ENTOMOLOGY

Graduate students have the option of obtaining their degree in the specific academic department of their major professor.

Graduate Area of Concentration

Graduate students pursuing an entomology area of concentration have the opportunity to study and conduct research within a number of graduate programs across the university in the Departments of Horticulture, Crop and Soil Science, Fisheries and Wildlife, and Forest Ecosystems and Society. Graduate students obtain their degree within the academic department of their major professor.

Entomologists continue to be at the forefront of basic and applied research in molecular biology, ecology, evolutionary biology, biodiversity, and pest management. The modern fields of physiology, ecology and systematics have their origins in research originally undertaken with insects, and entomologists help lead these disciplines today. Given the unique importance of insects in biodiversity and ecosystem processes, their roles in crop production and public health, and their value as model organisms for the exploration of basic scientific questions, there is demand for graduates who have acquired entomological expertise.

The Entomology Program is a component of the Agricultural Experiment Station, which has many research facilities for students and staff, including farms, greenhouses, an aquatic insect laboratory, and a forest insect research laboratory. In addition to OSU faculty, state and federal entomologists stationed across the state are available for consultation in their fields of specialization. The Oregon State Arthropod Collection has nearly 3,000,000 specimens of insects and mites and is a recognized center for research in insect systematics and biodiversity.

Undergraduate Programs

Minor

- Entomology (http://catalog.oregonstate.edu/college-departments/agricultural-sciences/entomology/entomology-minor/)

Graduate Programs

Major

- Entomology (http://catalog.oregonstate.edu/college-departments/agricultural-sciences/entomology/entomology-ma-ms-phd/)

Minor

- Entomology (http://catalog.oregonstate.edu/college-departments/agricultural-sciences/entomology/entomology-graduate-minor/)

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Faculty

Botany and Plant Pathology McEvoy
Crop and Soil Science Drees, Reitz, Rao, Rondon
Environmental and Molecular Toxicology Jepson

Fisher and Wildlife DeBano, Wooster
Forest Ecosystems and Society Ross
Horticulture Choi, Hooven, Lambrinos, Langellotto-Rhodaback, Lee, Miller, Rosetta, Sagili, Shearer, Walton, Wiman
Zoology Giebultowicz, Lytle, Maddison, Marshall

ENT 101, INTRODUCTION TO CROP, SOIL, AND INSECT SCIENCE, 1 Credit

Introduces students with interests in crop, soil, and insect sciences to educational and professional opportunities in these disciplines. Speakers will discuss opportunities in research and academia as well as in the applied professional job market. CROSSLISTED as CROP 101/ENT 101/SOIL 101.
Equivalent to: CROP 101, HORT 101, SOIL 101
Available via Ecampus

ENT 300, *PLAGUES, PESTS, AND POLITICS, 3 Credits

Integration and interaction of agricultural and public health aspects of entomology in society and history. CROSSLISTED as ENT 300/HORT 330. (Bacc Core Course)
Attributes: CSST – Core, Synthesis, Science/Technology/Society
Equivalent to: BI 300, HORT 330
Available via Ecampus

ENT 311, INTRODUCTION TO INSECT PEST MANAGEMENT, 4 Credits

Identification, biology and management of injurious and beneficial insects. Concurrent laboratory is designed to provide hands-on experience with identification of insect groups of relevance to agricultural cropping systems. Lec/lab.
Equivalent to: CSS 311
Recommended: Entomology course work or one year college biology.
Available via Ecampus

ENT 322, HONEY BEE BIOLOGY AND BEEKEEPING, 3 Credits

In this introduction to the fascinating honey bee and its biology, honey bees are used as model organisms to illustrate general principles of biology, entomology, and sociobiology. Students will learn the basics of beekeeping, have an opportunity to manipulate honey bee colonies, and gain hands-on experience, prevailing winter weather permitting.
Available via Ecampus

ENT 331, POLLINATORS IN PERIL, 3 Credits

Pollinators, human influences on pollination systems, and the potential consequences of pollinator decline. An introduction to the skills needed to investigate media reports and multidisciplinary scientific research. Effects of pesticides, habitat fragmentation, climate change, invasive species, pests, pathogens, and other threats to pollinators in critical natural and agricultural systems around the world. CROSSLISTED as ENT 331/HORT 331.
Equivalent to: HORT 331
Recommended: Completion of a Baccalaureate Core biological science course
Available via Ecampus
ENT 401, RESEARCH, 1-16 Credits
Work on approved problems carried on in the library, laboratory or field. 
This course is repeatable for 16 credits.

ENT 403, THESIS, 1-16 Credits
This course is repeatable for 16 credits.

ENT 405, READING AND CONFERENCE, 1-16 Credits
Reading and discussions on special topics.
This course is repeatable for 16 credits.

ENT 407, SEMINAR, 1-2 Credits
Graded P/N.
This course is repeatable for 16 credits.

ENT 410, INTERNSHIP, 1-16 Credits
This course is repeatable for 16 credits.

ENT 420, INSECT ECOLOGY, 3 Credits
Insect ecology, evolution, and management. Biophysical ecology; foraging and feeding; life cycles; population dynamics, regulation, and control; species interactions including herbivore-plant, predator-prey, parasite-host, competition, and mutualism; diversity, food web structure, agricultural ecology, exercises merge models, experiments, and sampling. Offered on even years.
Recommended: BI 370

ENT 440, ISSUES IN INSECT TOXICOLOGY, 3 Credits
Introduction to concepts and mechanisms associated with molecular toxicology as it relates to insects, including interactions with naturally occurring and synthetic compounds. Overview of current research in insect toxicology including resistance to pesticides, protection of non-target species, and use of insects as model organisms. Discussion of laboratory and field approaches and potential strategies to address issues in insect toxicology.
Recommended: Background in basic chemistry and biology
Available via Ecampus

ENT 444, INSECT AGROECOLOGY, 3 Credits
Agroecology incorporates ecological concepts and principles to the design and management of sustainable agricultural systems. Topics include: the role of insects in sustainable agricultural systems; application of the principles of insect ecology to better manage insect pests and maximize crop yield; conserving beneficial insects and other natural resources in agroecosystems and the surrounding landscape. CROSSLISTED as ENT 444/HORT 444 and ENT 544/HORT 544.
Equivalent to: HORT 444
Recommended: General background or previous course work in entomology.

ENT 499, SPECIAL TOPICS, 1-6 Credits
Equivalent to: FW 499
This course is repeatable for 6 credits.

ENT 501, RESEARCH, 1-16 Credits
Work on approved problems carried on in the library, laboratory or field. 
This course is repeatable for 16 credits.

ENT 503, THESIS, 1-16 Credits
This course is repeatable for 999 credits.

ENT 505, READING AND CONFERENCE, 1-16 Credits
Reading and discussions on special topics.
This course is repeatable for 16 credits.

ENT 507, SEMINAR, 1-2 Credits
Graded P/N.
This course is repeatable for 16 credits.

ENT 508, WORKSHOP, 1-16 Credits
This course is repeatable for 16 credits.

ENT 509, PRACTICUM IN TEACHING, 1-3 Credits
Developing skills and competence in teaching under staff supervision; organization and presentation of instructional material by assisting in laboratory, recitation, and lectures. CROSSLISTED as CROP 509/ENT 509/ PBG 509/SOIL 509.
Equivalent to: CROP 509, PBG 509, SOIL 509
This course is repeatable for 9 credits.

ENT 510, INTERNSHIP, 1-16 Credits
This course is repeatable for 16 credits.

ENT 518, CURRENT TOPICS IN ENTOMOLOGY, 2 Credits
A core course of the Horticulture graduate program. Provides an advanced understanding of entomology and its relationship to other disciplines through critical analysis of the scientific literature. Practice synthesizing information and presenting findings to peers. Instructors, topics, and specific learning objectives vary from term to term.
CROSSLISTED as ENT 518/HORT 518.
Equivalent to: HORT 518
This course is repeatable for 12 credits.

ENT 520, INSECT ECOLOGY, 3 Credits
Insect ecology, evolution, and management. Biophysical ecology; foraging and feeding; life cycles; population dynamics, regulation, and control; species interactions including herbivore-plant, predator-prey, parasite-host, competition, and mutualism; diversity, food web structure, agricultural ecology, exercises merge models, experiments, and sampling. Offered even years.
Recommended: BI 370 and Z 365

ENT 523, ORGANIC BEEKEEPING AND HONEY PRODUCTION, 3 Credits
In this introduction to the fascinating honey bee and its biology, honey bees are used as model organisms to illustrate general principles of biology, entomology, and sociobiology. Learn the basics of beekeeping, organic beekeeping and honey production. Examine the culture and certification of organic and conventional systems of honey production.
Available via Ecampus
**ENT 540, ISSUES IN INSECT TOXICOLOGY, 3 Credits**
Introduction to concepts and mechanisms associated with molecular toxicology as it relates to insects, including interactions with naturally occurring and synthetic compounds. Overview of current research in insect toxicology including resistance to pesticides, protection of non-target species, and use of insects as model organisms. Discussion of laboratory and field approaches and potential strategies to address issues in insect toxicology.
*Recommended:* Background in basic chemistry and biology
*Available via Ecampus*

**ENT 542, PRINCIPLES OF INTEGRATED PEST MANAGEMENT: SYSTEMS DESIGN, 4 Credits**
Principles of integrated pest management design focusing on the use of systems analysis as a means to integrate management tactics, environmental and biological monitoring, pest control models, and implementation elements into a cohesive whole. Introduction to integrated pest management on websites. Students will design a hypothetical crop-pest management system. Lec/lab.
*Equivalent to:* HORT 542
*Recommended:* ENT 311

**ENT 544, INSECT AGROECOLOGY, 3 Credits**
Agroecology incorporates ecological concepts and principles to the design and management of sustainable agricultural systems. Topics include: the role of insects in sustainable agricultural systems; application of the principles of insect ecology to better manage insect pests and maximize crop yield; conserving beneficial insects and other natural resources in agroecosystems and the surrounding landscape. CROSSLISTED as ENT 444/HORT 444 and ENT 544/HORT 544.
*Equivalent to:* HORT 544
*Recommended:* General background or previous course work in entomology.

**ENT 548, INTEGRATED PEST MANAGEMENT IN ORGANIC SYSTEMS, 3 Credits**
Prevention, detection, and management of pests and diseases in organic plant production systems. Content includes activities that require students to expand their experience of pest management in their locality by incorporating new and emergent technology for monitoring, diagnosing and managing insects, pathogen, and weed pests and their impacts on crops. Discussions will be centered on the logistics and potential of new technologies in pest management, incorporating biological, ecological and sustainable agriculture concepts.
*Recommended:* ENT 311 with minimum grade of D-
*Available via Ecampus*

**ENT 601, RESEARCH, 1-16 Credits**
This course is repeatable for 16 credits.

**ENT 603, THESIS, 1-16 Credits**
This course is repeatable for 99 credits.

**ENT 605, READING AND CONFERENCE, 1-16 Credits**
This course is repeatable for 16 credits.

**ENT 607, SEMINAR, 1-16 Credits**
This course is repeatable for 16 credits.

**ENT 609, PRACTICUM IN TEACHING, 1-3 Credits**
Developing skills and competence in teaching under staff supervision; organization and presentation of instructional material by assisting in laboratory, recitation, and lectures. Graded P/N.
*Equivalent to:* CROP 609, PBG 609, SOIL 609
*This course is repeatable for 9 credits.*

**ENT 699, SPECIAL TOPICS, 1-16 Credits**
Important topics of current interest in the areas of systematics, insect physiology and toxicology, ecology and behavior, and pest management. Course content and title will change with each offering.
*This course is repeatable for 16 credits.*