# ENTO - ENTOMOLOGY (ENTO)

**ENTO 201 General Entomology**
**Credits 3. 2 Lecture Hours. 2 Lab Hours.**
Survey of the major classes of arthropods with special emphasis on species of economic or biological importance; general insect anatomy, physiology, metamorphosis and classification; survey of the biologies of insect orders and major families using common injurious and beneficial species to relate material to production agriculture and the urban environment.

**ENTO 208 Veterinary Entomology**
**Credits 2. 2 Lecture Hours.**
Insects and their relatives causation of economic loss, impacts to well-being and transmission of disease pathogens to domestic and companion animals and wildlife as well as health and well-being of humans through occupational or recreational exposure; insect biology, economic importance and principles and methods of prevention and control.
**Prerequisite:** Co-enrollment in ENTO 209.

**ENTO 209 Veterinary Entomology Laboratory**
**Credit 1. 2 Lab Hours.**
Insects and their relatives causation of economic loss, impacts to well-being and transmission of disease pathogens to domestic and companion animals and wildlife, as well as health and well-being of humans through occupational or recreational exposure; laboratory emphasizes identification of major arthropod pests, use of microscopy and dissection equipment.
**Prerequisite:** Concurrent enrollment with ENTO 208.

**ENTO 210 Global Public Health Entomology**
**Credits 3. 3 Lecture Hours.**
Impacts of insects and insect-borne diseases on public health and well-being around the globe; insect biology, bloodfeeding, and transmission of human diseases; role of insect borne diseases on human history, socio-economic development, and public health infrastructure.
**Prerequisite:** Freshman or sophomore classification or approval of instructor.

**ENTO 285 Directed Studies**
**Credits 0 to 4. 0 to 4 Other Hours.**
Directed individual study in entomology.
**Prerequisites:** Freshman or sophomore classification; approval of instructor and department head.

**ENTO 289 Special Topics in...**
**Credits 1 to 4. 1 to 4 Lecture Hours.**
Selected topics in an identified area of entomology. May be repeated for credit.
**Prerequisite:** Approval of instructor.

**ENTO 291 Research**
**Credits 0 to 4. 0 to 4 Other Hours.**
Research conducted under the direction of faculty member in entomology. May be repeated 2 times for credit.
**Prerequisites:** Freshman or sophomore classification and approval of instructor.

**ENTO 300/WFSC 300 Field Studies**
**Credits 3. 3 Other Hours.**
Integration of principles of animal and plant ecology with environmental factors to characterize wildlife populations; intensive analysis of specific areas will emphasize either the development of a wildlife management plan or a general vertebrate natural history survey.
**Prerequisite:** Prior approval of instructor and concurrent enrollment in WFSC 450/ENTO 450 and WFSC 451/ENTO 451.
**Cross Listing:** WFSC 300/ENTO 300.

**ENTO 301 Biodiversity and Biology of Insects**
**Credits 4. 3 Lecture Hours. 3 Lab Hours.**
Introduction to orders and most important families of insects; order-level morphology and family-level natural history; collection of insects identified to family level provides introduction to collection methods and specimen preparation.
**Prerequisites:** ENTO 201, or ENTO 208 and ENTO 209; BIOL 111 and BIOL 112; junior or senior classification or approval of instructor.

**ENTO 305 Evolution of Insect Structure**
**Credits 3. 2 Lecture Hours. 3 Lab Hours.**
External morphology of insects; evolution of form and function.
**Prerequisite:** 6 hours of biological sciences.

**ENTO 306 Insect Physiology**
**Credits 3. 2 Lecture Hours. 3 Lab Hours.**
Physiology of insects; structure and function of internal organ systems and their role in insect success.
**Prerequisite:** ENTO 201 or ENTO 208; ENTO 209; BIOL 111 and BIOL 112; CHEM 101, CHEM 111, CHEM 102 and CHEM 112.

**ENTO 320 Honey Bee Biology**
**Credits 3. 3 Lecture Hours.**
Introduction of honey bee biology and beekeeping practices to science and non-science majors; honey bees as the model insect to introduce general principles of biology and entomology.
**Prerequisite:** Junior or senior classification or approval of instructor.

**ENTO 321 Beekeeping**
**Credit 1. 3 Lab Hours.**
Basic Knowledge and techniques used in apiculture; tools and knowledge needed to keep bees responsibly and productively.
**Prerequisites:** ENTO 320 or concurrent enrollment, junior or senior classification or approval of instructor.

**ENTO 322 Insects and Human Society**
**Credits 3. 3 Lecture Hours.**
Emphasis on the role insects have played in the development of human cultures; aspects include health, food production and storage, art, music and architecture; overview of historic, present day, and future roles insects will have on environmental movements (green societies), and in underdeveloped, developing and developed societies.
**Prerequisite:** Junior or senior classification.

**ENTO 401 Principles of Integrated Pest Management**
**Credits 3. 2 Lecture Hours. 3 Lab Hours.**
Integrated pest management (IPM) concepts, principles, development and application; IPM constitutes a series of pest control tactics and strategies toward more sustainable agriculture, natural resources, and urban and rural health and well-being.
**Prerequisite:** ENTO 201 or ENTO 208; ENTO 209.

**ENTO 402 Field-Crop Insects**
**Credits 3. 2 Lecture Hours. 3 Lab Hours.**
Application of management strategies for insect/mite pests of small grains, corn, cotton, rice, sorghum, stored products and sunflower; nature and symptoms of damage, life history and habits of common pests. Laboratory consists of pest and pest damage identification supported by field trips.
**Prerequisites:** ENTO 201, or ENTO 208 and ENTO 209.

**ENTO 403 Urban Entomology**
**Credits 3. 2 Lecture Hours. 3 Lab Hours.**
Biology, economic importance and control strategies for arthropod pests commonly invading households and commercial structures in urban environments; laboratory consists of urban pest identification and special presentations and demonstrations covering topics related to urban pest problems and their control. Offered in 2011-2012 academic year and alternating years thereafter.
**Prerequisites:** ENTO 201, or ENTO 208 and ENTO 209, or approval of instructor.

**ENTO 423 Medical Entomology**
**Credits 3. 2 Lecture Hours. 3 Lab Hours.**
Biologies, disease relationships, and control of insects and other arthropods parasitic on or in humans; aspect of the fields of clinical and preventative medicine; survey, collection and taxonomy of medically-important arthropods in laboratory sessions.
**Prerequisites:** BIOL 111; junior or senior classification or approval of instructor.

**ENTO 424 Insect Ecology**
**Credits 3. 2 Lecture Hours. 3 Lab Hours.**
Provides basic ecological background with an applied interpretation, emphasizing influences of insect populations and communities on ecosystem processes that influence landscape structure, function and change.
**Prerequisites:** ENTO 201 or ENTO 208; ENTO 209; BIOL 111; junior or senior classification or approval of instructor.

**ENTO 425 Disease Ecology**
**Credits 3. 3 Lecture Hours.**
Ecological interactions that influence the distribution and abundance of pathogens, vectors, and hosts ultimately determine the spread of disease; impacts of urbanization, climate change, and other human influenced environmental changes on disease dynamics; integration of disease ecology into pathogen and vector monitoring and comprehensive strategies to reduce disease occurrence.
**Prerequisite:** ENTO 208, ENTO 209 and ENTO 423; junior or senior classification, or approval of instructor.

**ENTO 426/VIBS 426 Methods in Vector-Borne Disease Ecology**
**Credits 3. 1 Lecture Hour. 5 Lab Hours.**
Methodological understanding of how vector-borne diseases are studied in the field and laboratory; hands-on exploration of the ecology disease systems in a one health framework; concepts of design, execution and presentation of research projects; outdoor field work and bio-safety level 2 laboratory.
**Prerequisites:** Junior or senior classification and approval of instructor.
**Cross Listing:** VIBS 426/ENTO 426.

**ENTO 428 Insect Biotechnology**
**Credits 3. 3 Lecture Hours.**
Applications of genetic engineering and biotechnology; specific problems dealing with insects and control of insect pests.
**Prerequisites:** ENTO 429 or concurrent enrollment; GENE 301, GENE 315, or GENE 320/BIMS 320; junior or senior classification or approval of instructor.

**ENTO 429 Insect Biotechnology Laboratory**
**Credit 1. 3 Lab Hours.**
Basic technical experience in insect molecular biology and biotechnology, including genomic DNA isolation, PCR, cloning, sequencing and gene manipulation techniques; focus on insect applications for improvement of human health and agriculture.
**Prerequisites:** ENTO 428 or concurrent enrollment; junior or senior classification or approval of instructor.

**ENTO 431/FIVS 431 The Science of Forensic Entomology**
**Credits 3. 3 Lecture Hours.**
Explores the science, methodology and technology employed to gather, preserve and present information about insects and other arthropods in such a manner that this information can be used in courts of law as evidence and testimony to help resolve issues of a criminal or civil nature.
**Prerequisite:** ENTO 432/FIVS 432 or concurrent enrollment; junior or senior classification or approval of instructor.
**Cross Listing:** FIVS 431/ENTO 431.

**ENTO 432/FIVS 432 Applied Forensic Entomology**
**Credit 1. 3 Lab Hours.**
Laboratory-based offering practical experience using scientific information, methodology, technology, and legal procedures inherent to the field of forensic entomology; emphasis on collecting, preserving, and identifying information as evidence and expert witness testimony in courts of law.
**Prerequisites:** Grade of C or better in ENTO 431/FIVS 431 or concurrent enrollment; junior or senior classification or approval of instructor.
**Cross Listing:** FIVS 432/ENTO 432.

**ENTO 435 Case Studies in Problem Solving**
**Credits 3. 3 Lecture Hours.**
Development of reasoning strategies by examining a variety of case studies, science and scientific methods; solving real-world problems as part of an investigative team.
**Prerequisite:** ENTO 201, or ENTO 208 and ENTO 209; ENTO 482; senior classification or approval of instructor.

**ENTO 450/WFSC 450 Caribbean Conservation**
**Credits 2. 6 Lab Hours.**
Provide experience in and appreciation for diverse tropical habitats and the problems associated with conserving these habitats; design and conduct individual research projects on topics of their choice with approval from the instructors on project design and feasibility.
**Prerequisites:** Concurrent enrollment in ENTO 300/WFSC 300 and ENTO 451/WFSC 451; junior or senior classification.
**Cross Listing:** WFSC 450/ENTO 450.

**ENTO 451/WFSC 451 Caribbean Research Seminar**
**Credit 1. 1 Other Hour.**
Document research activities; keep a journal of activities and research methods during study abroad trips.
**Prerequisites:** Concurrent enrollment in ENTO 300/WFSC 300 and ENTO 450/WFSC 450; junior or senior classification.
**Cross Listing:** WFSC 451/ENTO 451.

**ENTO 481 Seminar**
**Credit 1. 1 Lecture Hour.**
Report of original investigations, current literature and special features of entomology.
**Prerequisites:** ENTO 201, or ENTO 208 and ENTO 209; junior or senior classification.

**ENTO 482 Occupational and Professional Development**
**Credits 2. 2 Lecture Hours.**
Organized instruction in written and oral communication; acquaint students with private and public-sector companies and agencies as well as leading professionals from these firms to reinforce academic instruction and prepare students for the transition to employment, graduate and professional schools.
**Prerequisite:** ENTO 201, or ENTO 208 and ENTO 209; or approval of instructor.

**ENTO 484 Professional Internship**
**Credits 0 to 4. 0 to 4 Other Hours.**
Independent study and supervised field experience related to a professional area of interest in entomology. May be taken two times for credit.
**Prerequisite:** ENTO 201, or ENTO 208 and ENTO 209; junior or senior classification or approval of instructor.

**ENTO 485 Directed Studies**
**Credits 0 to 4. 0 to 4 Other Hours.**
Individual problems.
**Prerequisites:** ENTO 201, or ENTO 208 and ENTO 209; junior or senior classification; approval of instructor and department head.

**ENTO 489 Special Topics in...**
**Credits 1 to 4. 0 to 4 Lecture Hours. 0 to 4 Lab Hours.**
Selected topics in an identified area of entomology. May be repeated for credit.
**Prerequisite:** Approval of instructor.

**ENTO 491 Research**
**Credits 0 to 4. 0 to 4 Other Hours.**
Faculty supervised research in entomology. May be taken two times for credit. Registration in multiple sections of this course are possible within a given semester provided that the per semester credit hour limit is not exceeded.
**Prerequisites:** Junior or senior classification or approval of instructor.