Courses primarily for undergraduates:

**ENT 201: Introduction to Insects**
(1-0) Cr. 1. F.S.S.
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

**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

**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 odd-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 credits of all (university-wide) 490 credits may be applied 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 credits 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 AECL). (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 odd-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 590P: Special Topics: Medical and Veterinary Entomology.  
Cr. 1-3. Repeatable.

ENT 590G: Special Topics: Molecular Entomology.  
Cr. 1-3. Repeatable. Alt. F., offered even-numbered years.  
Prereq: 15 credits in biological sciences.

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.

Cr. 1-3. Repeatable.

Courses for graduate students:

ENT 600: Seminar
Cr. 1. F.S.S.
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.