

# ENTOMOLOGY (ENT)

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## Courses primarily for undergraduates:

### ENT 201: Introduction to Insects

(1-0) Cr. 1. F.S.SS.

5 weeks. Classroom section spring only. World Wide Web section of course offered summer and fall semesters. Biological and ecological aspects of insects.

### ENT 211: Insects and Society

(2-0) Cr. 2. F.S.

*Prereq: ENT 201*

11 weeks. Classroom section spring only. World Wide Web section offered fall semester. The importance of insects in human well-being. Insect-human interactions. Primarily for nonscience and nonagriculture majors.

### ENT 214: Insects in Forensic Science

(3-0) Cr. 3. Alt. F., offered even-numbered years.

*Prereq: none*

Introduction to the use of insects as evidence in court and how they can assist in solving crimes. Topics covered include basic insect biology, systematics, behavior, with emphasis on applications of forensic entomology.

### ENT 220: Introduction to Forensic Science

(Cross-listed with CJ ST). (3-0) Cr. 3. S.

*Prereq: none*

Study of fundamental forensic science techniques and procedures covering types of physical, chemical, and biological evidence and how this information is used in the legal system. Assessment of crime scenes and various forensic specialties will be introduced.

### ENT 283: Pesticide Application Certification

(Cross-listed with AGRON, FOR, HORT). (2-0) Cr. 2. S.

Core background and specialty topics in agricultural, and horticultural pesticide applicator certification. Students can select certification categories and have the opportunity to obtain pesticide applicator certification at the completion of the course. Commercial pesticide applicator certification is emphasized.

### ENT 370: Insect Biology

(2-3) Cr. 3. F.

*Prereq: BIOL 101 or BIOL 211*

Structure, physiology, evolution, behavior, life histories, and recognition of insects. Collection required.

### ENT 371I: Introduction to Insect Ecology

(Cross-listed with IA LL). (3-3) Cr. 4. Alt. SS., offered odd-numbered years.

Field and laboratory study of insects, their diversity, life history; emphasis on ecology and behavior.

### ENT 372: Livestock Entomology

(2-0) Cr. 2. Alt. S., offered odd-numbered years.

Classroom and off-campus videotape sections. 12 weeks. Recognition, biology, behavior, economic importance, and management of insects and other arthropods affecting livestock and poultry production.

### ENT 374: Insects and Our Health

(Cross-listed with MICRO). (3-0) Cr. 3. S.

*Prereq: 3 credits in biological sciences*

Identification, biology, and significance of insects and arthropods that affect the health of humans and animals, particularly those that are vectors of disease.

Meets International Perspectives Requirement.

### ENT 374L: Insects and Our Health Laboratory

(Cross-listed with MICRO). (0-3) Cr. 1. Alt. S., offered even-numbered years.

*Prereq: Credit or enrollment in ENT 374*

Laboratory and field techniques for studying medical or public health entomology, including: collection, identification and maintenance of medically significant arthropods and experimental design and execution related to the biology of arthropods or arthropod-pathogen interactions.

### ENT 375: Plant Protection Using Natural Enemies

(Dual-listed with ENT 575). (3-0) Cr. 3. Alt. S., offered even-numbered years.

*Prereq: ENT 370 or ENT 376*

Overview of the biology, ecology, and classification of insect pathogens, predators, and parasitoids. Discussion of the use of these organisms in plant protection, including an emphasis on genetic alteration of natural enemies.

### ENT 376: Fundamentals of Entomology and Pest Management

(2-3) Cr. 3. S.

*Prereq: BIOL 101 or BIOL 211*

Introduction to entomology and insect-pest management, including life processes, ecology, economics, tactics of population suppression, and ecological backlash.

### ENT 410: Insect-Virus Interactions: a Molecular Perspective

(Dual-listed with ENT 510). (Cross-listed with MICRO). (2-0) Cr. 2. Alt. F., offered odd-numbered years.

*Prereq: Permission of an instructor.*

Overview of insect-virus interactions including insect immunity to viruses, genetic enhancement of viral insecticides, transgenic mosquitoes, disruption of virus transmission, and the role of insect and virus genomics in combating viral disease of both human and agricultural importance.

**ENT 425: Aquatic Insects**

(Dual-listed with ENT 525). (Cross-listed with A ECL). (2-3) Cr. 3. Alt. S., offered odd-numbered years.

*Prereq: BIOL 312 or equivalent*

Morphology, ecology, diversity, and significance of aquatic insects, with emphasis on the collection, curation and identification of taxa in local streams and lakes.

**ENT 450: Pesticides in the Environment**

(Dual-listed with ENT 550). (2-0) Cr. 2. S.

*Prereq: 9 credits of biological sciences*

Fate and significance of pesticides in soil, water, plants, animals, and the atmosphere.

**ENT 452: Integrated Management of Diseases and Insect Pests of Turfgrasses**

(Dual-listed with ENT 552). (Cross-listed with HORT, PL P). (3-0) Cr. 3. Alt. S., offered even-numbered years.

*Prereq: HORT 351*

Identification and biology of important diseases and insect pests of turfgrasses. Development of integrated pest management programs in various turfgrass environments.

**ENT 466: Ecosystem Service Management**

(Dual-listed with ENT 566). (Cross-listed with ENSCI, NREM). (3-0) Cr. 3. Alt. S., offered odd-numbered years.

*Prereq: permission of instructor*

Land use and conservation techniques for improving ecosystem services including: pollination of crops, biological control of pests, prevention of erosion and water quality improvement.

**ENT 471: Insect Ecology**

(Dual-listed with ENT 571). (2-3) Cr. 3. Alt. F., offered even-numbered years.

*Prereq: 9 credits biological sciences*

The contribution of insects to ecosystem function is staggering. This course will focus on insect population ecology, predator-prey interaction and chemical ecology. The role of insects in nutrient cycling, pollination and pest management will be discussed with case studies used to highlight the applied nature of insect ecology and its relationship to agriculture.

**ENT 490: Independent Study**

Cr. 1-3. Repeatable, maximum of 9 credits.

*Prereq: 15 credits in biological sciences, junior or senior classification*

A maximum of 9 credits of all (university-wide) 490 credits may be applied toward graduation.

**ENT 490E: Independent Study: Research or work experience.**

Cr. 1-3. Repeatable, maximum of 9 credits.

*Prereq: 15 credits in biological sciences, junior or senior classification*

A maximum of 9 of all (university-wide) 490 credits may be used toward graduation.

**ENT 490U: Independent Study: Laboratory teaching experience**

Cr. 1-3. Repeatable, maximum of 9 credits.

*Prereq: 15 credits in biological sciences, junior or senior classification. For students registering to be undergraduate laboratory assistants.*

A maximum of 9 of all (university-wide) 490 credits may be used toward graduation.

**Courses primarily for graduate students, open to qualified undergraduates:**

**ENT 510: Insect-Virus Interactions: a Molecular Perspective**

(Dual-listed with ENT 410). (Cross-listed with MICRO). (2-0) Cr. 2. Alt. F., offered odd-numbered years.

*Prereq: Permission of an instructor.*

Overview of insect-virus interactions including insect immunity to viruses, genetic enhancement of viral insecticides, transgenic mosquitoes, disruption of virus transmission, and the role of insect and virus genomics in combating viral disease of both human and agricultural importance.

**ENT 511: Integrated Management of Tropical Crops**

(Cross-listed with HORT, PL P). (3-0) Cr. 3. Alt. S., offered odd-numbered years.

*Prereq: PL P 408 or PL P 416 or ENT 370 or ENT 376 or HORT 221*

Applications of Integrated Crop Management principles (including plant pathology, entomology, and horticulture) to tropical cropping systems.

Familiarization with a variety of tropical agroecosystems and Costa Rican culture is followed by 10-day tour of Costa Rican agriculture during spring break, then writeup of individual projects.

Meets International Perspectives Requirement.

**ENT 525: Aquatic Insects**

(Dual-listed with ENT 425). (Cross-listed with A ECL). (2-3) Cr. 3. Alt. S., offered odd-numbered years.

*Prereq: BIOL 312 or equivalent*

Morphology, ecology, diversity, and significance of aquatic insects, with emphasis on the collection, curation and identification of taxa in local streams and lakes.

**ENT 530: Ecologically Based Pest Management Strategies**

(Cross-listed with AGRON, PL P, SUSAG). (3-0) Cr. 3. Alt. F., offered even-numbered years.

Durable, least-toxic strategies for managing weeds, pathogens, and insect pests, with emphasis on underlying ecological processes.

**ENT 550: Pesticides in the Environment**

(Dual-listed with ENT 450). (Cross-listed with TOX). (2-0) Cr. 2. S.

*Prereq: 9 credits of biological sciences*

Fate and significance of pesticides in soil, water, plants, animals, and the atmosphere.

**ENT 552: Integrated Management of Diseases and Insect Pests of Turfgrasses**

(Dual-listed with ENT 452). (Cross-listed with HORT, PL P). (3-0) Cr. 3. Alt. S., offered even-numbered years.

*Prereq: HORT 351*

Identification and biology of important diseases and insect pests of turfgrasses. Development of integrated pest management programs in various turfgrass environments.

**ENT 555: Insect Physiology**

(3-3) Cr. 4. Alt. S., offered even-numbered years.

*Prereq: ENT 370*

Life processes of the insects, including reviews of current problems in insect physiology.

**ENT 566: Ecosystem Service Management**

(Dual-listed with ENT 466). (Cross-listed with ENSCI, NREM). (3-0) Cr. 3. Alt. S., offered odd-numbered years.

*Prereq: permission of instructor*

Land use and conservation techniques for improving ecosystem services including: pollination of crops, biological control of pests, prevention of erosion and water quality improvement.

**ENT 568: Advanced Systematics**

(Cross-listed with EEOB). (2-3) Cr. 3. Alt. S., offered odd-numbered years.

*Prereq: Permission of instructor*

Principles and practice of systematic biology; taxonomy, nomenclature and classification of plants and animals; sources and interpretation of systematic data; speciation; fundamentals of phylogenetic systematics.

**ENT 570: Plant-Insect Interaction**

(2-0) Cr. 2. Alt. F., offered odd-numbered years.

*Prereq: 9 credits in biological sciences*

Physiological, behavioral, ecological, and evolutionary factors that govern interactions between insects and plants, applications of this knowledge to agriculture, and important results from the study of natural systems. Additional topics covered during the semester include: tritrophic interactions, biological control of plants by insects, and pollination biology. Student-led discussions and draws on both the primary and secondary literature.

**ENT 571: Insect Ecology**

(Dual-listed with ENT 471). (2-3) Cr. 3. Alt. F., offered even-numbered years.

*Prereq: 9 credits biological sciences*

The contribution of insects to ecosystem function is staggering. This course will focus on insect population ecology, predator-prey interaction and chemical ecology. The role of insects in nutrient cycling, pollination and pest management will be discussed with case studies used to highlight the applied nature of insect ecology and its relationship to agriculture.

**ENT 574: Medical Entomology**

(3-3) Cr. 4. Alt. S., offered even-numbered years.

*Prereq: 9 credits in biological sciences*

Identification, biology, and significance of insects and other arthropods that attack people and animals, particularly those that are vectors of disease.

**ENT 575: Plant Protection Using Natural Enemies**

(Dual-listed with ENT 375). (3-0) Cr. 3. Alt. S., offered even-numbered years.

*Prereq: ENT 370 or ENT 376*

Overview of the biology, ecology, and classification of insect pathogens, predators, and parasitoids. Discussion of the use of these organisms in plant protection, including an emphasis on genetic alteration of natural enemies.

**ENT 576: Systematic Entomology**

(3-6) Cr. 5. Alt. F., offered even-numbered years.

*Prereq: ENT 370*

Classification, distribution, and natural history of insects, including fundamentals of phylogenetic systematics, biogeography, taxonomic procedures, and insect collection and curation.

**ENT 578: Global Protozoology - Molecular Biology of Protozoa**

(Dual-listed with ENT 478). (Cross-listed with V PTH). (2-1) Cr. 3. F.

*Prereq: Permission of instructor*

Analysis of cellular systems, molecules, and organelles of pathogenic protozoan parasites. Emphasis is placed on processes and systems that are unique to protozoa, are important to understanding vector-parasite-host biology/ecology, or are targets of disease prevention/treatment programs for international disease control.

**ENT 590: Special Topics**

Cr. 1-3. Repeatable.

*Prereq: 15 credits in biological sciences.*

**ENT 590A: Special Topics: Biological Control and Pathology.**

Cr. 1-3. Repeatable.

**ENT 590B: Special Topics: Chemical Ecology and Behavior.**

Cr. 1-3. Repeatable.

**ENT 590C: Special Topics: Ecology and Pest Management.**

Cr. 1-3. Repeatable.

**ENT 590D: Special Topics: Evolution and Systematics.**

Cr. 1-3. Repeatable.

**ENT 590E: Special Topics: Special Research Topics.**

Cr. 1-3. Repeatable.

**ENT 590F: Special Topics: Medical and Veterinary Entomology.**

Cr. 1-3. Repeatable.

**ENT 590G: Special Topics: Molecular Entomology.**

Cr. 1-3. Repeatable.

**ENT 590H: Special Topics: Physiology and Biochemistry.**

Cr. 1-3. Repeatable.

**ENT 590I: Special Topics: Toxicology**

Cr. 1-3. Repeatable.

**ENT 590K: Special Topics: Teaching Experience.**

Cr. 1-3. Repeatable.

**ENT 590L: Special Topics: Extension Internship.**

Cr. 1-3. Repeatable.

**ENT 590M: Special Topics: Immature Insects.**

Cr. 1-3. Repeatable.

**ENT 590N: Special Topics: Population Genetics.**

Cr. 1-3. Repeatable.

**Courses for graduate students:**

**ENT 600: Seminar**

Cr. 1. F.S.SS.

Presentation of research results.

**ENT 675: Insecticide Toxicology**

(Cross-listed with TOX). (2-3) Cr. 3. Alt. F., offered odd-numbered years.

*Prereq: ENT 555 or TOX 501*

Principles of insecticide toxicology; classification, mode of action, metabolism, and environmental effects of insecticides.

**ENT 699: Research**

Cr. arr. Repeatable.