

# course listings 9/1-1973

University of Wisconsin  
Center System

## INDEX

✓Agronomy.....	1
✓Anthropology.....	1
✓Art.....	2
✓Astronomy.....	5
✓Bacteriology.....	6
✓Botany.....	6
✓Business Administration.....	7
Chemistry.....	8
Computer Sciences.....	10
✓Dairy Science.....	10
✓Economics.....	10
Engineering Graphics.....	11
Engineering Mechanics.....	12
✓English.....	12
✓Food Science.....	14
✓French.....	14
✓Genetics.....	15
✓Geography.....	16
✓Geology.....	17
✓German.....	18
✓History.....	19
✓Horticulture.....	22
✓Journalism.....	22
Mathematics.....	23
✓Meat and Animal Science.....	26
Music.....	26
Music Applied.....	28
Philosophy.....	31
Physical Education-General.....	32
Physical Education-Professional.....	32
Physics.....	34
✓Physiology.....	35
✓Political Science.....	35
✓Psychology.....	36
<del>Social Science.....</del>	38
✓Sociology.....	38
✓Soils.....	40
✓Spanish.....	40
Speech.....	41
University Forum.....	43
✓Zoology.....	43

University of Wisconsin Center System  
Course Listings  
1971-73

AGRONOMY 132

100. Principles and Practices in Crop Production. 4 credits. Survey of plant science and applications to agronomic practice.

ANTHROPOLOGY 156

100. General Anthropology. 3 credits. A course planned to give the student a general understanding of man in relation to the cultures he has built. Deals with man's evolutionary development, his capacity for society, and the development of the world's major cultures. Open to freshmen. May not be taken by those who have taken ILS 121.
105. Introduction to Human Biology. 3 credits. The genetic basis of morphology, physiological and behavioral variation within and between human populations, and their origin and evolution. Open to freshmen. Prerequisite: one year high school or one semester university biology.
200. Cultural Anthropology. 3 credits. Variations of human cultures throughout the world and the comparative study of human institutions. Prerequisite: sophomore standing or Anthropology 100.
202. Prehistoric Archaeology--Origins of Civilization. 3 credits. Development of human culture from its earliest beginnings to the historic period in the Old World as revealed by archaeological studies. Prerequisite: sophomore standing or Anthropology 100.
204. Survey of World Ethnography. 3 credits. Ethnographic survey of representative primitive people and their cultures in recent times; major regions of the world considered in turn, with some attention to environmental factors and culture area classifications. Prerequisite: sophomore standing or Anthropology 100.

291. Selected Topics in Anthropology. 3 credits. The topic selected will be in some area of special competence of the instructor. When this course is offered, the specific topic will be indicated in the campus timetable. Prerequisite: sophomore standing plus an introductory course in anthropology or consent of instructor.
293. Proseminar in Anthropology. 3 credits. The topic selected will be in some area of special competence of the instructor. When this proseminar is offered, the specific focus will be indicated in the campus timetable. Prerequisite: sophomore standing plus an introductory course in anthropology or sociology plus one other course in anthropology and consent of instructor.
299. Independent Reading in Anthropology. 1, 2, or 3 credits. Prerequisite: sophomore standing and consent of instructor.

ART 168

Art majors will be able to complete, at most Center System campuses, the first two years of their major requirements (34 credits). The art courses also fulfill basic art requirements in other disciplines (elementary education, occupational therapy, recreation, etc.). Art 100, 131, or 132 are especially recommended to meet the creative arts requirements of most schools which offer a degree in elementary education.

Art majors are advised to enroll, preferably in the freshman year, in all courses marked below with an asterisk. During the sophomore year, it is recommended that majors carry a total of 18 art credits selected from the courses numbered above 132.

100. Design and Drawing. 2 credits. A broad course in the elementary principles of design in the space arts. Applications are made in the basic craft materials, drawing and printing media. It is a laboratory-lecture course that meets four hours per week. It will not apply for a major or minor in art and art education; majors and minors in that field should take the 101-102 and 131-132 sequence.
- \*101. Basic Drawing I. 3 credits. This course embraces basic linear perspective with an introduction to aerial perspective (light and shade). Emphasis is on the qualities of line, texture, and volume for its expressive qualities. Work is done from the actual object and the human figure. The course meets for six hours per week as a workshop. Open to freshmen.

- \*102. Basic Drawing II. 3 credits. This course continues the study of aerial perspective as applied to more complex objects and pictorial situations. There is a thorough exploration of many drawing media. The course meets six hours a week in a workshop. Prerequisite: Art 101. Open to freshmen.
- \*123. Man and the Visual Arts. 3 credits. Cultural history as it can be discerned through an investigation of the artist and the work of art he produces. Offered every third semester in a sequence with Art 126 and 127.
- 124. Studio Participation. 3 credits. Participation by humanities or non-art majors in the various sophomore studio offerings that normally carry prerequisites. Offered every semester. Consent of instructor required. Declared art majors may not take this course.
- 125. Studio Participation. 3 credits. See Art 124.
- \*126. Contemporary Expressive Arts. 2-3 credits. Painting, sculpture, the graphic arts, photography and the cinema as they reflect life in the 20th century. Field trip required.
- \*127. Contemporary Applied Arts. 2-3 credits. Architecture, environmental planning, commercial and industrial design, advertising and commercial illustration, furniture and interior design, textile, ceramic glass and metal design as they reflect life in the 20th century.
- \*131. Creative Design I. 3 credits. This is a lecture-laboratory course that meets six hours per week. It deals with the basic elements of design in materials. Open to freshmen.
- \*132. Creative Design II. 3 credits. This is a lecture-laboratory course that meets six hours per week. It gives the student the basic elements of design as applied to three-dimensional materials. Open to freshmen.
- 151. Introduction to Painting. 3 credits. A lecture-laboratory course that meets six hours per week. Introduces the basic painting media--oil, watercolor, casein, etc. Prerequisite: Art 102.
- 161. Life Drawing and Anatomy I. 3 credits. A study of the human figure as a basic skill for all art expression. Investigations are made into fundamental bone and muscle structures as they apply to the visual arts. It is a laboratory course that meets six hours per week and draws from the living model. Prerequisite: Art 102.

- 162. Life Drawing and Anatomy II. 3 credits. A continuation of Art 161. A laboratory course meeting six hours per week. Prerequisite: Art 161.
- 171. Lettering. 3 credits. Proportions of the classical letter, contemporary layout and letter adaptations. Prerequisite: sophomore standing.
- 201. Watercolor I. 3 credits. A laboratory course exploring watercolor as a medium of expression. The course meets six hours per week. Prerequisites: Art 102 and 151.
- 202. Watercolor II. 3 credits. A continuation of Art 201. The course meets six hours per week. Prerequisite: Art 201.
- 211. Oil Painting I. 3 credits. A laboratory course exploring oil as a medium of expression. The course meets six hours per week. Prerequisites: Art 151 and 161.
- 221. Sculpture I. 3 credits. A laboratory course that meets six hours per week. Prerequisite: Art 132.
- 222. Sculpture II. 3 credits. A laboratory course that meets six hours per week. Prerequisite: Art 221.
- 251. Metal I. 3 credits. Problems in copper, gold, silver, bronze and pewter. Prerequisites: Art 131 and 132.
- 252. Metal II. 3 credits. Continuation of Metal I. Prerequisite: Art 251.
- 261. Ceramics I. 3 credits. The introduction to the methods of pot production stressing slab, coil and simple wheel construction. It is a laboratory course meeting six hours per week. Prerequisites: Art 131 and 132.
- 262. Ceramics II. 3 credits. Continuation of Ceramics I. Prerequisite: Art 261.
- 300. Graphic Arts. Introduction. 3 credits. Studio survey course in relief printing. intaglio and lithography. History, slide print study, criticisms. Prerequisite: Art 102.
- 301. Graphic Arts. Relief Printing. 3 credits. Aspects of relief printing; wood cut, collage print, linoleum cut and wood engraving; introduction to relief printing in full color. Prerequisite: Art 151 or consent of the instructor.

302. Graphic Arts. Lithography. 3 credits. Various aspects of lithography; direct drawing on the stone with crayon and tusche, transfer techniques, lithographic color processes. Prerequisite: Art 151 or consent of the instructor.
304. Graphic Arts. Etching. 3 credits. Studio work in intaglio techniques, including dry point, engraving and various etching procedures; fine printing is stressed. Prerequisite: Art 151 or consent of the instructor.
306. Graphic Arts. Serigraphy. 3 credits. Materials and techniques of the silk-screen process; investigation of various types of stencils and resists used in serigraphy. Prerequisite: Art 151 or consent of the instructor.
441. Advanced Creative Design. 3 credits. Experimentation in visual phenomena. Studio practice with lectures and readings in perception, design theory, philosophy and history of design. Prerequisites: Art 131 and 132 and consent of instructor.
531. General Crafts. 3 credits. Leatherwork, blockprinting, plastics, stenciling, papier mache, chip carving and other crafts involving materials and processes. This is a laboratory session meeting six hours per week. Prerequisites: Art 132 and consent of instructor.
541. Materials Workshop (design). 2-3 credits. Exploration of materials as they apply to industrial production, emphasis on new applications for existing materials in three-dimensional problems in which both hand and power tools are used. This is a laboratory session that meets six hours per week. Prerequisites: Art 132 and consent of instructor.

#### ASTRONOMY 188

100. Survey of Astronomy. 4 credits. Descriptive survey of astronomy for students with little background in mathematics and physics; the physical nature of the universe; the solar system, stars, nebulae, galaxies; telescopic observations, lab demonstrations and discussions of astronomical methods; not open to students who have had the prerequisites required for Astronomy 200. Prerequisite: minimum mathematical preparation.
200. General Astronomy. 4 credits. Survey of astronomy for students with some background in mathematics and physics: the physical nature of the universe; the solar system, stars, nebulae, galaxies; telescopic

observations, lab demonstrations and discussions of astronomical methods; not open to students who have taken Astronomy 100. Prerequisite: Physics 106 or 202.

### BACTERIOLOGY 192

101. General Survey of Bacteriology. 4 credits. An introduction to the fundamental principles and techniques of microbiology and their application to public health practices. The subjects of microbial genetics, evolution, taxonomy, anatomy and metabolic pathways are discussed. Prerequisite: an introductory chemistry course; Chemistry 102 or 103 is recommended.

### BOTANY 208

The Department of Botany/Zoology offers credits by examination in any course under its jurisdiction. If a student feels that he is competent in a course as described below and wishes to obtain credit by examination, he should contact the departmental representative on his campus to make arrangements for the examination. If the student does not want to accept the grade obtained by examination he may change the grade by taking the course in the normal fashion.

100. Survey of Botany. 3 credits. Structure, functions and life histories of representative plants throughout the plant kingdom.
130. General Botany. 5 credits. An introduction to plant sciences including the structure, development and physiology of plants. The relation of the major plant groups and the principles of biology. Illustrated with plant material.
151. Introductory Biology (Same as Zoology 151). 5 credits. Living organisms; their structure, functional capabilities, developments, perpetuation and evolution. In combination with Botany 152, recommended for zoology majors preparatory to advanced zoology courses; also designed for those who wish a single integrated course in biology. No prerequisite.
152. Introductory Biology (Same as Zoology 152). 5 credits. Living organisms; their diversity, behavior, ecology and evolution. Prerequisites: Zoology or Botany 151.



160. Heredity (Same as Genetics 160 and Zoology 160). 3 credits. A general course in genetics designed especially for students not specializing in science; principles of heredity with applications to plant, animal and human inheritance; current advances in genetics and their bearing on the life sciences; lecture, demonstrations and discussion. Prerequisites: an elementary biology course and sophomore standing are recommended.
240. Plants and Man. 2 credits. Botanical and geographical history of plants important in the development of civilization and in world economy. Lecture.
400. Classification of Cultivated and Native Plants. 3 credits. Representative families and genera of flowering plants, use of keys and manuals, lecture and lab. Prerequisite: introductory course in botany.
450. Principles of Plant Ecology. 3 credits. Plants and plant communities in relation to their environment. Lecture and lab. Prerequisite: introductory botany course or equivalent.

#### BUSINESS ADMINISTRATION 216

The understanding and use of statistical methods is vital for students majoring in business administration. The department recommends Mathematics 210, Elementary Statistical Analysis (3 credits).

200. Introductory Accounting. 3 credits. Fundamental principles of accounting; basic business terminology, techniques and practices; books and accounts, and statements for retailing and wholesaling concerns; treatment and presentation of sole proprietorship, partnership, and introductory corporation accounts. Open to second semester freshmen; sophomore standing recommended. (May not be included in credits for graduation in the College of Letters and Science, Madison.)
201. Intermediate Accounting. 3 credits. Accounting theory, principles, concepts and procedures as they apply to balance sheet and income statement accounts; presentation and interpretation of financial reports, including the problems of terminology, manufacturing valuation and analysis. Prerequisite: Business Admin. 200.
202. Managerial Accounting. 3 credits. Interpretation and use of accounting reports by management in planning, coordinating and controlling business activities, presentation, analysis and interpretation of financial data,

internal control and reports to management, cost-volume-profit relationships, budgets, costs and managerial decisions. Prerequisite: Business Administration 200.

#### CHEMISTRY 224

102. General Chemistry. 5 credits. Two hours of lecture, two hours of recitation, one three-hour laboratory or two two-hour laboratory periods. A course in general inorganic chemistry, beginning with the study of non-metals and of the fundamental principles of chemistry.
103. General Chemistry. 4 credits. Introductory college chemistry. The subject matter is equivalent to Chemistry 102, the introductory concepts being covered more rapidly and with different lab experiments. Lecture, lab and discussion. Prerequisite: course in high school chemistry.
104. General Chemistry and Qualitative Analysis. 5 credits. Two hours of lecture, two hours of recitation, one three-hour laboratory or two two-hour laboratory periods. Continuation of Chemistry 102 or 103. Prerequisite: Chemistry 102 or 103.
107. Numerical Problems in General Chemistry. 1 credit. Open to all students who expect to take further courses in chemistry; strongly recommended for chemistry majors and chemical engineering students. Prerequisite: Chemistry 104 or concurrent registration.
108. General Chemistry. 5 credits. For the student who will take only one semester of chemistry. Two hours of lecture, two hours of recitation, one three-hour laboratory or two two-hour laboratory periods. A one semester course with extra emphasis on organic chemistry. Does not serve as a prerequisite for second semester general chemistry.
111. General Chemistry and Qualitative Analysis. 6 credits. An accelerated course for students with excellent high school preparation. Satisfies all requirements which are met by Chemistry 104 and 107. Three hours lecture, four hours laboratory, two hours discussion. Prerequisite: high school chemistry and physics, three years of high school mathematics, and consent of the instructor.
201. Survey of Biochemistry. 3-4 credits. Lectures and demonstrations on the chemical make-up and metabolism of living organisms presented at an elementary level for

non-science majors. Main emphasis on proteins, enzymes, nature of enzyme action, carbohydrates and fats as energy sources, metabolic processes involved in energy production, nucleic acids, biochemistry of genetic information transfer and protein biosynthesis. Not accepted toward requirements for undergraduate or graduate degrees in biochemistry. May be taken for four credits when laboratory work is offered. Prerequisite: Chemistry 108 or equivalent.

223. Elementary Quantitative Analysis. 4 credits. Two hours of lecture, two three-hour laboratories. A course in the essentials of quantitative analysis. Analysis of naturally occurring ores and commercial materials. For chemistry majors and chemical engineering students. (Satisfies requirements for Chemistry 221.) Prerequisite: General Chemistry, including qualitative analysis.
341. Elementary Organic Chemistry. 3 credits. Three hours of lecture. A one-semester course for those students not planning to take Chemistry 345. Prerequisite: Chemistry 104 or 111, or consent of instructor.
343. Introductory Organic Chemistry. 3 credits. Three hours of lecture. Covers the chemistry of the paraffin and unsaturated hydrocarbons, cycloalkanes, alkyl halides, poly-halogen compounds, alcohols, ethers, monocarboxylic acids and their derivatives, aldehydes, ketones, amines, carbohydrates, proteins, benzene and its homologues, halogenation, nitration and sulfonation of aromatic hydrocarbons; aromatic amines; an introduction to resonance stereoisomerism and tautomerism. Prerequisite: Chemistry 104 or 111.
344. Introductory Organic Chemistry Lab. 2 credits. Six hours of laboratory. Includes the qualitative tests for elements found in organic compounds; the preparation, purification, and properties of a number of representative and important organic products, including ethylene, ethylene dibromide, butanone, ether, ethyl bromide, ethyl benzoate, acetyl chloride, acetic anhydride, aniline, acetanilide, nitrobenzene, sulfanic acid and methyl orange; and reactions of aldehydes, ketones, carbohydrates and proteins. The principles and techniques involved with the various processes are stressed. Prerequisite: concurrent registration in or credit for Chemistry 343.
345. Intermediate Organic Chemistry. 3 credits. A continuation of Chemistry 343 covering derivatives of benzene and its homologues, polynuclear hydrocarbons and their derivations, polyhydroxy alcohols, polybasic acids, optical isomerism, further studies in proteins, sugars, starch, cellulose and its derivatives, heterocyclic compounds, synthetic drugs and alkaloids. Considerable emphasis is

placed upon physiological applications of organic compounds. Prerequisite: Chemistry 343.

#### COMPUTER SCIENCES 246

132. Introduction to Computing Machines. 3 credits. How computers work, communicating with computers, areas of application and significance, simple FORTRAN programming, elementary data processing and problem solving. An intensive and demanding survey course. The class meets four hours each week to allow the instructor to supervise student programming efforts. Prerequisite: intermediate level high school mathematics or a course in college mathematics.
302. Algebraic Language Programming. 3 credits. Construction of algorithms; flow charting; instruction and experience in the use of at least one procedure-oriented language (FORTRAN) and survey of other procedure-oriented languages; advanced programming techniques. Assumes the student recognizes the importance of the computer and is ready to learn how to use it as a tool. Prerequisite: advanced high school mathematical preparation or some college work in mathematics.

#### DAIRY SCIENCE 292

101. Livestock Production (same as Meat and Animal Science 101). 4 credits. General principles of livestock physiology, feeding, genetics and breedings, marketing and management; lectures, demonstrations and discussion; short field trips as part of lab.

#### ECONOMICS 296

101. General Economics. 3-4 credits. A study of the economic system, with emphasis on problems and policies, for students not planning to major in economics or business. Among subjects included are markets and prices, income distribution, business fluctuations, economic growth and comparative economic systems. Students planning to major in economics or business administration should take Economics 103 or 104. Students who take Economics 101 and then decide to major in economics or business may take Economics 103 and 104 but will probably receive a total of only six credits for all three courses. May not be taken for credit by students who have had or are currently enrolled in Economics 103 or 104.

103. Principles of Economics. 3 credits. Designed for students who plan to major in economics or business or for students who desire a basic one-year course (with Economics 104) in economics. This course, macroeconomics, covers national income, business fluctuations, monetary and fiscal policies and economic growth.
104. Principles of Economics. 3 credits. Covers the micro-economic approach, household, firm and market structures, and focuses on price determination and distribution of income. Foreign trade and international financial institutions are included. A student may elect Economics 104 prior to Economics 103, but the second course in his economics sequence must then be Economics 103.
274. Economic Development in the Middle East. 3 credits. Economic aspects of the struggle for a rising standard of living and stability in the Arab countries, Turkey, Iran and Israel: scarcity, choice, efficiency and growth. Comparison of the structure of economic organization and balance of payments. Case studies of development policies in the last two decades. Prerequisite: Economics 101, 103 or 104.
330. Money and Banking. 3 credits. A study of banks and their operation, Federal Reserve System, theories concerning money and prices, policies for inflation and unemployment control; financing international trade and investment; international monetary organization. Prerequisite: Economics 101 or 103.

The understanding and use of statistical methods is vital in economic analysis and interpretation. Mathematics 117, Elements of Statistics (3 credits), is recommended for students planning to major in economics.

#### ENGINEERING GRAPHICS 343

102. Elements of Descriptive Geometry. 3 credits. Orthographic projection and its application to the analysis and solution of three-dimensional problems involving points, lines, planes and solids; axonometric projections for pictorial representation with engineering applications. The class meets six hours each week to allow the student to do most of his drawing under the supervision of the instructor. Prerequisite: intermediate math preparation or consent of instructor.
113. General Engineering Graphics. 3 credits. Advanced principles of projection and perspective, sectional views, dimensioning, freehand sketching, isometric and oblique pictorials, graphs, maps, structures, machines, assembly

drawings and individualized problems designed to serve the requirements of the several engineering curricula. The class meets six hours each week to allow the student to do most of his drawing under the supervision of the instructor. Prerequisite: Engineering Graphics 102 or consent of instructor.

#### ENGINEERING MECHANICS 346

- 101. Statics. 3 credits. Principles of mechanics, force systems, equilibrium, structures, distributed forces, moments of inertia of areas, and friction. This course will serve the requirements of the several engineering curricula. Prerequisite: Mathematics 221.
- 102. Dynamics. 3 credits. Kinematics, force-mass-acceleration relations, work and energy, impulse and momentum, moments of inertia of mass. This course will serve the requirements of the several engineering curricula. Prerequisites: Engineering Mechanics 101 and Mathematics 222.

#### ENGLISH 350

- 101. Fundamentals of Writing. 3 credits. Exemption from English 101 will be granted on the basis of a student's performance on the placement examination taken as part of the registration procedures. Not open for credit to students who have previously received credit for English 102 with a C or better grade, except with instructor's permission.
- 102. Introductory Writing. 3 credits. A basic course intended to develop ability to write clearly and effectively. Prerequisite: English 101 or exemption.
- 120. Introduction to the English Language. 3 credits. A beginning course in the study of the English language, concerned with such subjects as the history and structure of the language, development of dictionaries, changing meanings of words, and types of grammar. An elective open to freshmen; not a substitute for English 102, but may be taken by those students for whom English 102 is waived as a prerequisite for English 200, although it would not be limited to those students.
- 200. Introduction to Literature. 3 credits. Intensive analysis of poetry, drama and fiction, using representative types from several periods of English and American literature. Prerequisite: English 101 or exemption.

201. Expository Writing. 3 credits. The theory and practice of informative and persuasive writing. Prerequisite: English 102 or its equivalent, or departmental waiver of this prerequisite based on placement test scores.
203. Introduction to Creative Writing. 3 credits. Chiefly devoted to writing and studying the short story. Prerequisite: English 102 or its equivalent or consent of the campus department.
204. Critical Writing. 3 credits. Study and written analysis of examples of various types of literature in English. Prerequisite: English 102 or its equivalent, or departmental waiver of this prerequisite based on placement test scores.
205. English Literature. 3 credits. A study of representative work by the most outstanding English writers. Prerequisite: English 200 or one semester of sophomore literature other than English literature.
209. Twentieth Century Literature. 3 credits. An approach to literature through significant and representative modern prose and poetry. Prerequisite: English 200 or one semester of sophomore literature other than twentieth century literature.
211. American Literature. 3 credits. A study of representative work by the most outstanding American writers. Prerequisite: English 200 or one semester of sophomore literature other than American literature.
227. Introduction to Shakespeare. 3 credits. Ten-to-twelve representative plays and the sonnets are read. Prerequisite: six credits of literature or three credits of literature and the consent of the campus department.
251. Studies in Dramatic Literature. 3 credits. An exploration of some aspect of drama or the theory of drama, the internal history of the genre or the distinctive character of the mode, and its application in practical criticism to an appropriate body of English and American literature. Prerequisite: six credits of literature or three credits of literature and the consent of the campus department.
253. Studies in Narrative Literature. 3 credits. An exploration of some aspect, problem or distinctive variety of narrative or the theory of narrative, in such forms as the novel, the epic, the romance, and its application in practical criticism to an appropriate body of English and American literature. Prerequisite: six credits of literature or three credits of literature and the consent of the campus department.

255. Studies in Poetry. 3 credits. An exploration of some aspect of poetic theory and practice, generally in terms of the shorter verse forms, and its application in practical criticism to an appropriate body of English and American literature. Prerequisite: six credits of literature or three credits of literature and the consent of the campus department.
260. The English Novel. 3 credits. A study of the English novel during the nineteenth century. Prerequisite: six credits of literature or three credits of literature and the consent of the campus department.
297. A Theme in English and/or American Literature. 3 credits. Varying themes, such as "Social Protest in American Literature since 1930." Prerequisite: six credits of literature or three credits of literature and the consent of the campus department.
298. A Figure or Figures in English and/or American Literature. 3 credits. The subject may be one writer, such as Milton, or a group of writers, such as English Romantic poets of the nineteenth century or nineteenth century American novelists. Prerequisite: six credits of literature or three credits of literature and the consent of the campus department.

#### FOOD SCIENCE 390

120. Survey of the Food Industries. 3 credits. Lecture. Size, scope and economic importance of the dairy and food industries; processing procedures and product characteristics of dairy and food products.

#### FRENCH 400

103. First Semester French. 4 credits. For students who have had no previous training in the language. Emphasis on oral practice, grammar and reading.
104. Second Semester French. 4 credits. Prerequisite: French 103 or one year of high school French.
203. Third Semester French. 4 credits. Intensive and extensive reading, grammar review, elementary composition and development of oral facility. Prerequisite: one year of college French (or equivalent) or two years of high school French.



204. Fourth Semester French. 4 credits. A continuation of French 203. Prerequisite: three semesters (or equivalent) of college French or three years of high school French.
221. Introduction to French Literature, Seventeenth and Eighteenth Century Authors. 3 credits. Masterpieces in the novel, drama, poetry and essay. Lectures, discussion, exercises in translation and interpretation. Prerequisite: French 204 or equivalent.
222. Introduction to French Literature, Eighteenth and Nineteenth Century Authors. 3 credits. Masterpieces in the novel, drama, poetry and essay. Lectures, discussion, exercises in translation and interpretation. Prerequisite: French 204, or equivalent.
223. Introduction to French Literature, Twentieth Century Authors. 3 credits. Masterpieces in the novel, drama, poetry and essay. Lectures, discussion, exercises in translation and interpretation. Prerequisite: French 204 or equivalent. Recommended but not required that French 221-222 precede this course.
227. Conversation and Composition (Intermediate Level). 2 credits. Development of facility in oral and written French. Prerequisite: French 204 or equivalent with consent of instructor. May be taken concurrently with French 221 or French 222.
228. Conversation and Composition (Intermediate Level). 2 credits. Continuation of French 227. Prerequisite: French 227 or consent of instructor. May be taken concurrently with French 222 or French 221.
275. Masterpieces of French Literature in Translation. 3 credits. Study, in translation, of representative masterpieces of modern French literature. No prerequisite. Open to students who have completed French 204 only with consent of instructor. No language credit.
299. Intermediate Independent Reading. 2-3 credits. For exceptional students in lieu of a regular course. Readings, discussions, reports, papers to be determined by individual instructor. Meetings to be arranged. Prerequisites: French 204 or equivalent and consent of instructor.

#### GENETICS 412

160. Heredity (Same as Botany 160 and Zoology 160). 3 credits. A general course in genetics designed especially for students not specializing in science; principles of heredity with applications to plant, animal and human

inheritance; current advances in genetics and their bearing on the life sciences; lecture, demonstration and discussion. Prerequisites: an elementary biology course and sophomore standing are recommended.

#### GEOGRAPHY 416

Geography 120, 123 and 124 are laboratory courses in natural science. Geography 125 gives natural science credit but not laboratory credit. Geography 101, 110, 115, 350, 510, 514, 521, 522 and 531 carry social science credit.

Students with any other course in physical geography or in ILS 132 may not take courses 120 or 125 for credit, or either semester of 123-124.

- 101. Introduction to Cultural Geography. 3 credits. An examination of world distribution patterns of population, settlement and cultural forms and their causal relationships. Open to freshmen.
- 110. The World: Peoples and Regions. 3 credits. Introduction to cultural geography through the study of representative and significant regions and nations. Open to freshmen.
- 115. Economic Geography. 3 credits. Analysis of location of population and the distribution and character of the leading economic activities (agriculture, fishing, forestry, mining, manufacturing, transportation and trade) in major world regions. Open to freshmen.
- 120. Survey of Physical Geography. 3 credits. Characteristics and world distribution of physical factors which in combination form the natural environment: elements of weather and climate, climatic types, earth materials, landforms and earth resources. Two hours of laboratory per week. Open to freshmen.
- 123. Physical Geography. 5 credits. The form of the earth; earth-sun relationships; elements of climate; characteristics, distribution and significance of climatic types; the seas; natural vegetation and soils. Laboratory and field trips. Open to freshmen.
- 124. Physical Geography. 5 credits. Introduction to maps; characteristics, distribution and significance of landform types; the continental margins and the sea floors, water resources of the land; mineral resources. Laboratory and field trips. Open to freshmen.

- 125. Survey of Physical Geography. 3 credits. Content similar to that of Geography 120 except that 125 has no laboratory work. Open to freshmen.
- 300. Population: World Survey. 3 credits. Regional contrasts in numbers, densities and qualities of population. Emphasis on the Far East, Europe and Anglo-America. Open to sophomores and second semester freshmen.
- 350. Conservation of Natural Resources. 3 credits. Problems arising from man's use of earth resources. Principles of management that make for a continuation of natural resource adequacy. Emphasis on the United States. Sophomore standing.
- 510. The United States and Canada. 3 credits. Physical and cultural aspects of the regions of the United States and Canada preceded by a study of overall characteristics of the climate, surface configuration and natural resources. Sophomore standing.
- 514. Wisconsin. 3 credits. The physical features, resources, population, land utilization and economic development of the state. Sophomore standing.
- 521. Middle America. 3 credits. Description and analysis of the physical and cultural landscape of Mexico, Central America and the West Indies. Sophomore standing.
- 522. South America. 3 credits. A comprehensive study of the physical and cultural characteristics of the South American continent as a whole, followed by a study of major regions within individual countries. Sophomore standing.
- 531. Northwestern Europe. 3 credits. The economy of Northwestern Europe in association with the physical environment. The approach is both on a broad regional basis and by individual country. Includes the British Isles, Scandinavian countries, Low Countries, France, Germany, Switzerland and Austria. Sophomore standing.

#### GEOLOGY 420

- 100. Survey of Geology. 3 credits. A brief study of minerals, rocks and the processes which create and modify the surface features of the earth. Field trips and laboratory. Not open to those who have had Geology 101, 102 or 105. Open to freshmen.
- 101. General Geology. 5 credits. Geologic processes in operation on and beneath the surface of the earth. Lecture, laboratory, field trips. Students who have had Geology 100 may receive only two credits. Open to freshmen.

102. Geologic Evolution of the Earth. 5 credits. Physical history of the earth in relationship to the orderly development of life throughout geologic time. Lecture, laboratory and field trips. Prerequisite: Geology 100 or 101.
130. Survey of Oceanography. 3 credits. A survey of fundamental topics and contemporary problems in the science of the sea including scientific exploration, configuration of the ocean basins, properties of sea water, currents and circulation, sediments on the sea floor, economic resources of food, minerals, energy and water, and oceanographic factors bearing on modern social, commercial, legal, international and exploitation problems of the world ocean. Open to freshmen and sophomores.
409. Geomorphology. 3 credits. Principles and analysis of geomorphic processes and resulting landforms; applications. Field trip. Prerequisite: Geology 100, 101-102, or Geography 123-124.
443. Glacial and Pleistocene Geology. 3 credits. Principles, characteristics and work of glaciers; events of the Pleistocene Period; applications. Field trip. Prerequisite: Geology 100, 101-102, or Geography 123-124.

GERMAN 424

103. First Semester German. 4 credits. For students with no previous knowledge of German. Emphasis on reading, oral practice and grammar.
104. Second Semester German. 4 credits. Continuation of German 103. Prerequisite: German 103 or equivalent.
203. Third Semester German. 3 credits. Intensive reading, grammar review and continued oral practice. Prerequisite: German 104 or equivalent.
204. Fourth Semester German. 3 credits. Continuation of German 203. Prerequisite: German 203 or equivalent.
215. Elementary Conversation. 2 credits. May be taken concurrently with German 203. Prerequisite: German 104 or equivalent.
216. Intermediate Conversation. 2 credits. May be taken concurrently with German 204. Prerequisite: German 215 or consent of instructor.

221. Introduction to German Literature. 3 credits. Selected readings from German literature of the last two centuries; discussions; transition from language study to study of literature. Prerequisite: German 204 or equivalent.
222. Introduction to German Literature. 3 credits. Continuation of German 221. Prerequisite: German 221 or equivalent.
225. Intermediate Composition and Conversation--First. 3 credits. Grammar review and conversation. Extensive composition practice. Prerequisite: German 204 or equivalent.
226. Intermediate Composition and Conversation--Second. 3 credits. Continuation of German 225. Prerequisite: German 225 or equivalent.
275. Periods in German Literature (in translation). 3 credits. Treats various periods and trends in German literature since 1750. Designed for students who do not have a command of German enabling them to read works in the original but who have an interest in important epochs in German literature. Carries credit as an elective. No prerequisites.
276. German Literature of the Twentieth Century in Translation. 3 credits. A study of German literature of the present century; designed for those students who do not have a command of German but who wish to acquaint themselves with the most important trends in twentieth century German literature. Carries credit as an elective. No prerequisites.
299. Independent Reading. 1-3 credits. An independent reading course which helps advanced students fulfill requirements for a major in German upon transferring to a degree-granting institution. Content to be determined by the instructor in counsel with the student.

#### HISTORY 448

101. American History 1607-1865--The Origin and Growth of the United States. 3 credits. Survey of American political, economic and social development from the founding of the colonies to the Civil War.
102. American History, 1865 to the Present. 3 credits. Survey of American political, economic and social development from the Civil War to the present.

111. Ancient History. 2-3 credits. Survey of the history of civilization from the beginnings in Egypt and Babylonia through the Classical Greek and Hellenistic periods with emphasis on institutional and social development.
112. Ancient History. 2-3 credits. Survey of the history of civilization during the Roman Republic and Empire to the year 500 with emphasis on institutional and social development.
115. Medieval Europe, 410-1500. 2-3 credits. General introduction to the history of Europe from the later Roman Empire to the end of the Middle Ages.
119. The Making of Modern Europe, 1500-1815. 3 credits. An introduction to the principal developments in the history of Europe from the Renaissance to the fall of Napoleon.
120. Europe and the Modern World, 1815 to the Present. 3 credits. A general survey of the political, economic, social and cultural history of modern Western civilization.
123. English History: England to 1688. 2-3 credits. General survey of the political, economic, social and cultural history of England from earliest historic times.
124. British History: 1688 to the Present. 2-3 credits. General survey of the political, economic, social and cultural history of Great Britain.
211. History of the American Frontier. 3 credits. American expansion focusing on the Turner hypothesis, land policy, territorial evolution, Indian policy, mining, lumbering and fishing frontiers, the cattleman's West, transportation, and literary uses of the West. Prerequisite: sophomore standing.
219. Russia in the Twentieth Century. 3 credits. A consideration of the major themes and personalities of Russian history since 1917. Prerequisite: sophomore standing.
227. The World in the Twentieth Century. 3 credits. Survey of the major trends in Europe, Asia, Africa and the Americas since 1900; the two world wars, the social and political revolutions of our time; Fascism and Communism; the new states of Africa and Asia. Prerequisite: sophomore standing.
254. American Foreign Relations, 1763 to the Present. 3 credits. America's relations with the world, emphasizing the economic, political and ideological elements determining policy. Prerequisite: sophomore standing.

255. Problems in American History. 3 credits. Discussions, reports on reading, research papers; meet in weekly two-hour sections; enrollment limited. Prerequisite: sophomore standing with overall grade-point average of 3.0 and/or consent of instructor.
256. Problems in European History. 3 credits. Discussions, reports on readings, research papers; meet in weekly two-hour sections; enrollment limited. Prerequisite: sophomore standing with overall grade-point average of 3.0 and/or consent of instructor.
257. Origins and History of World War II. 3 credits. Background and history of World War I. Problems of peace-making and international organization, rise of Fascism, National Socialism, and Japanese imperialism; breaking the peace; World War II. Prerequisite: sophomore standing.
259. History of Europe Since 1945. 3 credits. Political, social, economic, and moral effects of the Nazi era, the Resistance and the Liberation; restoration and reconstruction; influence of the United States and the Soviet Union; capitalism, socialism, and communism; the European unity movement and the cold war; social and cultural changes; relations with Africa and Asia. Prerequisite: sophomore standing.
290. History of Wisconsin. 3 credits. History of Wisconsin from the beginning of the historical period to the present, with emphasis on the economic and social aspects of Wisconsin history since 1815. Prerequisite: sophomore standing or consent of instructor.
291. The Age of Jefferson and Jackson, 1789-1848. 3 credits. Establishment of the national government; growth of democracy and the nature of party development, westward expansion, economic change, slavery, and social reform. Prerequisite: sophomore standing.
293. The United States, 1848-1877. 3 credits. Analysis of slavery in the Old South, the antislavery movement, the conflict between the southern plantation system and northern industrialism, the significance of the Civil War, presidential and congressional reconstruction, the position of the freedmen in the South, and the rise of racism. Prerequisite: sophomore standing.
295. The United States, 1877-1917. 3 credits. The rise and impact of modern industrialism, organization of labor and farmers, disappearance of the frontier, growth of American imperialism, and the resulting political, intellectual, and social changes in America. Prerequisite: sophomore standing.

297. The United States, 1917 to the Present. 3 credits. Political, social, economic, and cultural changes in America during World War I, the Twenties, the Age of the Great Depression, World War II, postwar America and the ripening civil rights movement. Prerequisite: sophomore standing.
299. Representative Americans. 3 credits. A biographical approach; evaluation of contributions of leading Americans to the nation's development. Prerequisite: sophomore standing.

#### HORTICULTURE 476

120. Survey of Horticulture. 3 credits. Survey course for the beginning student; scientific basis for horticultural practices; scope of the field of horticulture; introduction to propagation, culture, management, improvement, storage and marketing of flowers, fruits, ornamentals and vegetables.

#### JOURNALISM 512

100. Journalism Laboratory. 0-1 credit. Practical application of the principles of observing, reporting, writing, and editing, photography and management for journalistic publications or newscasts. Students work for a campus publication and submit copies and reports of their work to the instructor for evaluation and critique. Specific requirements are made by the instructor. Open to all students every semester by consent of instructor.
201. Mass Communications: Role and Effects of Press, Radio, Television and Film in Modern Society (Same as Speech 250). 3 credits. A survey and analysis of newspapers, magazines, radio, television and film; their organization and function in modern society. Includes an introduction to the history, regulations, social and ethical implications, technological, economic and political foundations and problems of the mass media. Required for journalism majors on the Madison campus.
202. Mass Media and Contemporary Issues. 3 credits. Analysis of contemporary public issues as reported in the mass media, with emphasis on news and feature content of radio, television, newspapers and other periodicals. Techniques of content analysis. Specific issues for study to be determined at the time the course is offered. Prerequisite: Journalism 201 or consent of instructor.



203. News and Informational Writing. 2 credits. Instruction and practice in written communication of factual materials under close supervision of instructor. Course treats writing for news media, but spends time on procedures and techniques which are basic for all informational writing. Required for journalism majors. Center System students may take this course through independent study (correspondence) if not currently available at their campus. Prerequisites: satisfaction of freshman English requirement and Journalism 201, or consent of instructor.
204. News Reporting. 3 credits. Emphasis on the gathering of news and interviewing. Field work in the community. Required for journalism majors in the news-editorial sequence. Prerequisite: Journalism 203.

#### MATHEMATICS 600

All courses offered by the department of mathematics require mathematical preparation consisting of a minimum of one unit of algebra and one unit of geometry.

101. Introductory College Algebra. 3 credits. Basic properties of the rational and the real number systems; the fundamental operations of algebra; linear and quadratic equations and inequalities; graphing linear functions, direct and inverse variation. Primarily intended for students who have had elementary preparation, normally two years of high school mathematics including elementary algebra and geometry.
106. Pre-Calculus Mathematics. 4 credits. Theory of equations; systems of linear equations and inequalities; conic sections and systems of quadratic equations and inequalities (complex numbers); inverse functions; logarithms and exponential functions; trigonometry; sequences and the binomial theorem.
112. College Algebra. 3 credits. Non-linear functions and graphs, including logarithmic and exponential functions; systems of linear equations; theory of polynomial equations; complex numbers; mathematical induction and the binomial theorem; arithmetic and geometric progressions.

Primarily for both engineering and non-engineering students who have had intermediate mathematical preparation (one-and-a-half to two years algebra and one year geometry). Not open for credit to students who have the prerequisites for Mathematics 221 or for students in engineering. Prerequisites: two units of

high school algebra and one unit of high school geometry and a satisfactory score on the placement examination, or Mathematics 101.

113. Plane Trigonometry. 2 credits. Trigonometric functions, their basic properties and graphs; trigonometric identities and equations; geometric applications of trigonometric functions; trigonometric form of complex numbers and DeMoivre's Theorem.

Primarily for both engineering and non-engineering students who have had two years of algebra and one year of geometry in high school. Not open for credit to students in engineering. Prerequisites: two units of high school algebra and one unit of high school geometry and a satisfactory score on the placement examination, or Mathematics 112, or concurrent registration in Mathematics 112.

115. Mathematics for Elementary Teachers. 4 credits. Basic concepts of set theory and logic; structure of mathematical systems, development of number systems; systems of numeration; development of the basic algorithms of arithmetic. Prerequisites: one unit each of high school algebra and geometry; sophomore standing and registration in the Program for Preparation of Elementary School Teachers.

116. Mathematics for Elementary Teachers. 4 credits. Continuation of Mathematics 115. Decimals and irrational numbers, the real number system, and the theory of approximation. Topics from informal geometry. Prerequisite: Mathematics 115 or consent of instructor.

117. Elements of Statistics. 3 credits. The primary aim of the course is a basic understanding and use of statistical concepts and methods to facilitate study and research in other disciplines. Topics include organization and presentation of data, descriptive statistics, special frequency distributions, sampling, estimation, confidence intervals, time series analysis, regression and correlation. Prerequisite: Mathematics 101 or equivalent.

118. Introductory Mathematics of Finance. 2 credits. Mathematical characteristics of currently used financial growth laws; annuities; amortization; sinking funds and bonds. Prerequisites: Mathematics 106 or 112 or equivalent, or advance mathematics preparation and a satisfactory score on the placement examination.

119. Introductory Finite Probability. 2 credits. The algebra of sets; elementary logic and probability; Bayes theorem; independent events. Prerequisites: Mathematics 106 or 112 or equivalent, or advanced mathematics preparation

and a satisfactory score on the placement examination.

Mathematics 118 and 119 do not count as part of the mathematics requirement for the B.A. or B.S. degree but may be taken as elective courses for credit by students who are candidates for either of these degrees.

- 210. Elementary Statistical Analysis. 3 credits. Elements of probability theory; collection and presentation of sample data; basic problems of statistical inference; applications, including quality control; regression; elements of statistical design. Prerequisite: Mathematics 221 or equivalent.
- 211. Calculus and Related Topics. 4 credits. Primarily for students in Letters and Science who wish to acquire some knowledge of the development of mathematics and its use in the modern world. Topics include the essential concepts of differential and integral calculus and of linear algebra (matrix theory) with applications. Students who are preparing for further study in advanced mathematics (e.g., majors in mathematics, physics, etc.) should take the sequence Mathematics 221, 222, 223. Prerequisites: Mathematics 106, or 112 and 113, or four units of high school mathematics and a satisfactory score on the placement examination.
- 212. Calculus and Related Topics. 4 credits. Continuation of 211. Prerequisite: Mathematics 211.
- 221. Calculus and Analytic Geometry. 5 credits. An introduction to differential and integral calculus and plane analytic geometry, with applications. Prerequisites: Mathematics 106, or 112 and 113, or four units of high school mathematics and a satisfactory score on the placement examination.
- 222. Calculus and Analytic Geometry. 5 credits. Continuation of Mathematics 221. Further topics in analytic geometry and calculus; transcendental functions and vectors; techniques and application of integration; improper integrals. For both engineering and non-engineering students. Prerequisite: Mathematics 221.
- 223. Calculus and Analytic Geometry. 4 credits. Continuation of Mathematics 222. Functions of more than one variable, with emphasis on partial derivatives and multiple integrals, introduction to differential equations. For both engineering and non-engineering students. Prerequisite: Mathematics 222.
- 251. Topics in College Mathematics. 4 credits. A development in depth of several problems from concrete examples to a mathematical theory. Emphasis placed on both the

method of abstraction and the theory itself. Prerequisites: Mathematics 106, or 112 and 113, or four units of high school mathematics and a satisfactory score on the placement examination.

299. Independent Reading in Mathematics. 1, 2, or 3 credits. Prerequisite: sophomore standing and consent of instructor.
320. Linear Mathematics. 4 credits. Introduction to linear algebra, vector spaces, matrices, linear transformations, and eigenvalues. Ordinary differential equations and linear systems of differential equations. Prerequisite: Mathematics 223.

#### MEAT AND ANIMAL SCIENCE 604

101. Livestock Production (same as Dairy Science 101). 4 credits. General principles of livestock physiology feeding, genetics, and breeding, marketing and management; lectures, demonstrations and discussion; short field trips are part of the lab.

#### MUSIC 660

The following courses may be taken by all students with a major or minor in music: 121-122, 211-212, 221-222, 241, 243, 245, 246.

The following courses may be taken by all students: 40, 55, 62, 201, 202, 265, 267, 268, 269. Students may count only six credits of work in "organization" courses such as Music 40, 55 and 62, toward a degree.

Music 101 and 201 are designed to fill requirements for the elementary classroom teacher. The student is advised to take Music 201 before Music 101.

40. Band. 0-1 credit. Open to all students. Band training, study and performance of standard band literature.
55. Chorus. 0-1 credit. Open to all students. Choral vocal training, study and performance of concert literature.
62. Orchestra. 0-1 credit. Open to all students by tryout. Playing of music from symphonic repertoire.
101. Fundamentals of Music. 2-3 credits. This course is designed to acquaint the student with the fundamentals of

music through experiences with the keyboard, rhythm instruments, singing, listening, note reading and so forth, so that he will be able to teach and supervise his class music program. Not accepted as part of a music major or minor or towards a degree in Letters and Science at Madison or Milwaukee. Class meets for three hours.

121. First Year Theory. 4 credits. Studies in basic notation; intervals, scales and modes; rhythm; contrapuntal harmony, written and keyboard; sight singing and ear training; selected music for harmonic and form analysis. Open only to music majors and minors. It is recommended that students have a background in piano before taking this course. Class meets for five hours.
122. First Year Theory. 4 credits. A continuation of Music 121.
201. Introduction to Music Literature. 2-3 credits. A guide to musical enjoyment and understanding; includes listening experiences in the various styles and forms of music, through assigned readings, the use of recorded music and sound films and attendance at concerts. Not accepted as part of a music major or minor. Class meets for three hours.
202. Introduction to Music Literature. 2-3 credits. A continuation of Music 201.
211. History of Western Music. 3 credits. A survey of the historical development of musical style and theoretical concepts from ancient Greece to the present. Class meets for four hours. Prerequisite: consent of instructor.
212. History of Western Music. 3 credits. A continuation of Music 211. Class meets for four hours.
221. Second Year Theory. 4 credits. Aural and written harmony; keyboard harmony and figured bass; harmonic counterpoint; sight singing and sight playing; ear training analysis. Class meets for five hours. Prerequisite: consent of instructor.
222. Second Year Theory. 4 credits. A continuation of Music 221.
241. Vocal Technics. 2 credits. Theory and practice in fundamentals of singing. Prerequisite: consent of instructor. Class meets for three hours.
253. Conducting. 2 credits. Conducting techniques; emphasis on practical application to vocal and instrumental groups. Prerequisite: Music 122 or consent of instructor.

- 263. Vocal Ensemble. 1-2 credits.
- 265. Woodwind Ensemble. 1-2 credits.
- 267. Brass Ensemble. 1-2 credits.
- 268. Percussion Ensemble. 1-2 credits.
- 269. Strings Ensemble. 1-2 credits.
- 271. Jazz Ensemble. 1-2 credits.

263-271 offer assignments in performing ensemble literature; class meets for two hours per credit. Prerequisite: consent of instructor.

- 300. Jazz, Yesterday and Today. 2 credits. A critical examination and analysis by illustration and demonstration of one of the most unique musical contributions made by America to the world's rich cultural heritage, both past and present. The course will introduce the student to the several styles to be found in the musical idiom known as jazz. The various styles will be illustrated with recorded and taped examples and a study will be made of the basic principles that make up the developmental periods in the history of jazz in the United States.

#### MUSIC APPLIED 664

Applied music courses are available to freshmen majoring in music, occupational therapy and recreation. The prerequisites for courses in applied music beyond the fundamental level are successful completion of the preceding course in a sequence and consent of instructor. Normally, a student taking an applied music course should be registered concurrently for Music 121-122 or 221-222.

It should be noted that applied music on all instruments and voice is not available from Center System staff. In such cases, an accredited and approved teacher in the area will give this instruction. The student must consult with the music adviser on his campus before registering for these applied courses.

Music Applied Chart for Piano, Organ, Voice and Guitar:

<u>Course</u>	<u>Cr.</u>	<u>Piano Number</u>	<u>Organ Number</u>	<u>Voice Number</u>	<u>Guitar Number</u>
Fundamentals	2	001*	----	005	003
Fundamentals	2	002*	----	006	004
Elementary	2	041*	----	---	045
Elementary	2	042*	----	---	046
Intermediate	2	043	----	---	081
Intermediate	2	044	----	---	082
First Year	2	101	103**	105	141
First Year	2	102	104	106	142
Second Year	2	201	203	205	143
Second Year	2	202	204	206	144

\*May be taught as a class or as private lessons.

\*\*Admission contingent upon eligibility for Piano 101.

Music Applied Chart for Wind and String Instruments,  
Elementary Level:

<u>Course</u>	<u>Cr.</u>	<u>Number</u>	<u>Course</u>	<u>Cr.</u>	<u>Number</u>
Flute	1	007	Tuba	1	025
Oboe	1	009	Percussion	1	027
Clarinet	1	012	Violin	1	031
Saxophone	1	014	Viola	1	033
Bassoon	1	015	Cello	1	035
Horn	1	017	String Bass	1	037
Trumpet or Cornet	1	019	Harp	1	040
Trombone	1	021			
Baritone	1	023			

Music Applied Chart for Wind and String Instruments;  
Intermediate, First Year and Second Year Levels:

<u>Course</u>	<u>Cr.</u>	<u>Intermed.</u>		<u>1st Year</u>		<u>2nd Year</u>	
Flute	2	047	048	107	108	207	208
Oboe	2	049	050	109	110	209	210
Clarinet	2	051	052	111	112	211	212
Saxophone	2	053	054	113	114	213	214
Bassoon	2	055	056	115	116	215	216
Horn	2	057	058	117	118	217	218
Trumpet or Cornet	2	059	060	119	120	219	220
Trombone	2	061	062	121	122	221	222
Baritone	2	063	064	123	124	223	224
Tuba	2	065	066	125	126	225	226
Percussion	2	067	068	127	128	227	228
Violin	2	071	072	131	132	231	232
Viola	2	073	074	133	134	233	234
Cello	2	075	076	135	136	235	236
String Bass	2	077	078	137	138	237	238
Harp	2	079	080	139	140	239	240



PHILOSOPHY 736

101. Introduction to Philosophy. 3 credits. Introduction to philosophic thinking through examination of the problems of freedom, knowledge and what is worthwhile. Open to freshmen and sophomores who have had no previous philosophy courses other than Philosophy 211.
102. Introduction to Social Philosophy. 3 credits. Studies of opposing philosophical views about man and his political and social life. Prerequisite: Philosophy 101 or sophomore standing.
103. Belief, Knowledge and Truth. 3 credits. Study of the grounds of rational belief and knowledge and the methods used for obtaining them, with particular emphasis on problems of evidence and truth. Prerequisite: Philosophy 101 or sophomore standing.
211. Elementary Logic. 3 credits. Principles, standards and methods of distinguishing good reasoning from bad, as applied to deductive and inductive inferences. Nature and detection of fallacies, and linguistic pitfalls affecting reasoning. Open to freshmen and sophomores.
226. Philosophical Ideas in Literature. 3 credits. A study of philosophical and moral ideas as embodied in selected works of literary art: aesthetic analysis of their structure and content. Prerequisites: sophomore standing and three credits in philosophy.
240. Introduction to Existentialism. 3 credits. An introduction to existential philosophy through critical examination of philosophical problems found in the writings of selected existential philosophers from Kierkegaard to the present. Prerequisite: Philosophy 101 or sophomore standing or consent of instructor.
241. Introductory Ethics. 3 credits. Nature of moral problems and of ethical theory, varieties of moral skepticism, practical ethics and the evaluation of social institutions. Prerequisite: Philosophy 101 or sophomore standing.
253. Philosophy of the Arts. 3 credits. Production, appreciation and criticism of works of art; sources and use of standards. Prerequisite: Philosophy 101 or sophomore standing.
254. Social Problems of Contemporary Art. 3 credits. Critical consideration of problems such as freedom, censorship, uses of art, function of artists in society, and social benefits of art, as related to the activities

and productions of contemporary artists. Prerequisite: Philosophy 101 or sophomore standing.

258. Man, Religion and Society. 3 credits. Study and critique of the views of theistic and secular writers concerning religion and its relationship to individual and social problems. Prerequisite: Philosophy 101 or sophomore standing.
291. Selected Topics in Philosophy. 3 credits. Prerequisite: sophomore standing and 3 credits in philosophy and consent of instructor.
299. Independent Reading in Philosophy. 1-3 credits. Prerequisites: consent of instructor. Program must be approved by chairman of the department.
520. Philosophy of the Natural Sciences. 3 credits. Nature and function of science; the logic of scientific method; clarification of such concepts as cause, law, theory, probability, determinism, teleology. Prerequisites: sophomore standing and three credits in philosophy.

PHYSICAL EDUCATION-GENERAL  
(Men-740) (Women-741)

Students may elect to take activity courses as offered at the various campuses. The offerings may include such activities as water safety, weight training, basketball, handball, marksmanship, etc. These courses may be elected for one credit. Whether this additional course work will count as degree credit depends on the regulations of the school or college from which the student seeks his degree (credit in these courses will not count toward a degree in Letters and Science or Business).

If you are interested in an activity course, please consult with the physical education instructor before registering, to determine your eligibility for the activity.

PROFESSIONAL PHYSICAL EDUCATION  
(Men-742) (Women-743)

Courses offered in this department are designed to prepare students to be teachers in elementary and secondary schools or non-school agencies such as YMCA's, clubs and institutions. Credit in these courses will not count toward a degree in Letters and Science or Business.

PHYSICAL EDUCATION-MEN 742

- 101. Body Mechanics. 3 credits.
- 102. Games of Low Organization. 2 credits.
- 104. Beginning Swimming. 1 credit.
- 105. Basketball Fundamentals. 1 credit.
- 116. First Aid. 1-2 credits.
- 117. Nature, Function & Org. of Play. 2 credits.
- 119. Introduction to Physical Education. 2 credits.
- 167. Folk & Square Dance. 1 credit.
- 201. Wrestling. 1 credit.
- 202. Apparatus. 1 credit.
- 203. Racket Sports. 1-2 credits.
- 204. Winter Sports. 1 credit.
- 205. Tumbling. 1 credit.
- 206. Baseball Fundamentals. 1 credit.
- 208. Volleyball Fundamentals. 1 credit.
- 217. Prevention of Athletic Injuries. 2 credits.
- 300. Golf. 1 credit.
- 301. Advanced Swimming. 1 credit.
- 302. Canoeing. 1 credit.
- 304. Soccer. 1 credit.
- 306. Skiing. 1 credit.
- 307. Archery. 1 credit.
- 308. Curling. 1 credit.
- 309. Sailing. 1 credit.

PHYSICS 754

The physics department provides a variety of introductory courses. One sequence of three semesters (201, 202, 205) is designed for students desiring to major in a physical science or in an applied science such as engineering. Students in this course sequence must have a strong background in mathematics. Another sequence (105, 106) consists of two semesters and is designed for those with less preparation in mathematics. This sequence meets the needs of students in applied science fields and in natural sciences. Students may also select this sequence to satisfy a physical science requirement.

- 105. General Physics. 4 credits. Studies in mechanics, heat, wave, motion and sound. Three hours of lecture, three hours of discussion-laboratory. Recommended for students majoring in business, elementary education, medical technology, pharmacy, physical education, pre-dentistry and pre-medical studies. Prerequisites: one unit high school algebra and one unit high school plane geometry.
- 106. General Physics. 4 credits. A continuation of Physics 105. Electricity and magnetism, light, and modern physics. Three hours of lecture, three hours of discussion-laboratory. Prerequisite: Physics 105.
- 107. Ideas of Modern Physics for Non-Science Majors. 3 credits. Introductory course for non-science majors; a small range of topics covered in depth, with particular emphasis on the development of modern theoretical concepts. Central topics: classical mechanics and electro-magnetism; quantum theory; relativity theory; some discussion of historical and philosophical aspects. Not open to those who have had one or more courses in college physics; does not apply toward engineering or physics majors, or toward the physics requirements for pre-professional courses (medicine, pharmacy, medical technology, etc.) Prerequisite: minimum math preparation.
- 201. General Physics for Engineers. 5 credits. Studies in mechanics, wave motion, sound and heat. Recommended for engineering students and science majors. Prerequisite: Mathematics 222 or concurrent registration.
- 202. General Physics for Engineers. 5 credits. Studies in magnetism, electricity and light. Continuation of Physics 201. Prerequisite: Physics 201.
- 205. Modern Physics for Engineers. 3 credits. Introduction to atomic, nuclear and solid state physics. Prerequisites: Physics 201 and consent of instructor.

PHYSIOLOGY 762

- 101. Elements of Human Physiology. 4 credits. Lectures and laboratory work directed toward understanding of the functions of the human body. Prerequisite: a course in general chemistry in high school or college.
- 104. Anatomy and Physiology. 4 credits. Lectures, recitation and laboratory dealing with the structure of the human body and the physiology of the organ systems. Prerequisites: general chemistry or concurrent registration in general chemistry with consent of instructor, and a college course in biology or zoology.

POLITICAL SCIENCE 778

- 101. Introduction to Politics. 3-4 credits. Approaches to political inquiry; basic problems common to all political systems; issues and practices of American politics. Open to freshmen and sophomores.
- 105. State Government and Public Policy. 3 credits. Studies in the federal system, constitutional basis and structure of state and local governments, domestic functions of all levels of government. Open to freshmen and sophomores.
- 106. Comparative Government and Politics. 3 credits. A comparative analysis of the political systems of major European and other selected nations of the world, stressing comparison of institutions, processes and methods of comparative analysis. Open to freshmen.
- 175. International Relations. 3 credits. A survey of conditions determining power and policies of individuals; nation-states; conflicting national policies; and international institutions. Open to freshmen.
- 201. Introduction to Political Theory. 3 credits. A survey and analysis of historical and recent ideas relating to political systems and values. Prerequisite: previous course in political science or consent of instructor.
- 213. Urban Politics. 3 credits. Organization and politics of city government; changing political structures and leadership patterns in urban policy problems. Prerequisite: previous course in political science or consent of instructor.
- 222. Politics, Parties and Pressure Groups. 3 credits. An analysis of the nature and functions of political parties; organization and leadership structure of political parties and pressure groups; nominations and elections; voting behavior; and survey research techniques. Prerequisite: previous course in political science or consent of instructor.

223. Proseminar in Political Science. 3 credits. The nature and subject of this course to be announced by instructor. Prerequisite: previous course in political science or consent of instructor.
243. Public Administration. 3 credits. An introductory study of the role and principles of administration in modern government; an analysis of the organized processes of government for the effective utilization of human and material resources to attain the goals of society. Prerequisite: previous course in political science or consent of instructor.
299. Independent Reading. 1-3 credits. Extensive reading for the purpose of surveying the literature in a particular subject, possibly including a research project, under the personal supervision of the instructor. Subject open, to be determined by the student and instructor. Students may be encouraged to use off-campus library resources when available. Prerequisite: consent of instructor.

Social Science 201 may be elected as a political science course.

#### PSYCHOLOGY 820

201. Introduction to Psychology. 4 credits. Development of human behavior in infant and child; motivation, frustration, emotion and biological functions; intelligent behavior; learning, retention and forgetting; social behavior, language and thinking; personality; efficiency. Prerequisite: advanced freshman standing.
202. Introduction to Psychology. 3 credits. (See course description, Psychology 201).
204. Experiential Introduction of Concepts of Human Behavior. 3 credits. Lecture/discussion presentation of concepts of human behavior will be related to concurrent experiences in community agencies--e.g. schools, welfare department, county hospital. Agency placements involve a minimum commitment of five hours per week and will provide some direct contact between the students and agency clients. Two hours of lecture and discussion will be required, with opportunity for additional individual discussion. Prerequisite: consent of instructor.
205. Psychology of Human Adjustment. 3 credits. Personality adjustment and maladjustment in normal persons; need, frustration and conflict; adjustive techniques; analysis

and rehabilitation. Prerequisite: Psychology 201 or 202. This is designed as a terminal course for individuals in other areas of concentration, and does not count toward the major in psychology.

- 210. Psychometric Methods. 3 credits. Calculation and interpretation of measures of central tendency, variability and correlation in psychological research; hypothesis testing and estimation from large and small samples. Prerequisite: Psychology 201 or concurrent registration.
- 225. Experimental Psychology. 5 credits. Psychophysical methods; sensory and perceptual functions, learning, transfer and forgetting; emphasis on research techniques and methodology; lecture, demonstration and experiments. Prerequisite: Psychology 201 or 202.
- 299. Independent Reading in Psychology. 1-3 credits. Prerequisite: Introductory Psychology and consent of the instructor.
- 411. Current Topics in Psychology. 1-3 credits. Prerequisite: Introductory Psychology and consent of instructor. Specific topic to be announced in campus timetables.
- 449. Animal Behavior. 3 credits. Behavior patterns of animals with particular emphasis on the social behavior, territoriality, sexual behavior, family patterns, aggression, defense and cooperation. Review of both experimental and ethological literature. Prerequisite: Introductory Psychology or ten hours of biological sciences.
- 507. Psychology of Personality. 3 credits. Modern approaches to the organization and development of personality. Prerequisite: Psychology 201 or 202.
- 511. Behavior Pathology. 3 credits. A consideration of maladaptive learning and functioning; the nature and social-biological origins of deviant patterns of behavior. Prerequisite: Psychology 205 or 507, or 560 and consent of instructor.
- 530. Introductory Social Psychology. 3 credits. Introduction to the general area of social psychology covering such topics as motivation, attitude, value, communication, leadership, etc. Prerequisites: Psychology 201 or 202, or Sociology 101 or Anthropology 100; also sophomore standing or consent of instructor.
- 560. Child Psychology - Human Development I. The Early Years. 3 credits. Learning principles; motor, language, emotional and social development of the child. Emphasis on experimentation and systematic investigation. Prerequisite: Psychology 201 or 202.

561. Psychology of Adolescence. 3 credits. Physical development, intellectual, emotional and social behavior, and the problems of adjustment which accompany and follow the physiological changes in puberty. Prerequisite: 201 or 202.
562. Child Psychology-Human Development II. The Later Years. 3 credits. An analysis of motor, emotional, social and intellectual development from grade school through senescence. Emphasis on systematic study of change and process in adolescents and adults from a developmental perspective. Prerequisite: 560 or permission. (Not open to anyone having credit for Psychology 561).

#### SOCIAL SCIENCE 890

201. Proseminar on Developing Nations: Asia. 3 credits. A comparative analysis of economic, political and social problems confronting Asian states, stressing the factors leading to change and affecting the development of modern institutions and processes. Prerequisites: any course in the social sciences (history, sociology, etc.) and consent of instructor. Course may be elected for credit in economics or political science.

#### SOCIOLOGY 900

Only two courses selected from 120, 125, 130, 134 and 170 may be counted for credit toward a sociology major at the UW-Madison campus. Students planning to transfer to other UW units and other institutions also should check the degree-granting department's regulations concerning the number of freshmen-sophomore level course which will be accepted toward a major.

101. Man in Society: An Introduction to Sociology. 3 credits. A course in interrelationships of personality, society and culture; social processes, structures, institutions and functions as they affect the building up and tearing down of society. Open to freshmen.
120. Marriage and the Family. 3 credits. Nature of the family. Processes of courtship and marriage interaction. Correlations of physiological, psychological, economic and sociological contributions to marriage and family life. Open to freshmen.
125. Contemporary American Society. 3 credits. Patterns of contemporary social life in the United States and Canada; cultural orientation, social structures and dynamics of social change. Open to freshmen.



130. Social Disorganization. 3 credits. Conditions and processes in personal and social maladjustment; nature of social problems, their relations to social change and basic ideological, technological and institutional structures and processes. Open to freshmen.
134. Problems of American Minority Groups. 3 credits. The nature, problems and adjustments of American racial, religious, ethnic and nationality groups; proposals for reduction of intergroup tension. Open to freshmen.
170. Introduction to World Population. 3 credits. Determinants and consequences of population size and growth. Changing levels of birth rates and death rates and their future social and economic implications. Fertility regulations and population policies in countries at various stages of development. Open to freshmen.
291. Selected Topics in Sociology. 3 credits. The topic selected will be in some area of special competence of the instructor. When this course is offered, the specific topic will be given in the campus timetable. Prerequisite: sophomore standing plus one other course in sociology and consent of instructor.
293. Proseminar in Sociology. 3 credits. The topic selected will be in some area of special competence of the instructor. When this proseminar is offered, the specific focus will be stated in the campus timetable. Prerequisite: sophomore standing plus an introductory course in sociology or anthropology plus one other course in sociology and consent of instructor.
299. Independent Reading in Sociology. 1, 2, or 3 credits. Prerequisites: sophomore standing and consent of instructor.
357. Methods of Sociological Inquiry. 3 credits. Scientific methods and their application in the analysis of society; procedures in testing sociology theory; problem definition, hypothesis construction, collection and evaluation of data. Prerequisite: sophomore standing and an introductory level course in sociology.
530. Introductory Social Psychology (same as Psychology 530). 3 credits. Introduction to the general area of social psychology, covering such topics as motivation, attitude, value, communications, leadership, etc. Prerequisites: sophomore standing and either Sociology 101 or Anthropology 100, or Psychology 201 or 202.

SOILS 908

101. Soils and Soil Fertility. 4 credits. Introductory general survey of the field. Prerequisite: Chemistry 102 or equivalent.

SPANISH 912

103. First Semester Spanish. 4 credits. Spanish grammar, elementary reading, oral practice and cultural background. For students who have had no Spanish.
104. Second Semester Spanish. 4 credits. A continuation of Spanish 103. Prerequisite: Spanish 103 or one year of high school Spanish.
203. Third Semester Spanish. 4 credits. Grammar review; intensive class reading; study of vocabulary, idioms and syntax; oral and composition practice. Prerequisite: Spanish 104 or two years of high school Spanish (or equivalent).
204. Fourth Semester Spanish. 4 credits. A continuation of Spanish 203. Prerequisite: Spanish 203 or three years of high school Spanish. With department consent, exceptional students may be permitted to take Spanish 204 and Spanish 225 concurrently.
221. Elementary Survey of Spanish Literature. 3 credits. Introduction to the study of Spanish literature; readings, discussions, literary history. Twelfth to seventeenth centuries. Prerequisite: Spanish 204 or equivalent.
222. Elementary Survey of Spanish Literature. 3 credits. A continuation of Spanish 221. Eighteenth to twentieth centuries.
225. Third-Year Conversation and Composition. 3 credits. Emphasis on oral and composition practice. Prerequisite: Spanish 204 or equivalent.
226. Third-Year Conversation and Composition. 3 credits. A continuation of Spanish 225. Prerequisite: Spanish 225 or equivalent.
266. Masterpieces of Latin-American Literature in Translation. 3 credits. Study, in translation, of representative masterpieces of modern Latin-American literature. No prerequisite. Open to students who have completed Spanish 204 only with consent of the instructor. No language credit.

275. Masterpieces of Spanish Literature in Translation. 3 credits. Presentation of the culture of the Spanish people and its relation to that of Western Europe and America, through study of Spanish literary masterpieces. No prerequisite. Open to students who have completed Spanish 204 only with consent of instructor. No language credit.
299. Intermediate Independent Reading. 2-3 credits. For exceptional students in lieu of a regular course. Readings, discussions, reports, papers to be determined by individual instructor. Meetings to be arranged. Prerequisites: Spanish 204, or equivalent, and consent of instructor.

#### SPEECH 920

099. Forensic Laboratory. 0-1 credit. The practical application of the principles of forensics through the preparation for and the participation in inter-collegiate speech experiences. This includes debate, discussion, extemporaneous speaking, oratory, interpretative reading, impromptu speaking and improvisation. Open to all students with consent of instructor. (Speech 099 counts as an elective credit at most of the former state universities. Students working toward a degree from the UW-Madison may count a total of three credits for work taken in Speech 099 and 100.)
100. Theater Laboratory. 0-1 credit. Practical application of the principles of acting, directing, stagecraft and/or management through actual participation in dramatic productions. Specific requirements will be made by the instructor depending upon the area or areas assigned. Open to all students with consent of instructor. (Speech 100 counts as an elective credit at most of the former state universities. Speech 100 fulfills a practicum requirement for theatre majors at UW-Madison and UW-Milwaukee. Students working toward a degree from UW-Madison may count a total of three credits for work taken in Speech 099 and 100.)
101. Fundamentals of Speech. 3 credits. Instruction in the principles of preparing and presenting effective public messages. Application of these principles in the analysis of contemporary speeches and in the presentation and critique of student speeches. Open to freshmen. Not open to those who have had Speech 105.
105. Introduction to Public Speaking. 2 credits. Development of fundamental skills in the preparation, delivery, and evaluation of the common forms of public address. Open to freshmen, or with consent of instructor; not open to those who have had speech 101.

130. Introduction to Dramatic Arts. 3 credits. Study of the nature of drama, important plays and presentation on stage, in motion pictures, by television. Open to freshmen.
150. Introduction to Film. 3 credits. The materials and methods of film making; study of criteria for analysis and evaluation of films; relationships of art to industry. Weekly film screenings at times to be arranged. Open to freshmen.
160. Speech and Human Behavior. 3 credits. Consideration of the nature of public discourse through the study of leading theorists, examination of fundamental problems and concepts, and analysis of examples of public discourse. Open to freshmen.
230. Fundamentals of Oral Interpretation. 2 credits. Emphasis on understanding literature through study of meaning, imagery, mood and theme. Analysis and development of techniques in presentation. Prerequisite: sophomore standing; for speech majors, a beginning speech course. Open also to second semester freshmen who have successfully completed Speech 101 or 105, or with consent of instructor.
231. Elements of Dramatic Production. 3 credits. Play analysis, fundamentals of acting, directing, staging, lighting, costuming and make-up, theatre organization and business management. Not open to theatre concentration majors. Prerequisite: sophomore standing. Open also to second semester freshmen who have successfully completed Speech 101, 105 or 130, or with consent of instructor.
232. Fundamentals of Acting. 3 credits. Action, voice and analysis of character for portrayal of realistic roles in proscenium and arena. Prerequisite: sophomore standing. Open also to second semester freshmen who have successfully completed Speech 101, 105 or 130, or with consent of instructor.
234. Fundamentals of Stagecraft. 3 credits. Theory and techniques of stagecraft, scene painting. Some execution of basic drawings. Prerequisite: sophomore standing. Open also to second semester freshmen who have successfully completed Speech 101, 105 or 130, or with consent of instructor.
250. Mass Communications: Role and Effects of Press, Radio, Television and Film in Modern Society (Same as Journalism 201). 3 credits. A survey and analysis of newspapers, magazines, radio, television and film; their organization and function in modern society. Includes an introduction to the history, regulations, social and ethical implications, technological, economic and political foundations and problems of the mass media.

266. Theory and Practice of Group Discussion. 3 credits. Study of the structure and dynamics of small group decision-making. Includes critical and creative problems in group interaction processes. Prerequisite: sophomore standing. Open also to second semester freshmen who have successfully completed Speech 101, 105 or 160, or with consent of instructor.

Courses in which the Speech Proficiency Requirements for teaching certificates may be met are 101, 230, 232, 266, 105 and also 130 at certain campuses.

#### UNIVERSITY FORUM 943

101. University Forum. 1 credit. A lecture-discussion course designed to introduce students to current problems and significant issues. Open to freshmen and sophomores. May be taken twice for a maximum of two credits.

#### ZOOLOGY 970

The Department of Botany/Zoology offers credits by examination in any course under its jurisdiction. If a student feels that he is competent in a course as described below and wishes to obtain credit by examination, he should contact the departmental representative on his campus to make arrangements for the examination. If the student does not want to accept the grade obtained by examination he may change the grade by taking the course in the normal fashion.

101. Animal Biology. 5 credits. General Biological principles--structure and function of cells, histology, embryology, heredity and evolution; survey of the animal kingdom; and structure and function of the vertebrate body.
103. Man in the Natural World. 3 credits. Lectures and laboratory with some field trips scheduled on Saturdays. A study of man's relationships to the earth and all it contains and how it can be conserved, with emphasis on contemporary issues. This course is designed for the non-major to meet laboratory science requirements for the baccalaureate degree. It is approved as meeting the statutory requirement concerned with Conservation of Natural Resources as a requirement for state certification for teachers of science and social science. Does not carry credit toward a botany or zoology major. No prerequisite.

125. General Zoology--TV. 5 credits. Selected areas of biology treated in depth. Lecture-demonstrations by means of television, laboratory taught by audio-tutorial method.
151. Introductory Biology (see Botany 151). 5 credits. Living organisms: their structure, functional capabilities, developments, perpetuation and evolution; in combination with Zoology 152, recommended for zoology majors preparatory to advanced zoology courses; also designed for those who wish a single integrated course in biology. No prerequisite.
152. Introductory Biology (see Botany 152). 5 credits. Living organisms; their diversity, behavior, ecology and evolution. Prerequisite: Zoology or Botany 151.
160. Heredity (Same as Botany 160 and Genetics 160). 3 credits. A general course in genetics designed especially for students not specializing in science; principles of heredity with applications to plant, animal and human inheritance; current advances in genetics and their bearing on the life sciences; lecture, demonstration and discussion. Prerequisites: an elementary biology course and sophomore standing are recommended.
170. Human Anatomy and Physiology. 3 credits. Anatomy and physiology of the human body. Demonstration and discussion section designated to emphasize anatomy and basic physiological principles; three hours lecture (given as Physiology 762-104), one hour demonstration and discussion. Prerequisite: General chemistry and biology or general zoology are recommended. [Does not carry credit toward zoology major]
300. General Invertebrate Zoology. 3 credits. Structure, function, classification and life histories of the major groups of invertebrates. Prerequisites: introductory course in zoology and sophomore standing.
430. Comparative Anatomy of Invertebrates. 5 credits. An outline of the basic vertebrate anatomical systems and a consideration of variations, using functional, embryological and evolutionary approaches. Lab dissection and study of representative vertebrate material. Prerequisite: introductory course in zoology.
505. Field Zoology. 3 credits. Designed to acquaint student with local fauna, emphasizing taxonomy. Can be used by school teachers or liberal arts students or as a background course for such advanced courses as vertebrate ecology, fishery biology, wildlife management, entomology, forestry, and agriculture.



Conservation of Aquatic Resources--Limnology. 2 credits.  
General limnology; study of lake and stream communities  
and their conservation. Prerequisite: introductory  
course in zoology or botany.

PLEASE NOTE: Course offerings vary slightly among campuses,  
so students interested in a specific course or program should  
consult the campus timetable and/or the campus Office of  
Student Affairs. Courses are subject to change.

UNIVERSITY OF WISCONSIN CENTER SYSTEM

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