

# ENTOMOLOGY (ENTO)

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## ENTO 109 Beekeeping

**Description:** Life history and habits of the honeybee; methods of management; honey and wax production; apiary equipment; pollination; identity and control of bee diseases.

**Credit Hours:** 2

**Max credits per semester:** 2

**Max credits per degree:** 2

**Format:** LEC

## ENTO 115 Insect Biology

**Crosslisted with:** BIOS 115

**Description:** Fundamental insect biology (anatomy, development, physiology, behavior, ecology and diversity). Economic and medical importance of insects and principles of insect pest management.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Format:** LEC

**Prerequisite for:** ENTO 200; ENTO 400

**ACE:** ACE 4 Science

## ENTO 116 Insect Identification

**Crosslisted with:** BIOS 116

**Description:** Identification of representative orders and families of insects by their anatomy, metamorphosis, habits and habitats. Sight recognition emphasized but dichotomous keys also used. Interrelation of insect and habitats stressed.

**Credit Hours:** 1

**Max credits per semester:** 1

**Max credits per degree:** 1

**Format:** LAB

## ENTO 200 Behavior of Arthropods

**Prerequisites:** ENTO 115 or equivalent introductory course

**Description:** An in-depth look at how arthropods find and defend their resources, how they avoid predators, how they find mates, how they mate, and how some exist in highly ordered social settings.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Format:** LEC

## ENTO 300 Toxins in the Environment

**Crosslisted with:** BIOS 300, NRES 300

**Prerequisites:** One semester BIOS and one semester CHEM

**Description:** Introduction to the principles of toxicology as they apply to environmental contaminants, agri-chemicals, and industrial and naturally occurring chemicals.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Format:** LEC

## ENTO 308 Management of Field Crop Insects

**Prerequisites:** BIOS 101 and 101L

**Notes:** ENTO 115 recommended

**Description:** Injurious and beneficial insects and pest management practices associated with field crop insects and mites.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Format:** LEC

## ENTO 309 Career Experience

**Prerequisites:** Junior standing; introductory courses in entomology; and permission prior to enrolling

**Notes:** Course must be concluded with preparation of a written report. P/N only.

**Description:** Career experience in applied practices is provided via employment with an entomology-related agency, business or industry, research, extension, or teaching activity.

**Credit Hours:** 1-3

**Min credits per semester:** 1

**Max credits per semester:** 3

**Max credits per degree:** 4

**Format:** LEC

## ENTO 315 Undergraduate Research Seminar

**Description:** A comprehensive introduction to research is covered in this course designed for, but not limited to, insect science majors preparing for their capstone experience. Students learn about the scientific method, methodologies used to conduct research (including utilizing the library for literature searches), and the process of scientific writing and presentation.

**Credit Hours:** 1

**Max credits per semester:** 1

**Max credits per degree:** 1

**Format:** LEC

## ENTO 395 Experiential Learning for Career Development in Insect Science

**Prerequisites:** Sophomore standing.

**Notes:** A faculty adviser for the area of interest must be identified prior to registering for the course.

**Description:** Application and integration of the Insect Science curriculum within the context of extension and service, research, or teaching experience.

**Credit Hours:** 1-5

**Min credits per semester:** 1

**Max credits per semester:** 5

**Max credits per degree:** 5

**Format:** FLD

## ENTO 395A Experiential Learning for Career Development in Insect Science Research Experience

**Prerequisites:** Sophomore standing.

**Notes:** A faculty adviser for the area of interest must be identified prior to registering for the course.

**Description:** Application and integration of the Insect Science curriculum within the context of extension and service, research, or teaching experience.

**Credit Hours:** 1-5

**Min credits per semester:** 1

**Max credits per semester:** 5

**Max credits per degree:** 5

**Format:** FLD

**ENTO 395B Experiential Learning for Career Development in Insect Science Teaching Experience**

**Prerequisites:** Sophomore standing.

**Notes:** A faculty adviser for the area of interest must be identified prior to registering for the course.

**Description:** Application and integration of the Insect Science curriculum within the context of extension and service, research, or teaching experience.

**Credit Hours:** 1-5

**Min credits per semester:** 1

**Max credits per semester:** 5

**Max credits per degree:** 5

**Format:** FLD

**ENTO 395C Experiential Learning for Career Development in Insect Science Extension Experience**

**Prerequisites:** Sophomore standing.

**Notes:** A faculty adviser for the area of interest must be identified prior to registering for the course.

**Description:** Application and integration of the Insect Science curriculum within the context of extension and service, research, or teaching experience.

**Credit Hours:** 1-5

**Min credits per semester:** 1

**Max credits per semester:** 5

**Max credits per degree:** 5

**Format:** FLD

**ENTO 400 Biology and Classification of Insects**

**Prerequisites:** ENTO 115 or equivalent introductory course.

**Description:** Survey of orders and common families of insects with emphasis on biology, ecology, and phylogeny. Sight recognition of major orders and families, identification of other families with keys. Insect collection required.

**Credit Hours:** 4

**Max credits per semester:** 4

**Max credits per degree:** 4

**Format:** LEC

**ENTO 401 Insect Physiology**

**Crosslisted with:** ENTO 801

**Prerequisites:** CHEM 251 or CHEM 255; 12 hrs entomology or biological sciences (zoology)

**Description:** Functions and other phenomena associated with the major organ systems of insects; the cuticle, nervous, circulatory, digestive, metabolism, nutrition, locomotion, reproduction, respiration, and growth and development.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Format:** LEC

**ENTO 402 Aquatic Insects**

**Crosslisted with:** BIOS 485, BIOS 885, ENTO 802, NRES 402, NRES 802

**Prerequisites:** 12 hrs biological sciences

**Description:** Biology and ecology of aquatic insects.

**Credit Hours:** 2

**Max credits per semester:** 2

**Max credits per degree:** 2

**Format:** LEC

**Prerequisite for:** BIOS 485L, BIOS 885L, ENTO 402L, ENTO 802L, NRES 402L, NRES 802L

**ENTO 402L Identification of Aquatic Insects**

**Crosslisted with:** BIOS 485L, BIOS 885L, ENTO 802L, NRES 402L, NRES 802L

**Prerequisites:** Parallel ENTO 802, NRES 402/802, BIOS 485/885.

**Description:** Identification of aquatic insects to the family level.

**Credit Hours:** 1

**Max credits per semester:** 1

**Max credits per degree:** 1

**Format:** LAB

**ENTO 403 Management of Horticultural Crop Insects**

**Crosslisted with:** ENTO 803

**Prerequisites:** Introductory biology course.

**Description:** The biology, ecology and management of insect pests of horticultural crops such as vegetables, fruit trees, trees and shrubs, greenhouse crops, turf and ornamentals. Employing Integrated Pest Management (IPM) strategies to maintain pests below damaging levels while minimizing the use of traditional insecticides.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Format:** LEC

**ENTO 406 Insect Ecology**

**Crosslisted with:** BIOS 406, BIOS 806, ENTO 806

**Prerequisites:** BIOS/NRES 220 and 222.

**Description:** Biotic and abiotic factors as they influence insect development, behavior, distribution, and abundance.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Format:** LEC

**ENTO 409 Insect Control by Host-Plant Resistance**

**Crosslisted with:** ENTO 809

**Prerequisites:** 12 hrs agricultural sciences and/or biological sciences including one course in entomology and one course in genetics.

**Description:** Explore resistance of crops to herbivorous arthropods. Investigate how insect behavior and physiology are affected by resistance, critically review current research on plant resistance genes, and the molecular, biochemical and physiological aspects of insect/microbe interactions with host plants.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Format:** LEC

**ENTO 412 Entomology and Pest Management**

**Crosslisted with:** ENTO 812

**Prerequisites:** Introductory course in ENTO.

**Description:** Principles and practices of managing insects pests. Pest management theory, use of sampling, evaluation, tactics, types of insect pests, and current issues.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Format:** LEC

**ENTO 414 Forensic Entomology****Crosslisted with:** ENTO 814, FORS 414, FORS 814**Prerequisites:** ENTO 115 or equivalent introductory course.**Description:** Application of entomology to legal issues. Criminal investigations, insects of forensic importance, insect succession on carrion, and case studies.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Format:** LEC**ENTO 415 Medical Entomology****Crosslisted with:** ENTO 815**Prerequisites:** Introductory course in ENTO.**Description:** Direct and indirect importance of insects in human medicine. Principles of arthropod-borne disease, medically important arthropod groups, and arthropod-transmitted diseases.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Format:** LEC**ENTO 416 Forensic Insect Succession****Crosslisted with:** ENTO 816**Description:** Forensic insect succession and specific forensically important insects including their life cycle, biology, and association with decomposition. Case studies about how forensic entomology has been used in solving crimes will also be covered.**Credit Hours:** 1**Max credits per semester:** 1**Max credits per degree:** 1**Format:** LEC**Offered:** SPRING**ENTO 482 Field Entomology****Crosslisted with:** BIOS 482, BIOS 882, ENTO 882**Prerequisites:** 12 hrs biological sciences.**Notes:** Offered only at Cedar Point Biological Station.**Description:** Field course in insect taxonomy and biology emphasizing field collection, specimen preparation, classification, and insect natural history.**Credit Hours:** 4**Max credits per semester:** 4**Max credits per degree:** 4**Format:** LEC**Offered:** SUMMER**ENTO 485 Current Issues in Entomology****Prerequisites:** Senior standing; completion of ENTO core requirements.**Notes:** Capstone course. Fulfills the capstone requirement for the insect science major.**Description:** The application and integration of biological principles of the insect science program.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Format:** LEC**ACE:** ACE 10 Integrated Product**ENTO 495 Grasslands Seminar****Crosslisted with:** AGRO 495, GRAS 495, HORT 495, NRES 495, RNGE 495, SOIL 495**Prerequisites:** Junior standing.**Description:** Topic varies and deals with different aspects of forage and/or range and/or livestock, turf and/or landscape grasses, natural habitats, and wetlands.**Credit Hours:** 1-2**Min credits per semester:** 1**Max credits per semester:** 2**Max credits per degree:** 4**Format:** LEC**ENTO 496 Independent Study in Entomology****Crosslisted with:** ENTO 896**Prerequisites:** 12 hrs biological sciences and/or agricultural sciences.**Notes:** Independent study contracts must be filed with the department.**Description:** Individual or group projects in research, literature review, or extension of course work.**Credit Hours:** 1-6**Min credits per semester:** 1**Max credits per semester:** 6**Max credits per degree:** 12**Format:** IND**ENTO 499H Honors Thesis****Prerequisites:** Admission to the University Honors Program and permission, AGRI 299H recommended.**Description:** Conduct a scholarly research project and write a University Honors Program or undergraduate thesis.**Credit Hours:** 3-6**Min credits per semester:** 3**Max credits per semester:** 6**Max credits per degree:** 6**Format:** IND