

- 806. Medieval Languages**
Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 15 credits.
Gothic, Old Norse, and Old Irish.
- 810. Medieval Literature**
Fall, Winter, Summer. 3(3-0) May re-enroll for a maximum of 6 credits.
Chaucer and the literature of the fourteenth century.
- 811. Renaissance Literature**
Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits.
English nondramatic literature, 1500-1600.
- 815. Restoration and Eighteenth Century Literature**
Fall, Winter. 3(3-0) May re-enroll for a maximum of 6 credits.
English literature, 1660-1798.
- 816. Nineteenth Century Literature**
Fall, Winter, Spring, Summer. 3(3-0) May re-enroll for a maximum of 9 credits.
English literature, 1798-1900.
- 821. Nineteenth Century American Literature**
Fall, Winter, Spring, Summer. 3(3-0) May re-enroll for a maximum of 9 credits.
American literature, 1820-1900.
- 824. Seventeenth Century Literature**
Winter, Spring. 3(3-0) May re-enroll for a maximum of 6 credits.
English nondramatic literature, 1600-1660, including Milton.
- 828. Colonial and Revolutionary American Literature**
Winter. 3(3-0)
American literature, from the beginnings to 1820.
- 829. Twentieth Century Literature**
Fall, Spring. 3(3-0) May re-enroll for a maximum of 6 credits.
English and American literature, 1900 to the present, with attention to foreign backgrounds.
- 830. Major Writers of American Literature**
Fall. 5(4-0) Major in English—Secondary School Teaching or approval of department.
Franklin through Whitman.
- 831. Major Writers of American Literature**
Winter. 5(4-0) Major in English—Secondary School Teaching or approval of department.
Twain to the present.
- 840. Writing Workshop for Teachers**
Fall, Spring, Summer. 5(5-0) Major in English—Secondary School Teaching or approval of department.
Emphasis on personal and public modes of writing; some discussion of methods of teaching writing; class discussion and evaluation of student writing; individual conferences.
- 845. Approaches to Language**
Fall. 3(3-0) Major in English—Secondary School Teaching or approval of department.
Modern linguistic approaches to language and their application to writing.
- 846. Approaches to Language**
Winter. 3(3-0) Major in English—Secondary School Teaching or approval of department.
Continuation of 845.
- 855. Shakespeare**
Fall, Spring. 3(3-0) Major in English—Secondary School Teaching or approval of department.
Intensive study of selected plays.
- 862. Approaches to Literature**
Winter. 5(4-0) Major in English—Secondary School Teaching or approval of department.
Literature through thematic, genre and historical approaches.
- 871. Methods of Literary Research**
Fall, Spring, Summer. 3(3-0)
Bibliography and use of library: preparation of reports, reviews, and scholarly papers.
- 880. Proseminar for Master's Degree Candidates**
Fall, Winter, Spring, Summer. 3(3-0)
Individual scholarly work under guidance.
- 895. College Teaching of English**
Fall, Winter, Spring. 1 to 3 credits.
May re-enroll for a maximum of 3 credits.
Graduate teaching assistant.
Supervised teaching of college classes in English language and literature.
- 899. Research**
Fall, Winter, Spring, Summer. Variable credit. Approval of department.
- 902. Studies in Form and Genre**
Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits.
Development and interrelationships of individual and collective forms and genres of literatures of the Western world, including the drama, tragedy, the novel, the short story, the theory and forms of poetry, popular literature, and the tale.
- 903. Studies in Periodization**
(C L 903.) Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits.
Analyses of the manner in which various genres, conventions and continuing traditions of literature interact with the creative and critical climates of particular periods and movements, such as classicism, the Middle Ages, the baroque, or romanticism, in qualifying or modifying characteristic literary works.
- 904. Studies in Influence**
Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits.
Mutual influences of the English, Romance and Germanic literatures in general and in terms of specific authors and literary kinds, together with studies of the intermediaries of transmission, translations and sources.
- 930. Studies in English Drama**
Fall of odd-numbered years. Winter and Spring of even-numbered years. 3(3-0) May re-enroll for a maximum of 9 credits.
Liturgical beginnings to 1642, excluding Shakespeare.
- 940. Studies in Shakespeare**
Winter of odd-numbered years. 3(3-0) To receive credit, both 940 and 941 must be completed satisfactorily.
- 941. Studies in Shakespeare**
Spring of odd-numbered years. 3(3-0) To receive credit, both 940 and 941 must be completed satisfactorily.
- 970. Graduate Reading Course**
Fall, Winter, Spring, Summer. 1 to 5 credits. Approval of department.
Supervised reading course in English and American literature for Ph.D. candidates.
- 972. Rationale of Literary Research**
Spring. 3(3-0) Candidacy for the Ph.D. degree.
Principles and methods of research in literary problems.
- 980. Studies in English Language**
Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits.
The English language from the viewpoint of historical problems, literary analysis and pedagogical implications.
- 981. Seminar: Earlier English Literature**
Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits.
Special problems in English literature, beginnings to 1660.
- 982. Seminar: Later English Literature**
Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits.
Special problems in English literature, 1660-1900.
- 983. Seminar: American Literature**
Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits.
Special problems in American literature, beginnings to 1900.
- 984. Seminar: Twentieth Century Literature**
Winter, Spring. 3(3-0) May re-enroll for a maximum of 6 credits.
Special problems in English and American literature, 1900 to the present.
- 985. Seminar: Special Studies in Literary Form and Theory**
Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits.
Forms, genres, and movements.
- 986. American Literature and Culture**
Fall, Winter. 3(3-0)
American Literature in a cultural context, drawing upon popular and fine arts, the history of ideas, the history of social movements.
- 999. Research**
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

ENTOMOLOGY ENT

College of Natural Science

- 301. General Entomology**
Fall, Spring. 3(3-0) R S 211 and 212 recommended.
Biological relationships of insects. Insect behavior, ecology, and classification. Metamorphosis and development of insects.
- 302. General Entomology Laboratory**
Fall, Spring. 2(0-6) 301 or concurrently.
Experiments in morphology, physiology, behavior of insects. Populations and classification of major groups.

**337. Forest and Shade Tree
Entomology**

Fall. 4(3-2) N S 193.

Provides an understanding of significance and nature of insect injury to forest and shade trees, based upon morphology, physiology, biology and taxonomy of insect and host. Analyzes biological, chemical, cultural and silvicultural approaches to insect control in order to equip student with competence to carry out survey and action program assignments.

401. Problems

Fall, Winter, Spring, Summer. 1 to 6 credits. May re-enroll for a maximum of 12 credits. Approval of department.

Advanced individual work on a field or laboratory research problem or a study of published literature on a selected topic.

404. Field Entomology

Summer. 6 credits. One year of zoological science or teaching major in general science or approval of department. Given at W. K. Kellogg Biological Station.

Basic field survey in entomology. Emphasis on the biology, collection and identification of insects common to the Gull Lake Biological Station area.

410. Apiculture and Pollination

Spring. 3(2-2)

Biology of the honey bee and some of the wild bees. Relationships between bees and flowering plants. Value of bees in crop pollination. Introduction to management with visits to the University apiary.

411. Seminar

Fall, Winter. 1(1-0) Majors or approval of department.

Reports by students, faculty, and representatives of the profession, with emphasis on current problems not covered in regular college subjects.

418. Systematic Entomology

Winter. 4(1-9) 301, 302.

General taxonomic course to acquaint the student with the various groups of insects.

420. Aquatic Insects

Fall. 4(2-4) 301, 302.

Biology, ecology and systematics of aquatic insects.

421. Stream Ecology

Summer. 3 credits. 420 or approval of department. Given at W. K. Kellogg Biological Station.

An in-depth examination of stream ecosystems—physical, chemical and biological aspects. Field work will be centered on local streams. Laboratory exercises will involve manipulations necessary for the determination of population energy budgets, with special emphasis on aquatic insects.

430. Economic Entomology

Winter. 3(2-3) 301, 302.

Recognition, life histories, behavior, ecology and integrated control of insects of economic importance.

438. Taxonomy of Immature Insects

Spring of even-numbered years. 4(1-9)

418. Identification of immature insects with particular emphasis on the Holometabola.

440. External Morphology of Insects

Fall. 4(2-6) 301, 302, or approval of department.

Morphological concepts of external skeletal parts of insects. Emphasis on evolutionary development of structures from the Apterygota through the Pterygota.

441. Internal Morphology

Winter. 4(2-6) 440 or approval of department.

Morphology of the internal structure of insects. Emphasis on the evolutionary development of organs and organ systems of various representative insects.

450. Insect Physiology

Spring. 4(3-3) 441; PSL 401; 1 year of chemistry or approval of department.

Comparative physiology of insects with histological and functional aspects of organs and organ systems.

460. Medical Entomology

Winter. 4(3-3) 301, 302, or approval of department.

Distribution and biology of important arthropod vectors of diseases to man, disease symptoms, life cycle of the infectious agent, reservoirs, urticating arthropods, anaphylactic reactions, myiasis, and prophylactic measures.

470. Introductory Nematology

Winter of odd-numbered years. 3(2-3) Interdepartmental with the Department of Botany and Plant Pathology.

Biology, taxonomy and control of plant parasitic and saprophytic nematodes.

480. Insects in Relation to Plant Diseases

(860.) Winter of even-numbered years. 4(2-4) 302. Interdepartmental with the Department of Botany and Plant Pathology.

Relationships of insects, mites and nematodes to important plant diseases incited by bacteria, fungi, viruses and toxins. Mode of transmission and means of control. Transmission techniques and important plant-pathogen-insect relationships.

490. Topics in Entomology

(870.) Fall, Winter, Spring, Summer. Variable credit. Majors or approval of department.

Advanced work in medical entomology, acarology, advanced forest entomology, soil arthropods, behavior and biological control.

808. Advanced Taxonomy

Fall, Winter, Spring. 4(0-12) May re-enroll for a maximum of 24 credits. 418, 440.

Classification in depth of a single order of insects, including comparative morphology of the group and survey of recent and classical literature.

811. Ecology of Aquatic Insects

Summer of every third year; given in 1969. 3 credits. 420 or approval of department. Given at W. K. Kellogg Biological Station.

Aquatic insects, their physiology, distribution, and density. Preparation of energy budgets for natural populations.

820. Insect Ecology

Fall of even-numbered years. 3(2-3) Approval of department.

Insects and various invertebrates in relation to their environment. Factors affecting populations, speciation and distribution. Application of basic ecological principles to integrated control measures.

821. Advanced Stream Ecology

Summer. 3 credits. 421 or approval of instructor. Given at W. K. Kellogg Biological Station.

Stream ecosystem energy budget models with emphasis on individual projects involving both laboratory and field experiments. Particular use will be made of artificial streams and locally abundant species of aquatic insects.

830. Insect Biochemistry

Spring of even-numbered years 4(4-0). 450; BCH 401.

Energy metabolism, intermediary metabolism and the biochemistry of development in insects; stresses biochemical differences between insects and higher animals.

831. Insect Biochemistry Laboratory

Summer of even-numbered years. 2(0-6) 830 or concurrently.

Laboratory to accompany 830. Experiments designed to elucidate the biochemical mechanisms of importance to insects.

838. Principles of Taxonomy

Spring of odd-numbered years. 3(3-0) Twenty credits in zoology and/or entomology, or approval of department.

Methods and principles of systematic zoology and entomology, including a historical survey of the pre-Linnaean and post-Linnaean systems of classification. International rules of zoological nomenclature and their emendations.

840. Insect Toxicology

Winter of odd-numbered years. 5(3-6) 301, 302; organic chemistry.

Chemical and physical properties of insecticides, relationship of chemical structure to mode of action, and physiological basis of toxicological action.

881. Biology of the Arthropoda

Winter. 5(3-6) ZOL 481 or approval of department. Interdepartmental with and administered by the Zoology Department.

Ecology, life cycles, morphology, taxonomy, and distribution of arthropods other than insects.

899. Research

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

940. Analytical Techniques for Biological Compounds I

Fall. 4(2-6) Organic chemistry, approval of department.

Application, extraction, cleanup and purification techniques employed in analysis of biologically active compounds. Stresses use of radioisotopes, and column, paper, thin-layer, and molecular sieve chromatography.

941. Analytical Techniques for Biological Compounds II

Winter. 4(2-6) 940.

Analytical techniques used for identification and quantitation of biologically active compounds. Emphasis on spectroscopy and gas-liquid chromatography.

999. Research

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

**EXTENSION PERSONNEL
DEVELOPMENT EPD**

**College of Agriculture and
Natural Resources**

**801. Seminar in Cooperative
Extension Service**

Fall, Winter, Spring, Summer. 1 to 3 credits. Approval of department.