ENTOMOLOGY ENT

Department of Entomology
College of Agriculture and Natural Resources

110 Applied Entomology of Economic Plants
Fall. 3(2-2) Fall: Traverse City. RB: Interest or experience in ornamentals and turf production systems. R: Open to students in the Institute of Agricultural Technology. Not open to students with credit in ENT 111.
Arthropod pests of horticultural plants and turf grasses. Groups and species of economic importance to Michigan.

111 Basics of Applied Entomology
Spring. 2(2-2) R: Open to students in the Institute of Agricultural Technology. SA: AT 057 Not open to students with credit in ENT 110.
Basic insect biology, principles of integrated pest management, and the major pests of field crops, woody ornamentals, other perennials, turf, and commercial greenhouses. Offered first ten weeks of semester.

205 Pests, Society and Environment
Fall, Spring, Summer. 3(3-0) Not open to students with credit in ENT 404.
Nature of pests and their impact on society. Principles of integrated pest management in relation to environmental quality and sustainable development.

319 Introduction to Earth System Science
Fall. 3(3-0) Interdepartmental with Geological Sciences and Integrative Biology and Plant Biology and Sociology. Administered by Entomology. RB: Completion of one course in biological or physical science.
Systems approach to Earth as an integration of geochemical, geophysical, biological and social components. Global dynamics at a variety of spatio-temporal scales. Sustainability of the Earth system.

364 Turfgrass Entomology
Fall. 3(2-2) P: CSS 232 SA: CSS 362
Life history, identification, and collection of turfgrass insects. Cultural biological and insecticide control. Principles of pest management.

401 Directed Studies
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Approval of department.
Individual field or laboratory research, or review of published literature, on a topic of interest.

404 Fundamentals of Entomology
Fall. 3(2-4) P: BS 162 or PLB 105 or LB 144
Insect classification, identification, diversity, physiology and ecology. Importance of insects to humans and the environment. Insect collection required.

407 Diseases and Insects of Forest and Shade Trees
Spring. 4(3-3) Interdepartmental with Forestry and Plant Biology and Plant Pathology. Administered by Plant Pathology. P: (PLB 105 or BS 162 or LB 144) and Completion of Tier I Writing Requirement SA: BOT 407
Diseases, insects, and environmental problems affecting trees in forests, parks, suburbs, and nurseries. Methods of control.

410 Apiculture and Pollination
Fall, Spring. 2(1-2) P: BS 162 or PLB 105 or LB 144
Biology of bees and their relationship to flowers, pollination and crop production. Offered first ten weeks of semester. Laboratory sessions at MSU apiary.

422 Aquatic Entomology
Fall of odd years. 3(2-3) Interdepartmental with Fisheries and Wildlife and Integrative Biology. Administered by Entomology. P: BS 162 SA: ENT 420
Biology, ecology and systematics of aquatic insects in streams, rivers and lakes. Field trips and aquatic insect collection required.

460 Medical Entomology
Spring of odd years. 3(2-2) P: ENT 404 or MMG 201 or MMG 301 or approval of department R: Open to juniors and open to seniors and open to graduate students.
Transmission and management of infectious diseases involving insects and acarines.

461 Field Ecology of Disease Vectors
Summer. 3(1-4) Summer: W. K. Kellogg Biological Station. Interdepartmental with Fisheries and Wildlife. Administered by Entomology. RB: (ENT 460 or FW 463) or Courses in Epidemiology or Public Health. R: Not open to freshmen.
Collection and identification of arthropod vectors of human and animal diseases in Michigan. Assays for associated pathogens. Integration of disease ecology and public health responses to vector-borne disease

469 Biomonitoring of Streams and Rivers
Summer of odd years. 3(2-3) Interdepartmental with Fisheries and Wildlife. Administered by Entomology. P: BS 162 or LB 144
Practical field and lab rapid bioassessment methodologies used to sample and assess the biota of streams and rivers. Sampling and identification of fish, macroinvertebrates and other biota.

477 Pesticides in Pest Management
Fall of even years. 3(3-0) Interdepartmental with Crop and Soil Sciences and Horticulture. Administered by Entomology. RB: General chemistry, entomology, plant pathology, weed science. R: Open to juniors or seniors or graduate students.
Chemistry, modes of action, product development and regulation of pesticides. Environmental and social aspects of pesticide use.

479 Organic Pest Management (W)
Spring. 3(2-2) P: Completion of Tier I Writing Requirement RB: An undergraduate course in ecology and/or pest management. R: Open to juniors or seniors or graduate students or approval of department.
Theory, philosophy and application of organic pest management systems. Field trips required.

812 Graduate Seminar
Fall, Spring. 1(1-0) A student may earn a maximum of 10 credits in all enrollments for this course.
Current research topics. Student presentation required.

815 Insect Behavior
Fall of odd years. 3(2-3) RB: ENT 404
Fundamentals of insect behavior with emphasis on mechanisms. Quantitative methods.

818 Adult Insect Taxonomy
Fall of odd years. 4(1-6) P: ENT 404 or approval of department
Identification, morphology, biology and evolutionary relationships of adult insects. Insect collection required.

830 Statistical Methods in Ecology and Evolution I
Fall. 3(3-0) Interdepartmental with Integrative Biology and Plant Biology. Administered by Integrative Biology.
Fundamental elements of data analysis in ecology and evolution. Programming fundamentals in the R computing language. Introduction to modeling biological data with modern methods for estimation and inference.

831 Statistical Methods in Ecology and Evolution II
Spring. 3(3-0) Interdepartmental with Integrative Biology and Plant Biology. Administered by Integrative Biology. P: IBIO 830
Advanced interpretation and modeling of biological data with modern methods for estimation and inference using the R computing language.

838 Immature Insect Taxonomy
Fall of even years. 4(1-6) P: ENT 404 or approval of department
Classification, identification, morphology, biology and evolutionary relationships of immature insects. Emphasis on terrestrial holometabola. Collection required.

848 Biological Control of Insects and Weeds
Spring of odd years. 3(2-2) RB: (ENT 404) or Ecology
Principles and practices in the application of natural enemies to control arthropod and weed pests. Identification and biology of beneficial species (parasitoids, predators, pathogens) and the ecological basis for their use in pest management systems.

851 Insect Physiology and Molecular Biology
Fall of odd years. 3(3-0) Interdepartmental with Genetics. Administered by Entomology. RB: General entomology (ENT 404 or equivalent); general biology (organismal and cellular); genetics
Structure and function of physiological systems in insects, and current understanding of how these systems work at the molecular level.

890 Independent Study
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open to graduate students.
Individual study on a field or laboratory research topic or review of published literature on a topic of interest.

898 Master's Research
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Open only to master's students in the Department of Entomology.
Master's degree Plan B research paper.

899 Master's Thesis Research
Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 24 credits in all enrollments for this course. R: Open only to master's students in the Department of Entomology.
Master's thesis research.

999 Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 36 credits in all enrollments for this course. R: Open to doctoral students.
Doctoral dissertation research.