ENTOMOLOGY (ENTO)

ENTO 800 Insect Biodiversity
Prerequisites: 12 hrs. of biological sciences, graduate standing and ENTO 116 or equivalent for entomology majors
Description: Classification, taxonomy, and biology of adult insects. Identification of orders and families of insects using keys. Collection required using techniques for collecting, preparing, and curating. One oral/written term paper required.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Format: LEC

ENTO 801 Insect Physiology
Crosslisted with: ENTO 401
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 801L Insect Physiology Lab
Prerequisites: CHEM 251 or CHEM 255; 12 hrs. entomology or biological sciences (zoology)
Notes: Must also register for required lecture ENTO 801.
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: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LAB

ENTO 802 Aquatic Insects
Crosslisted with: BIOS 485, BIOS 885, ENTO 402, 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

ENTO 802L Identification of Aquatic Insects
Crosslisted with: BIOS 485L, BIOS 885L, ENTO 402L, 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 803 Management of Horticultural Crop Insects
Crosslisted with: ENTO 403
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 806 Insect Ecology
Crosslisted with: BIOS 406, BIOS 806, ENTO 406
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 809 Insect Control by Host-Plant Resistance
Crosslisted with: ENTO 409
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 810 Insects as Educational Tools for the Classroom
Prerequisites: Introductory entomology course
Description: Overview of insects. Insect diversity, insect structure and function, insect ecology and behavior, and the beneficial and detrimental roles insects play. Integrating the study of insects into the classroom to enhance science education.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

ENTO 811 Field Entomology
Crosslisted with: BIOS 482, BIOS 882, ENTO 411
Prerequisites: 12 hrs biological sciences.
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
ENTO 812 Entomology and Pest Management
Crosslisted with: ENTO 412
Prerequisites: Introductory course in ENTO.
Description: Principles and practices of managing insects pests. Pest management theory, us 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 813 Biological Control of Pests
Crosslisted with: PLPT 813
Prerequisites: 12 hrs biological sciences and/or agricultural sciences
Description: Principles and practices of using natural enemies and antagonists to manage the abundance of pests and reduce economic losses.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

ENTO 814 Forensic Entomology
Crosslisted with: ENTO 414, FORS 414, FORS 814
Prerequisites: Introductory course in entomology
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 815 Medical Entomology
Crosslisted with: ENTO 415
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 815A Self-pollinated Crop Breeding
Crosslisted with: AGRO 815A
Prerequisites: AGRO 215
Description: Self-pollinated plant breeding theory and methods. Pedigree, bulk, single seed descent, back-crossing methods and inbreeding theory.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LEC
Prerequisite for: AGRO 816B; AGRO 816E

ENTO 815B Gemplasm and Genes
Crosslisted with: AGRO 815B
Prerequisites: AGRO 215
Description: Obtaining germplasm and genes from cultivated plants, wild relatives of cultivated plants, and the biosphere. Origination of crops, mutation genetics, biotechnology as a source of genes, chromosomal engineering and plant reproduction.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LEC
Prerequisite for: AGRO 816B; AGRO 816E

ENTO 815D Cross-pollinated Crop Breeding
Crosslisted with: AGRO 815D
Prerequisites: AGRO 215
Description: Cross-pollinated breeding theory and methods. Genes in populations, recurrent selection methods, creating populations, hybrid production practices, and population improvement theory.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LEC
Prerequisite for: AGRO 816B; AGRO 816E

ENTO 817 Pest Management Systems
Prerequisites: 10 hrs entomology and crop production courses or permission
Description: Different philosophies and theories of insect pest management, theory vs. reality of management, interactions of public and private sectors, development and implementation of pest management programs.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

ENTO 818 Insect Identification and Natural History
Prerequisites: Introductory course in entomology
Notes: Credit toward the degree may not be earned in both ENTO 800 and ENTO 818. ENTO 818 is offered in summer session on the Internet via the World Wide Web (WWW).
Description: Biology and identification of major insect orders, families, classification, and ecology.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Format: LEC

ENTO 819 Insect Behavior
Prerequisites: Introductory course in entomology
Description: The process of behavioral study involves investigating the relationship between animals and their surroundings, and their response to their kin and to other organisms. Topics include characterizing how insects 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
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Description</th>
<th>Max credits per semester</th>
<th>Max credits per degree</th>
<th>Format</th>
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</thead>
<tbody>
<tr>
<td>ENTO 820</td>
<td>Insecticide Toxicology</td>
<td>12 hrs biological sciences; 4 hrs organic chemistry</td>
<td>Principles of toxicology, insecticide classification, mode of action, metabolism and consequences of insecticide use.</td>
<td>3</td>
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<td>LEC</td>
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<tr>
<td>ENTO 825</td>
<td>Management of Agronomic Crop Insects</td>
<td>An introductory entomology course</td>
<td>Identification, biology, ecology and management of insect pests of agronomic crops such as corn, soybeans, sorghum, wheat, and alfalfa. Integrated Pest Management (IPM) strategies employed to maintain pests below damaging levels while minimizing the use of traditional insecticides.</td>
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<td>LEC</td>
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<td>ENTO 826</td>
<td>Scientific Illustration</td>
<td>12 hrs agricultural and/or biological sciences</td>
<td>Prepare scientifically accurate, high quality illustrations and graphics for the teaching, presentation, and publication of scientific information. Drawing techniques, drafting, copyright, and publication and presentation of scientific art work.</td>
<td>3</td>
<td>3</td>
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<tr>
<td>ENTO 827</td>
<td>Population and Ecological Genetics</td>
<td>Introductory Genetics, Introductory Algebra</td>
<td>Introduction to key theoretical concepts in population genetics and their application. Mutation, genetic drift, structured populations, natural selection, molecular evolution.</td>
<td>3</td>
<td>3</td>
<td>LEC</td>
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<tr>
<td>ENTO 830</td>
<td>Introduction to the Development of Distance Education Courses</td>
<td>ALEC 830</td>
<td>Introduction to practical aspects of developing and facilitating distance education courses. Create and facilitate interaction, assessments, course delivery, assignments, course etiquette and ADA compliance. Develop a distance course module grounded in distance education theory and instructional design principles.</td>
<td>3</td>
<td>3</td>
<td>LEC</td>
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<td>ENTO 835</td>
<td>Chemical Ecology of Insect-Plant Interactions</td>
<td>15 hours of agricultural sciences and/or biological sciences including one course in entomology &amp; one course in biochemistry.</td>
<td>A focus on insect-plant interactions including direct and indirect plant defenses against herbivory, tritrophic interactions among plant, insect herbivores and herbivore natural enemies, biochemical mechanisms of plant defenses, insect herbivore-produced elicitors of plant defenses, semiochemicals based IPM, chemical ecology of insect vectors of plant diseases, and chemical ecology of insect pollination.</td>
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<tr>
<td>ENTO 888</td>
<td>MS Degree Project</td>
<td>Completion of 24 hrs toward the MS degree</td>
<td>Application of graduate course work for the non-thesis MS degree program.</td>
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<td>2</td>
<td>LEC</td>
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<tr>
<td>ENTO 896</td>
<td>Independent Study in Entomology</td>
<td>12 hrs biological sciences and/or agricultural sciences.</td>
<td>Individual study contracts for ENTO 496/896 must be filed with the department.</td>
<td>1-6</td>
<td>12</td>
<td>FLD</td>
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<tr>
<td>ENTO 899</td>
<td>Masters Thesis</td>
<td>Admission to masters degree program and permission of major adviser</td>
<td>Individual or group projects in research, literature review, or extension of course work.</td>
<td>1-10</td>
<td>99</td>
<td>IND</td>
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<tr>
<td>ENTO 905</td>
<td>Seminar in Entomology</td>
<td></td>
<td>Presentation of topics in entomology or related subjects.</td>
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<td>8</td>
<td>LEC</td>
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<tr>
<td>ENTO 915</td>
<td>Presentation Methods</td>
<td>Permission</td>
<td>This course prepares entomology graduate students to give scientific and public presentations. It includes instruction in preparing posters and on-screen shows, image editing, finding entomological resources in libraries and on the internet, insect photography, and public speaking. Students develop a portfolio of their work, and they make two 12- and one 30-minute presentations to their classmates.</td>
<td>3</td>
<td>3</td>
<td>LEC</td>
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ENTO 920 Xenobiotics in the Environment  
**Crosslisted with:** AGRO 920, EOHT 920, HORT 920, NRES 920  
**Prerequisites:** Recommend one course each in organic chemistry, soil science, biochemistry, plant physiology, microbiology and ecology  
**Description:** Fate and ecotoxicological impacts of biologically foreign compounds in soil-water-plant environments; uptake, mechanisms of toxicity and metabolism in plants and other biota. Herbicides and other pesticides.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Format:** LEC

ENTO 960 Biosystematics and Nomenclature  
**Crosslisted with:** BIOS 960  
**Description:** Methods and principles of systematics and nomenclature.  
**Credit Hours:** 2-3  
**Min credits per semester:** 2  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Format:** LEC

ENTO 991 Advanced Topics in Entomology  
**Prerequisites:** Permission  
**Description:** Advanced study of selected topics not presented in established courses.  
**Credit Hours:** 1-5  
**Min credits per semester:** 1  
**Max credits per semester:** 5  
**Max credits per degree:** 5  
**Format:** LEC

ENTO 996 Research in Entomology  
**Credit Hours:** 1-12  
**Min credits per semester:** 1  
**Max credits per semester:** 12  
**Max credits per degree:** 12  
**Format:** IND

ENTO 999 Doctoral Dissertation  
**Prerequisites:** Admission to doctoral degree program and permission of supervisory committee chair  
**Credit Hours:** 1-24  
**Min credits per semester:** 1  
**Max credits per semester:** 24  
**Max credits per degree:** 99  
**Format:** IND