899. *Master's Thesis Research*
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

902. *Comparative Literature: Studies in Form and Genre*
Winter, Spring. 3(3-0) Interdepartmental with the departments of German and Russian, and Romance and Classical Languages.
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. *Comparative Literature: Studies in Periodization*
Fall, Winter, Spring. 3(3-0) Interdepartmental with the departments of German and Russian, and Romance and Classical Languages.
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, ifi qualifying or modifying characteristic literary works.

904. *Studies in Influence*
Fall, Winter, Spring. 3(3-0)
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 even-numbered years. Winter and Spring of odd-numbered years. 3(3-0)
Liturgical beginnings to 1642.

940. *Studies in Shakespeare*
Winter of odd-numbered years. 3(3-0) To receive credit, both ENG 940 and ENG 941 must be completed satisfactorily.

941. *Studies in Shakespeare*
Spring of odd-numbered years. 3(3-0) To receive credit, both ENG 940 and ENG 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.

975. *The Reading Process and the Concept of Literacy*
Spring. 3(3-0) Approval of department.
The contributions of language and literary studies to our understanding of the reading process and our definitions of literacy.

980. *Studies in English Language*
Fall, Winter, Spring. 3(3-0)
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)
Special problems in English literature, beginnings to 1660.

982. *Seminar: Later English Literature*
Fall, Winter, Spring. 3(3-0)
Special problems in English literature, 1660-1900.

983. *Seminar: American Literature*
Fall, Winter, Spring. 3(3-0)
Special problems in American literature, beginnings to 1900.

984. *Seminar: Twentieth Century Literature*
Fall, Winter, Spring. 3(3-0)
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)
Forms, genres, and movements.

986. *Seminar: American Literature and Culture*
Fall, Winter, Spring. 3(3-0)
American literature in a cultural context, drawing upon popular and fine arts, the history of ideas, the history of social movements.

987. *Seminar: Special Topics in Comparative Literature*
Spring. 3(3-0) Advanced graduates. Interdepartmental with the departments of Romance and Classical Languages, and German and Russian. Administered by the Department of Romance and Classical Languages.

998. *Advanced Writing for Doctoral Candidates*
Fall, Winter, Spring, Summer. 3(3-0) Admission to a doctoral program or approval of instructor.
Training for writing dissertations and publishing in the sciences, humanitites, and other fields. Includes a detailed analysis of each student's style, methods of organizing, practice in editing, and individual conferences.

999. *Doctoral Dissertation Research*
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

ENTOMOLOGY ENT

College of Agriculture and Natural Resources
College of Natural Science

250. *Pesticides, Their Alternatives and Environmental Quality (N)*
Winter. 3(4-0)
Impact of agricultural pesticides on man and his environment. Emphasizes the effect of chemicals on food production and combating diseases and ecological imbalance. Presents pesticide alternatives for the future.

301. *General Entomology*
Fall, Spring. 3(3-0) B S 211 and B S 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) ENT 301 or concurrently.
Insect diversity with emphasis on morphology, development, classification, identification, bionomics, and evolution. Stresses reproductive strategies and general adaptability as relates to the overall ecological success of insects.

303. *Entomological Techniques*
Spring. 2(0-6) ENT 301 or approval of department; ENT 302 recommended but not required.
Field entomology, including collecting and rearing techniques and methods of specimen preparation and preservation. Practical experience in insect identification and bionomics. Collection required.

337. *Forest and Shade Tree Entomology*
Fall. 4(3-2) Three terms of natural science.
Ecological relationships of insect/tree interactions. Taxonomy of insects and recognition of insect injury. Biological, chemical, silvicultural and intergrated control methods. Insect collection required (see instructor during prior spring term).

401. *Problems*
Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll 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.

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.

415. *Insect Behavior*
Winter of even-numbered years. 3(3-0) ENT 301, ENT 302; ZOL 413 recommended.
Mechanisms and adaptive significance of communication, orientation, food and habitat selection and behavioral rhymicity in insects.

418. *Systematic Entomology*
Winter. 4(1-9) ENT 301, ENT 302.
General taxonomic course to acquaint the student with the various groups of insects.

420. *Aquatic Insects*
Spring. 4(3-3) ENT 301, ENT 302.
Biology, ecology and systematics of aquatic insects. Insect collection required.

421. *Stream Ecology*
Fall. Summer--given at W. K. Kellogg Biological Station. 3(3-0) ENT 420 or approval of department. Interdepartmental with the Department of Fisheries and Wildlife.
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. Field trips required.

425. *Agricultural Entomology*
Fall. 4(3-2) One year of biological or agricultural sciences.
Natural processes of insect populations and associated techniques that are important to agriculture.

438. *Taxonomy of Immature Insects*

Spring of even-numbered years. 4(1-9) ENT 418.

Identification of immature insects with particular emphasis on the Holometabola.

440. *External Morphology of Insects*

Fall. 4(2-6) ENT 301, ENT 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.

444. *Insect Ecology*

Fall of odd-numbered years. 3(3-0) One course in introductory entomology.

Unique characteristics and principles of insect ecology. Trophic relationships, populations, climate, co-existence, competition, behavior, communities and distributions.

450. *Insect Physiology*

Fall. 5(3-4) ENT 301, ENT 302; 1 biochemistry or physiology course; 1 year of chemistry including 1 term of organic.

General and comparative physiology of insects, treating molecular, tissue and organ function. Laboratory exercises emphasizing mastery of sound experimental procedures.

455. *Toxicology of Insecticides*

Winter of odd-numbered years. 4(4-0) 1 term organic chemistry.

Properties of insecticides. Mode of action, metabolism and movement in animals. Safety and potential hazards to man and wildlife. Fates of insecticides in the environment.

460. *Medical Entomology*

Spring. 4(3-3) ENT 301, ENT 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. *Nematode Diseases of Economic Plants*

Winter. 4(3-3) B S 212 or BOT 205. Interdepartmental with the Department of Botany and Plant Pathology.

Major nematode diseases of economically important plants, with emphasis on diagnostic symptoms, nematode biology and principles of control.

490. *Topics in Entomology*

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.

812. *Graduate Seminar Topics*

Fall, Winter, Spring. 1(1-0) May reenroll if different topic is taken. Graduate students and approval of department.

Graduate level seminars on current research and philosophy. Student participation required.

815. *Biological Control*

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

Properties of entomophagous species; relationships to population ecology and systematics; foreign exploration, colonization, manipulation, and evaluation; interactions with pesticides, analysis of successful programs, and future trends. Collection for taxonomic lab to be made the summer before.

820. *Applied Insect Ecology*

Winter of odd-numbered years. 3(2-3) Approval of department.

Ecological factors in an insect's ecosystem that can be manipulated for the purpose of pest management. Critical evaluation of current and classical literature presented by students in both oral and written reports.

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.

871. *Biology of Nematodes*

Spring. 4(2-6) ENT 470 or approval of department. Interdepartmental with the Department of Botany and Plant Pathology.

Ontogeny, taxonomy, morphology, pathology and ecology of nematodes, with special reference to plant-parasitic and phytopathogenic species.

881. *Biology of the Arthropoda*

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

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

890. *Problems*

Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 12 credits. Majors or approval of department.

Advanced individual work in: apiculture, aquatic insects, insect biochemistry, biosystematics, economic insects, insect ecology, forest insects, morphology, nematology, insect physiology, plant disease transmission, insect toxicology, araneida, acarina, medical entomology, chemistry of insecticides, insect biology, extension entomology, systems.

899. *Master's Thesis 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) ENT 940.

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

999. *Doctoral Dissertation Research*

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

FAMILY AND CHILD ECOLOGY — FCE

(Name changed effective July 1, 1980. Formerly the departments of Family and Child Sciences and Family Ecology.)

College of Human Ecology

118. *Family Resources*

(F E 118.) Fall. 3(2-2)

Skill development in identification, description and classification of human and non-human family resources on a historical and cross-cultural basis.

145. *The Individual, Marriage and the Family*

(FCS 145.) Fall, Winter, Spring. 4(4-0) Students may not receive credit in both FCE 145 and S W 228.

Individual as young adult. Alternative living patterns. Marriage as social institution. Courtship and marriage patterns. Adjustments in marriage. Attitudes and roles in family living. Crises situations. Family planning.

200. *Ecological Approach to Family and Health*

(F E 200.) Fall, Winter. 2(2-0) Sophomores. Not open to HEC majors.

Use of the human ecosystem perspective to study people and their various environments with focus on family and health support systems.

221. *The Role of the Helping Professions and Organizations in Community Services*

(IDC 221., F E 221.) Fall, Winter, Spring. 4(4-0) Interdepartmental with and administered by the Department of Urban and Metropolitan Studies.

Analysis of human and community needs; review and examination of existing and emerging resources to meet those needs; role of professionals and volunteers in providing community and human services.

238. *Personal Finance*

(F E 238.) Fall, Winter, Spring. 3(3-0)

Strategies, techniques and resources useful in the management of personal finance.

255. *Family and Individual Development: Life Cycle*

(FCS 255.) Winter, Spring. 3(3-0) Three terms of natural science; sophomores.

Overview of family development. Predictable individual developmental changes over the life span. Cognitive, moral, physical, psychological and social aspects. Interface between individual and family development.

262A. *Child Growth and Development: Conception through Early Childhood*

(FCS 262A.) Fall, Winter, Spring. Summer of odd-numbered years. 3(3-0) Sophomores, PSY 160 or PSY 170 or ED 200; FCE 262B concurrently.

Physical, cognitive, social, and emotional aspects of human growth and development from conception through early childhood.

262B. *Child Growth and Development Laboratory*

(FCS 262B.) Fall, Winter, Spring. Summer of odd-numbered years. 1(0-3) FCE 262A concurrently or approval of department.

Observation of human development in infants and young children.