will be devoted to stock breeding and draining. Under the first head will be considered the history of our various breeds of stock, principles of stock breeding and the feeding of stock. While pursuing this subject it is designed, not only to make use of the various breeds of stock on the Experimental Farm for illustration, but it is also expected that the class will visit several of the herds and flocks of improved animals in the state, and thus acquire familiarity in handling and judging stock. As a text-book, in part, for this course, Miles' Stock Breeding will be used. In draining, the student will receive the theoretical part by a study of Waring's Draining for Profit and Health, and by lectures. A system of thorough tile draining has been planned for a part of the Experimental farm, which will require several years for completion; while this is in progress, ample opportunity will be afforded the student to assist in the practical operations of surveying, planning and laying drains.

During the spring term several topics will receive attention, among which may be named, farm book-keeping, general farm management, rotation of crops, farm manures and farm crops.

Students in the short course take these studies during their second year, with the Seniors of the regular course.

THE EXPERIMENTAL FARM, lying in close proximity to the college buildings, will be used for the purposes of illustration, so far as is practicable. It is expected that Agricultural students, during the last year of their course, will become familiar with the experiments in progress, and, when possible, will assist in conducting them. There are upon the farm representatives of four breeds of cattle, viz: Shorthorn, Holstein, Jersey and Ayrshire. There are several orchards and a small vineyard, together with

a small fruit garden, and plats of various grasses, both native and foreign.

A knowledge of agriculture, requiring as it does a familiarity with so many of the sciences, demands that most of the time of a four years' course be devoted to careful study, in order that the student may attain to any degree of thoroughness in this department. In view of this fact he is not required to do any manual labor upon the farm, except that which is educational, as mentioned under the subjects horticulture and agriculture. As a rule, the methods of performing ordinary farm work can be learned elsewhere by the student at far less expense to him than here; but those in this course seeking instruction in farm operations will have ample opportunity to obtain it. Anyone taking this course who may desire work upon the farm in order to help defray college expenses will be allowed fair remuneration for his services.

AGRICULTURAL CHEMISTRY — DR. ARMSBY —

This subject comprehends the applications of both chemistry and other natural sciences to agriculture, and might more properly be called agricultural science. It includes such subjects as the chemical and physical properties of the atmosphere and soil, their value as sources of food to plants, the composition, digestibility and nutritive effect of cattle foods, the composition and mode of action of fertilizers and manures, etc.

Lectures on these subjects will be given during the Senior year. Profitable attendance upon them will require as much knowledge of general science as is given in the first three years of the General Science or the regular Agricultural Course, or in the first year of the Short Course in Agriculture. Attendance upon these lectures is required of all agricultural students, both in the long and short courses.

Students in the long course, so soon as they have acquired sufficient proficiency in general quantitative chemistry, will take up the analysis of agricultural materials and products, such as fertilizers, fodders, milk. This portion of the course is specially intended for such students as may desire to fit themselves for positions as chemists or assistants in agricultural experiment stations or similar institutions, and every possible facility consistent with the prosecution of the other studies of the course will be afforded to such students to become acquainted with the methods and aims of agricultural chemical analysis. The Wisconsin Agricultural Experiment Station is located at the University, and students will have an opportunity to become familiar with its methods of work by observation, and, when possible, by personal participation in it.

TEXT-BOOKS.—Johnson's *How Crops Grow and How Crops Feed*, Armsby's *Manual of Cattle Feeding*, Stewart's *Feeding Animals*, Tanner's *Science of Agricultural Practice*, Wolff's *Düngerlehre*.

WISCONSIN AGRICULTURAL EXPERIMENT STATION — PROFESSORS

HENRY, TRELEASE and ARMSBY —

In accordance with the terms of chapter 300, of the laws of 1883, the Board of Regents, at their June meeting, 1883, organized the Wisconsin Agricultural Experiment Station, and placed its general management in the hands of the Farm Committee of the Board.

The purpose of the Station may be stated to be, in general, the promotion of agricultural science by investigation and experiment. It proposes to investigate as fully as lies in its power such questions as are of special interest to the farmers of this state, and at the same time so to investigate them that the results may have a general as well as a local value, and may be real contributions to agricultural science. It will also endeavor to be of use as a means of disseminating information on agricultural topics, and correspondence or personal interviews on such topics are desired.

Specimens of weeds and introduced plants of questionable value, of cultivated and other plants attacked by fungi (rusts, smuts, mildews, etc.), and of noxious and beneficial insects, are likewise solicited. In return, the names of unknown plants and insects, together with information as to the best means of dealing with them, will be gladly given, so far as possible, and questions will always be cheerfully answered.

Samples of farm and garden seeds, when taken according to the station's instructions, will also be examined as to purity and vitality, and in general all chemical and botanical work which is of general interest will be undertaken free of charge so far as the facilities of the station will permit.

The work of the station will be conducted by the professors of the agricultural department of the University, viz.:

W. A. HENRY, Professor of Agriculture.

WM. TRELEASE, Professor of Botany and Horticulture.

H. P. ARMSBY, Professor of Agricultural Chemistry.

The office of the station is at No. 16, Agricultural Hall. Its chemical and botanical laboratories and herbarium are in the same building, while the University farm, which joins the University grounds on the west, furnishes the necessary facilities for the conduct of field and feeding experiments.

Communications and inquiries should be addressed to

AGRICULTURAL EXPERIMENT STATION,

Madison, Wisconsin.

DEPARTMENT OF PHARMACY — PROFESSOR POWER —

Announcement for the session of 1885-6.

The object of this department is to furnish to the Pharmacists of the Northwest and other sections of our country, an opportunity for acquiring a thorough practical education in those departments of science most intimately connected with, or relating to, the practice of this profession.

The course extends over a period of two years, embracing the fall and winter terms of each academic year. The instruction comprises a series of lectures upon practical pharmacy and pharmaceutical chemistry; general chemistry, inorganic and organic; chemical physics, *materia medica* (pharmacognosy), and structural, systematic and physiological botany; all of which are amply illustrated by cabinet specimens, experiments, apparatus and diagrams, with frequent reviews throughout the course.

On account of the importance and value of thorough practical as well as theoretical knowledge in the several department of study, the attainment of a certain degree of proficiency and skill in practical chemical analysis

and in pharmaceutical and chemical manipulations is required of all those upon whom the degree of the University is conferred. All students are therefore required to devote about four hours daily, throughout the course, to practical work in the chemical and pharmaceutical laboratories. This embraces a systematic and progressive course in qualitative and quantitative chemical analysis, including volumetric estimations, together with shorter courses in the analysis of urine and in chemical toxicology, or the identification and separation of the more important poisons, as also the preparation of at least one of each of the several classes of galenical or chemical preparations of the United States Pharmacopœia.

The laboratories likewise afford to the advanced students facilities for the prosecution of independent research and investigation under the guidance of the professor in charge; but which will be subject to such conditions or restrictions as he may specify.

In connection with the above prescribed course, it is designed to incorporate from time to time such other courses or departments of study as shall seem practicable or desirable.

TERMS OF ADMISSION.

All applicants for admission must be at least sixteen years of age.

Applicants who bring a diploma of graduation from some standard high school, or a certificate of good standing and scholarship in a corresponding higher educational institution, will be admitted without examination.

All other applicants who do not present written evidence of a satisfactory preliminary education, will be subjected to such an examination in arithmetic, grammar, English composition, geography (political and physical), and history of the United States, as will afford a guaranty that the applicant is capable of pursuing with advantage and profit to himself the studies of this department. The examination of such applicants will be held on the first two days immediately following the opening of the fall term.

Students from other recognized colleges or schools of pharmacy will be admitted to the senior course of this department only when by a special examination they are found to be proficient in the studies of our junior year, including the required amount of laboratory work.

REQUIREMENTS FOR THE DEGREE OF GRADUATE IN PHARMACY (PH. G.).

Every person upon whom the diploma of this department of the University shall be conferred, must conform to the following requirements:

He must have attained the age of twenty-one years, and have attended two full courses of instruction (two years) in this department of the University; or one course (one year) in this, and one in another recognized college or school of pharmacy, in which the same studies are required. The last year, however, must be passed in this University. His deportment, character and work must have been satisfactory. He shall also furnish evidence of having had a practical experience of four years in a dispensing pharmacy, under the guidance of a competent and reputable preceptor (the time actually spent in attendance upon the lectures and in

the instruction of the laboratories being considered a part of such time of service), and shall submit an original essay or thesis upon some subject of practical pharmacy, chemistry, *materia medica*, botany or other branch of science intimately connected therewith.

The candidate must furthermore have passed a satisfactory examination, by the faculty, in the several branches of science taught, including laboratory work, and an examination in practical pharmacy by a committee composed of three members of the State Pharmaceutical Association.

On the satisfactory fulfillment of the above requirements, the candidate will be entitled to the degree of Graduate in Pharmacy, and shall receive the diploma of the University.

TEXT-BOOKS AND WORKS OF REFERENCE.

PHARMACY. Parrish's Practical Pharmacy; United States Pharmacopoeia (sixth revision).

CHEMISTRY. Richter's Inorganic Chemistry; Attfield's Chemistry; Frensenius' Qualitative Analysis; Hoffmann and Power's Examination of Medicinal Chemicals; Classen's Quantitative Analysis; Pinner's Organic Chemistry.

MATERIA MEDICA. Maisch's Organic *Materia Medica*; Flückiger and Hanbury's *Pharmacographia*; National Dispensatory by Stillé and Maisch.

BOTANY. Gray's Lessons and Manual of Botany.

FEES AND EXPENSES.

A matriculation fee of \$5 is required to be paid for the first course in this department; the ticket issued therefor should be obtained by September 15th, and none will be issued after October 1st. This ticket is to be renewed for every subsequent course (without additional expense), in order that a correct registry of attendance may be kept.

The lectures are free to all matriculated students who are residents of the state of Wisconsin; for non-resident students a lecture fee of \$25 is required for each course, which must be paid by October 1st. The fee for incidental expenses is \$8 for each course, which must be paid by all students. In the instruction of the chemical laboratory each student is required to pay for the chemicals which he consumes, and for the use or breakage of apparatus. The expense will be in proportion to the care and economy exercised in his work. An advance payment of \$15 is therefore required, of which and of all subsequent deposits an accurate account is kept, and the amount of the deposit not used returned to the student at the completion of the course.

In the pharmaceutical laboratory a fixed fee of \$5 is required, to cover the cost of material consumed and the use of apparatus; the latter, however, when broken or injured, must be replaced. Materials which may be required for original investigations or for work upon graduating essays must be furnished by the student at his own expense.

A diploma fee of \$3 is required upon graduation.

Further details relating to this department are contained in the annual announcement, published in May, which may be obtained by addressing

PROF. F. B. POWER,

Madison, Wisconsin.

MILITARY SCIENCE AND TACTICS—LIEUT. CHASE—

All able-bodied male students are required, during the first two years of the course, to attend such military drills and exercises as are prescribed by the faculty. They are organized as the University battalion for instruction in infantry tactics, and when on duty are required to wear a uniform.

The prescribed uniform consists of a dark blue blouse, of pattern worn by officers of the regular army, with state buttons. Pants of the same cloth—plain. Cap—dark blue (chasseur or forage cap), with gold wreath and letters W. U., on black velvet. It is less expensive than civilian dress, and can be worn with propriety at all times.

The course in military science and tactics is as follows:

First Year—Practical instruction in school of the soldier (infantry and artillery), in the schools of the company and battalion, and United States infantry and artillery tactics (Upton's).

Second Year—Instruction (practical and theoretical) in the schools of the company and battalion, in military law and courts martial, field fortifications, orders and correspondence, customs of the service and operations of war.

Under the laws of the general government, and of the state of Wisconsin, instruction in military science and tactics is obligatory.

In the organization of the battalion, the students are at present divided into two companies, officered by those young men who have shown themselves to be most prompt and faithful in the discharge of their duties, and who are conspicuous for soldierly bearing. As far as practicable, the commissioned officers will be chosen from the Senior and Junior classes, or special students of more than two years' standing, who may voluntarily retain membership in the battalion.

The general government furnishes for the use of this department 150 breach-loading Cadet Springfield rifles, cal. 45, with accoutrements complete, two three-inch rifled cannons, with carriages, limbers and implements; also 1,000 rounds of ball, 1,000 rounds of blank rifle cartridges, 100 blank cartridges and 300 friction primers for three-inch guns, annually, to be used in drills and target practice.

Roster of the University Battalion, taken from the rolls at the close of the spring term, 1884:

Company "A."

Captain, F. A. Pike.
 1st Lieutenant, C. L. Brigham.
 2d Lieutenant, F. E. Lyons.
 1st Sergt., J. A. Bruce.
 2d Sergt., R. C. Spencer.
 3d Sergt., G. W. Canner.
 4th Sergt., W. S. Dwinnell.
 5th Sergt., Howard Greene.
 1st Corporal, J. F. Harper.
 2d Corporal, A. A. Armstrong.
 3d Corporal, W. R. Rosenstengel.
 4th Corporal, F. L. Woodhouse.

1st Lieut. and Adjutant, C. M. Wales.

Sergt. Major, C. E. Nichols.

Quarter Master Sergt., L. W. Jacobs.

Company "B."

Captain, J. M. Hutchinson.
 1st Lieutenant, G. W. Baldwin.
 2d Lieutenant, Frank White.
 1st Sergt., F. F. Foote.
 2d Sergt., F. N. Hooker.
 3d Sergt., O. E. Zwietusch.
 4th Sergt., W. S. Tupper.
 5th Sergt., L. R. Anderson.
 1st Corporal, A. P. Hansen.
 2d Corporal, F. E. Bamford.
 3d Corporal, W. E. Kramer.
 4th Corporal, N. A. Moe.

MUSIC—PROFESSOR PARKER—

There are two general classes in music, each of which meets once a week during the entire year. The first of these begins at the opening of each year, with a course in the elements of the theory of music, combined with practical exercises in the art of reading vocal music. All students who desire to join this class are admitted without restriction.

The second class is devoted to the practice of glees, choruses, part-songs, etc. The selections of music are varied in kind and style, for the purpose of acquainting the students with the works of both classical and modern authors. All who enter this class are expected to read plain music readily.

Smaller organizations for special occasions or general practice are encouraged, and receive such attention as can be given without detriment to other work.

Private lessons in vocal culture, piano playing and harmony, are given to students pursuing any of the regular courses of study, on application and presentation of a card from the Secretary of the Board of Regents, to indicate that the fees mentioned under the head of expenses, have been paid. Special students taking two studies may receive private lessons on the same conditions, by consent of the faculty.

The instruction, both in singing and piano playing, is designed to be thorough and progressive, combining a careful technical training with proper guidance to intelligent interpretation.

There are occasional public exercises in addition to class exercises.

COLLEGE OF LAW.

GENERAL STATEMENT.

The great advantage of professional schools for the rapid and thorough elementary training of professional men has been long since completely demonstrated, and no profession has more entirely accepted and heartily acknowledged the benefits of such schools than the legal profession.

The learning of this profession embraces almost all the relations of life, and the result of the experience of many ages is scattered through numerous treatises, reports, statutes and digests. To obtain the mastery of the topics embraced within the limits of the body of the law in such a degree of perfection as marks the learned lawyer, requires many years of diligent study and practical experience.

The beginner needs to gain a comprehensive general view and analysis of the whole system; then to learn, without the careful reading which would occupy a life-time, what the books contain, and where to search for more particular and detailed information, and to acquire the habits and methods of legal study and thought. This degree of attainment can be reached in the professional school in at least half the time in which the student can otherwise acquire it, and with the additional advantage that there is no incumbrance of obsolete ideas or mistaken impressions, which are so difficult for any but a lawyer to distinguish from living doctrine, among the great mass of legal writings.

To afford the young men of Wisconsin and the northwest ready facilities for such acquirements, this department has been established.

THE METHOD OF INSTRUCTION

is for the most part by lectures and by reading under the direction of the professors, and by examinations on the subject read, together with moot court practice. The lectures give a clear analysis of the subject under discussion, while the instructor can refer the student to such parts of the text-books, and to such adjudications in the reports, as present in the best manner the principles which it is important to know. The system of reading cases in connection with text-books and lectures is of the first importance.

The moot court is held weekly. Here the students are taught to perform, as students, what they will be required to do as lawyers. The preparation of pleadings and the argument of questions—selected from actual cases occurring in practice, and designed to illustrate the subjects discussed in the lectures, under direction of the dean of the faculty,—afford to the student unsurpassed facilities for acquiring a practical familiarity with the modes of administering the law. Additional means to the same end consists in the forming of clubs by the students themselves, to which the instructors will afford every assistance.

A certificate of graduation from this department entitles the student to admission to practice in all the courts of the state.

The peculiar advantages which the city of Madison, the capital of the state, affords to the student of law, deserve mention. All sessions of the Supreme Court are held here, and also one term of the United States Circuit and District Courts annually. The Circuit Court for the county of Dane holds three terms annually, so that there is almost constantly some court in session.

The Judges who preside in the courts held at Madison are as follows:

In the United States Court — The Associate Justice of the Supreme Court of the United States assigned to 7th Circuit: HON. THOMAS DRUMMOND, *Circuit Judge*. HON. ROMANZO BUNN, *District Judge*.

In the Supreme Court of the State — HON. ORSAMUS COLE, *Chief Justice*. HON. WILLIAM P. LYON, HON. HARLOW S. ORTON, HON. DAVID TAYLOR, HON. JAMES B. CASSODAY, *Associate Justices*.

In the Dane County Circuit — HON. ALVA STEWART, *Circuit Judge*.

These courts hold their sessions near the hall of the Law School, and students can readily avail themselves of the advantages which these courts afford in the trial of cases at *nisi prius* and the arguments of the cases *in banc*, where all the diversity of legal topics will be discussed from day to day, and cases argued, many of which are of great interest, both on account of the questions at issue and the public and private interests involved.

Course of Study.

JUNIOR YEAR.

PROFESSOR CARPENTER.

First term, Contracts, including Agency, - - Parsons, *Story on Agency*.

Second term, Contracts, including Partnership, - - - Parsons.

Third term, Contracts, including Bailments, Parsons, *Story on Bailments*.

PROFESSOR VILAS.

First term, Jurisdiction, Original Process, Common Law Pleadings,

Stephen.

Second term, Equity Pleadings, - - - - - Story.

Code Pleadings and Practice, - - - - - Bliss.

Third term, Code Pleading and Practice before Judgment, - - - - - Bliss.

PROFESSOR SLOAN.

First term, Real Estate.

Second term, Real Estate and Eminent Domain, - Vols. I. and II. Washburn, Mills.

Third term, Corporations, Public and Private, and Principles of Statutory Construction.

PROFESSOR BUNN.

First term, Rights of Persons, including Domestic Relations, Blackstone and Reeves.

Second term, Rights of Things, - - - - - Blackstone.

Third term, Organization and Jurisdiction of the Federal Courts, Admiralty and Maritime Law, - - - - - Kent, *Federal Decisions*.

SENIOR YEAR.

PROFESSOR CARPENTER.

<i>First term</i> , Notes and Bills,	- - - - -	<i>Edwards.</i>
<i>Second term</i> , Torts,	- - - - -	<i>Cooley.</i>
<i>Third term</i> , Criminal Law,	- - - - -	<i>Bishop.</i>

PROFESSOR VILAS.

<i>First term</i> , Evidence,	- - - - -	<i>Greenleaf.</i>
<i>Second term</i> , Evidence,	- - - - -	<i>Greenleaf.</i>
<i>Third term</i> , Practice after Judgment and in Special Proceedings.		

PROFESSOR SLOAN.

<i>First and Second terms</i> , Real Estate, commencing with Uses and Trusts, and Wills,	- - - - -	<i>Washburn, Redfield.</i>
<i>Third term</i> , Equity Jurisprudence and Law of Notice,	-	<i>Willard, Wade.</i>

PROFESSOR BUNN.

<i>First and Second terms</i> , Commercial and Maritime Law,	-	<i>Kent, Abbott on Shippings.</i>
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<i>Third term</i> , United States Constitution and Constitutional Limita- tions,	- - - - -	<i>Cooley and Federal Decisions.</i>
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Lectures will also be delivered during the course, as follows:

PROFESSOR GAPEN,	- - - - -	Medical Jurisprudence.
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ADMISSION AND GRADUATION.

Students will be admitted at any time, but those who are not collegiate graduates must be twenty years of age to enter this department. Candidates will be examined in the ordinary English branches. Credentials of good moral character must be furnished.

Every candidate for graduation is required to prepare and read before the class and faculty, within six weeks before the close of the collegiate year, a dissertation on some legal subject, or some subject connected with the history, science or practice of the law, which will be approved by the faculty.

Resolved, That no student shall hereafter be graduated from the law department who has not devoted two years to the study of the law; one year of which shall be under the direction and supervision of the faculty of said department; and that no student shall be graduated until he shall have passed a satisfactory examination after the completion of said two years of study, which examination shall be conducted by the law faculty in the presence of the annual board of visitors.

EXPENSES.

Matriculation fee, \$75 for the full course, or \$50 for the first year and \$25 for the second year. For students entering the advanced class, \$60. Non-residents of the state are required to pay, in addition, a tuition fee of \$6 per term. All fees are payable in advance.

GENERAL INFORMATION.

LIBRARIES.

The University Library contains about thirteen thousand volumes, and is open to students every day from 9 A. M. to 5:30 P. M. The best American and foreign periodicals are taken.

Students also have an opportunity, free of expense, to consult the State Historical and State libraries, the former numbering over one hundred thousand volumes (including pamphlets), the latter comprising a law library of fifteen thousand volumes. These library privileges are unsurpassed in the west, and equalled in very few institutions in the country.

The students, by special arrangements, are enabled to take out books from the free library of the city of Madison. This is a well selected collection of about nine thousand volumes.

APPARATUS, CABINETS, LABORATORIES.

The University is provided with extensive and valuable geological and mineralogical cabinets and collections in natural history; also, with well selected physical and chemical apparatus.

The following departments are provided with laboratories: In Science Hall—chemistry, physics, geology, zoology and assaying; in Agricultural Hall—botany, agricultural chemistry and pharmacy. The laboratories are well furnished with apparatus and materials for work.

The machine shop is amply provided with tools and machines, and gives good opportunities for work in practical mechanics.

The Astronomical Observatory, built by the liberality of the late Governor C. C. Washburn, is now completed. Attention is called to the opportunities for study and original work offered by the Students' Observatory, which is now furnished with instruments well adapted for these purposes.

LECTURES.

Lectures constantly accompany text-books in the instruction of the University, and supplement them in a great variety of ways. The connection is so general and so changeable as to render any programme of lectures, aside from recitations, undesirable. The President gives a course of lectures to the Freshman in health, methods of study and manners.

LADIES' HALL.

Ladies' Hall contains a society hall, teachers' rooms, study and lodging rooms for about sixty students, and ample accommodations for boarding. Students' rooms are carpeted and furnished, but occupants are expected to provide the toilet sets needed in their rooms, also towels, napkins, sheets, pillow-cases, blankets and counterpanes, all of which should be marked with the name of the owner. Young women occupying this building are under the immediate charge of the principal, are required to board

with the matron, and are expected cheerfully to conform to the rules requisite for a quiet and orderly household. No responsibility is assumed for pupils rooming in the city, beyond that involved in good scholarship and general deportment. The rooms are in suites to accommodate two or four students. Gas has been introduced into this building, and an abundant supply of water has been provided.

POLICY.

The policy of the institution is determined by the regents, who, as a body, represent the people, and no particular sect or party. It is the aim of the University to meet the highest educational wants of every student in the state. In the elective studies there is provision for the demand of higher scholarship. It is advisable that students should pursue a prescribed course, if possible, but they may elect any studies, subject to the direction of the faculty.

PEDAGOGY.

The regents have established a department of the Science and Art of Teaching. It is the purpose of this professorship to better prepare University students for practical educational work; to aid in developing rational criticism of educational plans and methods; to promote such a relation between the High Schools of the state and the University as will advance the interests of both; to induce a study of educational systems, experiments and current questions. The University desires to establish such relations with superintendents and school officers as shall promote good understanding and helpfulness, and keep a vital connection throughout the educational work of the state.

GOVERNMENT.

Students are held responsible only for good order and the diligent use of their time. Those who fail to conform to this simple requirement will be dismissed. The University is no place for those who do not propose to give their whole time to the work prescribed for them by the faculty. The loss of a single recitation injures not only the student, but also those connected with him. Students who room in the city will be held responsible for good behavior everywhere, but will be under the direct supervision of the University only when on its grounds, and in their University work. Leave of absence will not be granted except in cases of absolute necessity.

EXAMINATIONS.

There will be no special public examination of the classes at the close of the year. All persons desirous of knowing the character of the work done at the University are invited to be present at the regular exercises and examinations of the classes. The members of the board of visitors will visit the University from time to time during the year, to inspect the work done in recitations, lectures, laboratory work and examinations.

HONORS IN SPECIAL STUDIES.

Special honors are given, upon recommendation of the professors in the several departments, to the members of the graduating class who have

done special work under the direction of the professor of any department, and prepared an acceptable thesis; but the amount of work required for a special honor must be at least the equivalent of a full study for one term, and in the case of those branches in which there are longer and shorter elective courses, the student must have taken the longer course.

Candidates for special honors must have a general average standing of 85, and one of 93 in the department of which the application is made.

Students taking special honors read their theses in public on the Monday next preceding commencement day, or such of the students, not exceeding three in number, who shall have honor orations assigned them for the exercises of commencement day, may substitute their theses for the orations.

Application for special honors must be made to the faculty through the professor in whose department honors are sought, before the middle of the winter term. The application must be accompanied with a statement of the subject of the proposed thesis. Theses must be submitted at least two weeks before the Monday next preceding commencement to a committee consisting of the professor in whose department honors are sought, and the committee on higher degrees in the course to which the student belongs. The General Science Committee on higher degrees will act for the Technical courses. But in case the thesis cannot be completed by the time above named, such a synopsis should be presented to this committee as shall satisfy it that the thesis will entitle the student to special honors.

DEGREES.

Academic.

The degree of *Bachelor of Science* is conferred upon such persons as satisfactorily complete the General Science Course.

The degree of *Bachelor of Arts* is conferred upon such persons as satisfactorily complete the Ancient Classical Course.

The degree of *Bachelor of Letters* is conferred upon such persons as satisfactorily complete the Modern Classical Course.

The degrees of *Master of Science*, *Master of Arts* and *Master of Letters* are conferred on Bachelors of Science, Bachelors of Arts and Bachelors of Letters, respectively, on the following conditions:

An amount of study is required equal to that performed in one year's attendance at the University. This work may be done at the University or elsewhere. Of this study a part equal to that required at the University for two recitations (four to six hours) per day for one year must be devoted to one department of study or to allied studies. The degree will be conferred in that department in which this work is done: as M. A. in Latin, M. S. in Chemistry, etc.

An examination on the work done is required and an acceptable thesis on an assigned topic must be presented. The course of study for each candidate for the master's degree, whether in attendance at the University or elsewhere, and the subject of his thesis will be assigned by the standing committee on the degree applied for. Candidates may obtain further information by application to the proper committee. These committees are as follows:

For degree of M. A., Professor Allen and Professor Kerr.

For degree of M. L., Professor Parkinson and Professor Freeman.

For degree of M. S., Professor Irving and Professor Daniells.

The degree of *Master of Letters (English)* will be given to Bachelors of Science who pursue a course of literary studies.

The faculty will not recommend any graduate for these degrees except on compliance with the above conditions.

Special and Professional.

The degrees of *Bachelor of Agriculture*, *Bachelor of Civil Engineering*, *Bachelor of Metallurgical Engineering*, *Bachelor of Mining Engineering*, *Bachelor of Mechanical Engineering*, and *Graduate in Pharmacy*, are conferred respectively upon such persons as satisfactorily complete the course of study in agriculture, or in civil, metallurgical, mining or mechanical engineering, or in pharmacy.

The degrees of *Civil Engineer*, *Metallurgical Engineer*, *Mining Engineer* and *Mechanical Engineer* are conferred respectively upon such bachelors of civil, metallurgical, mining or mechanical engineering as, after one year of additional study and practice, present a suitable project, and pass the requisite examinations. Residence at the University during the year is not required.

The degree of *Bachelor of Laws* is conferred on those who satisfactorily complete the course of study prescribed in the law school.

LITERARY AND SCIENTIFIC SOCIETIES.

The literary societies — Athenæn, Hesperian, Adelphian, Castalian and Laurean — are sustained with interest, and aid in the intellectual training of the student. There are also a Mathematical Club, a Natural History Club, a German Bildungsverein, and a Scandinavian society, Nora Samlag. These offer opportunity for study and discussion on topics connected with the subjects which they represent.

PHYSICAL TRAINING.

Military drill is required for the young men of the Freshman and Sophomore classes, and of special students during the first two years' attendance. A well furnished gymnasium and two bowling alleys are open to the students at fixed hours. The University is situated on the shores of Lake Mendota, and the students can find relaxation and exercise in boating.

SCHOLARSHIPS.

The University is indebted to the liberality of Hon. John A. Johnson, of Madison, for ten scholarships of \$35 annual value each, established under the following conditions:

The sum received by one student in one year shall not exceed \$50, nor the sum received during his college course exceed \$200. Until the year 1900 the fund will be limited to students speaking one of the Scandinavian languages (Norse, Swedish, Danish or Icelandic). No student can receive aid from this fund unless he has attended a common school one year or

has attended the University one year. The recipient of aid will be expected to return the money received by him to the fund, if he shall at any time be able to do so. The income of the fund will be dispensed by a committee of the faculty. This committee consists of President Bascom, Professor Parkinson and Mr. Bull.

THE LEWIS PRIZE.

The Lewis prize fund, the fruits of a donation made by Ex-Governor James T. Lewis, now yields annually \$18. The sum is bestowed on the student furnishing the best commencement piece. It was given for the year 1875, to Fannie West, of Milwaukee; for 1876, to A. S. Ritchie, of Racine; for 1877, to Charles Dudley, of Madison; for 1878, to Fred King Conover, of Madison; for 1879, to Belle Case, of Baraboo; for 1880, to Henry Decker Goodwin, of Milwaukee; for 1881, to Howard L. Smith, of Madison; for 1882, to David F. Simpson, of Waupun; for 1883, to Alice J. Sanborn, of Freeport, Ill.; for 1884, to Fred. J. Turner, of Portage.

ROOMS.

No student will be allowed to occupy a room in the dormitory until his bills for the term are settled. Students are allowed the choice of rooms, in the order of the classes. Regular students, in previous occupancy, if on the ground at the opening of the term, are permitted to retain their rooms, unless needed for those in higher classes.

Rooms for young men are furnished at the expense of the students, who should bring their own bedding, towels, etc. Other furniture can be obtained here, second hand or new, at moderate prices.

Students will not be allowed to board themselves in the dormitory. Occupants of rooms are held responsible for damages to them.

Rooms can be obtained in the city at reasonable rates.

CHARGES AND FEES.

Room rent in dormitory, per term, -	-	-	-	-	\$5 00
Tuition to residents of the state of Wisconsin, -	-	-	-	-	FREE.
Tuition for non-resident students, per term, -	-	-	-	-	6 00
General Expenses — First term, -	-	-	-	-	4 00
General Expenses — Second term, -	-	-	-	-	4 00
General Expenses — Third term, -	-	-	-	-	2 00
Room rent in Ladies' Hall, per term, -	-	-	-	-	6 00
Fuel and light at actual cost.					
Board in Ladies' Hall, per week, -	-	-	-	-	3 50
Washing, Ladies Hall, per dozen, -	-	-	-	-	60
Instrumental Music, 20 lessons, -	-	-	-	-	10 00
Use of instrument, per term, -	-	-	-	-	2 00-5 00
Vocal Music, 20 lessons, -	-	-	-	-	10 00
Matriculation fee, in the Law School, first year, -	-	-	-	-	50 00
Matriculation fee, in the Law School, second year, -	-	-	-	-	25 00
Matriculation fee, in the Law School, second year only, -	-	-	-	-	60 00
Lecture fee, department of Pharmacy, for non-residents only, -	-	-	-	-	25 00

Students will be charged for not less than one term, and no deduction will be made for voluntary absence. Payment of all University charges for tuition, room rent, heating, etc., is required strictly in advance, and is payable to the Secretary of the Board of Regents.

Students working in the laboratories are required to make deposits of from \$5 to \$30, to cover the cost of instruments and materials used by them. An accurate account of the same is kept, and the amount of the deposit not used returned to the student at the close of his term of study in the laboratory.

The cost of board in clubs is from \$1.75 to \$2.50 per week; in private families from \$2 to \$4 per week; washing, from sixty to seventy-five cents per dozen.

Many of the students support themselves in whole or in part. The places offering available work are eagerly sought for, and can not be obtained at once. Those dependent on themselves should secure some means before coming here, and to be ready to wait and to learn how to help themselves.

NOTE.—Three dollars is charged for each diploma. The items of expense are subject to revision at the commencement of each collegiate year.

CALENDAR.

ACADEMIC YEAR, 1884-5.

EXAMINATION of candidates for admission, September 2 and 3.

FALL TERM begins Wednesday, September 3.

Election day, Tuesday, November 4.

Thanksgiving, Thursday, November 27.

Fall term closes Wednesday, December 17—15 weeks.

WINTER TERM begins Wednesday, January 7.

Washington's birthday, February 22, Legal Holiday, Monday Feb. 23.

Winter term closes Wednesday, April 1—12 weeks.

SPRING TERM begins Wednesday, April 8.

Examination of candidates for admission, June 18 and 19.

Baccalaureate sermon, Sunday, June 21.

COMMENCEMENT, Wednesday, June 24, 9 A. M.

ACADEMIC YEAR, 1885-6.

FALL TERM begins September 9, closes December 23.

WINTER TERM begins January 6, closes March 31.

SPRING TERM begins April 7, closes June 23.