

# Entomology and Plant Pathology (ENPL)

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Entomology and Plant Pathology Website (<http://entomology.uark.edu/>)

The Department of Entomology and Plant Pathology offers three undergraduate minors:

- Entomology
- Plant Pathology
- As well as an interdisciplinary Pest Management (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/daledumperscollegeofagriculturalfoodandlifesciences/pestmanagementpmgt/>) minor.

Full degree programs are offered only at the graduate level.

Entomology is the branch of science concerned with the study of insects and related organisms. It involves studies of their biology, structure, identification, economic significance, and population management. The major emphasis of the curriculum is understanding insect biology and applying that knowledge in an integrated approach to insect-pest management.

Plant pathology is the study of interrelationships of plants with the abiotic and biotic agents that affect plant health and productivity. The goal of the discipline is to minimize the impact of plant diseases on agricultural production and human health. Scientific training within the department focuses on the nature, cause, and management of plant diseases.

Undergraduate students interested in graduate work in entomology or plant pathology should pursue one of the minors here or the Pest Management minor.

## Minor in Entomology (ENTO-M)

A student planning to minor in Entomology must notify the ENTO program adviser for consultation and more detailed information. The Entomology Minor consists of 15 semester hours of courses in Entomology, including the following:

### Core Requirements

ENTO 30103	Introduction to Entomology	3
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### Core Electives

Students must complete at least 12 credits of additional ENTO courses selected with the approval of the Entomology program adviser. Examples of available electives include:

ENTO 10203	Insects, Science and Society
ENTO 10201	Insects, Science and Society Lab
ENTO 30101	Introduction to Insect Identification Lab
ENTO 40103	Insect Behavior and Chemical Ecology
ENTO 40204	Insect Diversity and Taxonomy
ENTO 40403	Honey Bee Biology and Beekeeping
ENTO 40503	Insect Ecology
ENTO 41203	Insect Pest Management

ENTO 41303 Advanced Applied Entomology

ENTO 4000V Special Problems

ENTO 4100V Special Topics

**Total Hours** 15

## Minor in Plant Pathology (PLPA-M)

A student planning to minor in plant pathology should notify the Department of Entomology and Plant Pathology and consult an adviser. A minor in Plant Pathology consists of 19 hours to include the following:

PLPA 30003 & PLPA 30001	Principles of Plant Pathology and Principles of Plant Pathology Laboratory	4
PLPA 4000V	Research	3
PLPA 42203	Plant Disease Control	3
BIOL 42373	Genomics and Bioinformatics	3
BIOL 43573	Ecological Genetics/Genomics	3
PLPA 43303	Biotechnology in Agriculture	3

**Total Hours** 19

## Graduate Faculty

**Adams, Reichard**, Ph.D. (University of Texas-Arlington), B.S. (Stephen F. Austin State University), Assistant Professor, 2023.

**Bateman, Nick**, Ph.D. (Mississippi State University), B.S. (University of Arkansas-Monticello), Associate Professor, 2016, 2022.

**Bluhm, Burt H.**, Ph.D., M.S. (Purdue University), B.S. (University of Oklahoma), Associate Professor, 2008, 2014.

**Clay, Natalie**, Ph.D. (University of Oklahoma Norman), Associate Professor, 2023.

**Correll, Jim**, Ph.D., M.S. (University of California-Berkeley), B.S. (Pennsylvania State University), Distinguished Professor, 1989, 2018.

**Dowling, Ashley Patrick Gregg**, Ph.D. (University of Michigan-Ann Arbor), B.S. (University of Arizona), Professor, 2008, 2019.

**Egan, Martin J.**, Ph.D., B.Sc. (University of Exeter, United Kingdom), Associate Professor, 2016, 2022.

**Faske, Travis**, Ph.D. (Texas A&M University), M.S. (Oklahoma State University), B.S. (Tarleton State University), Professor, 2015, 2020.

**Goggin, Fiona**, Ph.D. (University of California-Davis), B.S. (Cornell University), Professor, 2001, 2011.

**Jones, Austin**, Ph.D. (University of Arkansas), Instructor, 2021.

**Joshi, Neelendra**, Ph.D. (Pennsylvania State University), Associate Professor, 2015, 2020.

**Kariyat, Rupesh**, Ph.D. (Pennsylvania State University), M.S. (University of Wyoming), B.S. (Kerala Agricultural University), Associate Professor, 2021.

**Korth, Ken L.**, Ph.D. (North Carolina State University), B.S. (University of Nebraska), Professor, 1999, 2009.

**Kud, Joanna "Asia"**, Ph.D. (University of Idaho), M.S. (Maria Curie-Skłodowska University), Assistant Professor, 2022.

**Loftin, Kelly M.**, Ph.D. (New Mexico State University), M.S. (University of Arkansas), B.S. (Arkansas Tech), Professor, 1998, 2010.

**McDermott, Emily**, Ph.D. (University of California-Riverside), B.S. (The Ohio State University), Assistant Professor, 2020.

**Nicolli, Camila**, Ph.D. (Universidade Federal de Lavras, Brazil), Assistant Professor, 2023.

**Rojas, Clemencia**, Ph.D. (Cornell University), M.S. (Purdue University), B.S. (Universidad de Los Andes, Colombia), Assistant Professor, 2015.

**Rupe, John C.**, Ph.D., M.S. (University of Kentucky), B.S. (Colorado State University), University Professor, 1984, 2019.

**Spradley, Ples, B.A.** (University of Arkansas at Little Rock), Associate Professor, 2004.

**Spurlock, Terry, Ph.D.** (University of Arkansas), Extension Associate Professor, 2015.

**Studebaker, Glenn, Ph.D., M.S.** (University of Arkansas), B.S. (Missouri Southern State University), Associate Professor, 1993.

**Szalanski, Allen Lawrence, Ph.D.** (University of Nebraska-Lincoln), M.S. (Kansas State University), B.S. (University of Manitoba), Professor, 2001, 2011.

**Thrash, Ben, Ph.D.** (Mississippi State University), M.A., B.S.A. (University of Arkansas), Assistant Professor, 2018.

**Tzanetakis, Ioannis E., Ph.D.** (Oregon State University), M.S., B.S. (Agricultural University of Athens, Greece), Professor, 2008, 2016.

**Zawislak, Jon, Ph.D., M.S., B.S.** (University of Arkansas), Assistant Professor, 2022.

## Entomology Courses

### ENTO 10201. Insects, Science and Society Lab. 1 Hour.

To educate students on the importance of insects in biology and science, human and animal medicine, ecosystems, agriculture, pollination, genetic research, the arts, and human culture and history. The lab will be a hands-on approach to reinforcing entomological concepts addressed in lecture. Corequisite: ENTO 10203. (Typically offered: Fall and Spring)

### ENTO 10203. Insects, Science and Society. 3 Hours.

To educate students on the importance of insects in biology and science, human and animal medicine, ecosystems, agriculture, pollination, genetic research, the arts, and human culture and history. Corequisite: ENTO 10201. (Typically offered: Spring)

### ENTO 30101. Introduction to Insect Identification Lab. 1 Hour.

Introductory lab course on insect identification, collection, and curation techniques, primarily designed as an intensive add-on to ENTO 30103 for students wanting a more in-depth examination of insect diversity. Insect collection required. Course includes field trips. Students are encouraged to contact instructor before enrolling. Pre- or Corequisite: ENTO 30103. (Typically offered: Fall)

### ENTO 30103. Introduction to Entomology. 3 Hours.

Fundamentals of insect biology including structure and function, development, ecology, behavior, plant feeding and disease transmission. Lecture 3 hours/week. Students interested in a more intensive examination of insects, including collection, curation, and identification techniques, should sign up for the separate one credit lab ENTO 30101. Students are strongly encouraged to take BIOL 10103 before registering for this course. (Typically offered: Fall)

### ENTO 4000V. Special Problems. 1-4 Hour.

Special problems. (Typically offered: Fall, Spring and Summer) May be repeated for up to 8 hours of degree credit.

### ENTO 40103. Insect Behavior and Chemical Ecology. 3 Hours.

Basic concepts in insect senses and patterns of behavioral responses to various environmental stimuli. Previous knowledge of basic entomology is helpful, but not required. Lecture 2 hours, laboratory/discussion 2 hours per week. Corequisite: Lab component (Typically offered: Spring Even Years)

This course is cross-listed with BIOL 4017, ENTO 4010.

### ENTO 40204. Insect Diversity and Taxonomy. 4 Hours.

Principles and practices of insect classification and identification with emphasis on adult insects. Corequisite: Lab component. Prerequisite: ENTO 30103. (Typically offered: Fall Even Years)

This course is cross-listed with BIOL 4027, ENTO 4020.

### ENTO 40403. Honey Bee Biology and Beekeeping. 3 Hours.

To acquaint the student with social insects in general and honey bees in particular, to promote an interest in beekeeping as a hobby, occupation, and/or science, to give the students the basic knowledge of how to keep honey bees, and to increase awareness of the contribution that pollinating insects make to agriculture, natural ecosystems, and human life. Lecture 3 hours, plus beekeeping field day. (Typically offered: Spring)

### ENTO 40503. Insect Ecology. 3 Hours.

To develop understanding of important ecological concepts through study of dynamic relationships among insects and their environment. To become familiar with the literature of insect ecology, and interpretation and critique of ecological research. Previous knowledge of basic entomology and/or ecology will be assumed. Corequisite: Lab component. (Typically offered: Fall Even Years)

This course is cross-listed with BIOL 4057, ENTO 4050.

### ENTO 40603. Medical and Veterinary Entomology. 3 Hours.

Medical and veterinary entomology is the study of how insects and other arthropods affect human and animal health. Many insects, along with ticks and mites, require blood in order to develop their eggs, and in the process of feeding can transmit harmful pathogens. Even without disease, their bites can be painful and annoying. Other insects inject toxic venoms with their bites and stings that can cause allergic reactions or death. Some even lay eggs and grow inside of their live hosts. This class will cover the different groups medically important arthropods and the ways in which they cause direct or indirect injury to humans and animals. We will cover the disease cycles of relevant vector-borne pathogens, as well as surveillance and control. Students will learn to identify medically important arthropods and gain exposure to techniques and tools used in the field of medical and veterinary entomology. Corequisite: Lab component. (Typically offered: Spring)

### ENTO 4100V. Special Topics. 1-3 Hour.

Topics not covered in other courses or a more intensive study of specific topics in entomology. (Typically offered: Irregular) May be repeated for degree credit.

### ENTO 41203. Insect Pest Management. 3 Hours.

Study of principles and concept of insect pest management. Areas covered include survey of arthropod pests and damage, population dynamics, damage thresholds, physiological units, prediction models, surveillance, arthropod sampling, strategies and tactics utilized to maintain pest populations below economic injury levels. Prerequisite: ENTO 30103. (Typically offered: Spring Odd Years)

### ENTO 41303. Advanced Applied Entomology. 3 Hours.

Biology and ecology of major arthropod pests as model applied management systems. Activities include independent study, literature review and group discussions. Knowledge of general entomology and pest management is required. Self-learning modules are available. Lecture 2 hours/week and direct self-study laboratory 2 hours/week. Corequisite: Lab component. Prerequisite: ENTO 30103. (Typically offered: Spring Even Years)

## Plant Pathology Courses

### PLPA 30001. Principles of Plant Pathology Laboratory. 1 Hour.

Lab course in examination of the causes and symptoms of plant disease and the genetics of plant disease. Physiology, and ecology of host-pathogen interactions. Spread of disease and principles of disease control. Pre- or Corequisite: PLPA 30003 or BIOL 30173. (Typically offered: Fall)

### PLPA 30003. Principles of Plant Pathology. 3 Hours.

Examination of the causes and symptoms of plant disease and the genetics of plant disease. Physiology, and ecology of host-pathogen interactions. Spread of disease and principles of disease control. (Typically offered: Fall)

### PLPA 4000V. Research. 1-6 Hour.

Original investigations of assigned problems in plant pathology. Prerequisite: PLPA 30003. (Typically offered: Fall, Spring and Summer)

**PLPA 41203. Bacterial Lifestyles. 3 Hours.**

The course will introduce students to bacteria as prokaryotic organisms, different from eukaryotes such as plants and animals. Model microbial systems will be studied in more detail to identify unique strategies that bacteria employ to thrive in their respective environment, whether they are causing diseases or establishing beneficial interactions with animal or plants or coexisting with other microorganisms in diverse ecological environments. The course will also cover special adaptations that bacteria have evolved to adapt to harsh environments and how these adaptations can be harnessed to control pollution. Prerequisite: (BIOL 20003 and BIOL 20001) or BIOL 31273. (Typically offered: Spring Odd Years)

**PLPA 42203. Plant Disease Control. 3 Hours.**

Principles, methods and mechanics of plant disease control. Emphasis is given to the integration of control measures and epidemiology of plant diseases. Lecture 3 hours per week. Prerequisite: PLPA 30003. (Typically offered: Fall)

**PLPA 43303. Biotechnology in Agriculture. 3 Hours.**

Discussion of the techniques, applications, and issues of biotechnology as it is being used in modern agriculture. Coverage includes the basics of molecular biology, production of transgenic plants and animals, and new applications in the agricultural, food, and medical marketplace. Lecture and discussion, 3 hours per week. (Typically offered: Fall)

This course is cross-listed with BIOL 4337, PLPA 4330.

**PLPA 4620V. Internship. 1-6 Hour.**

Supervised practical work experience in pest management to develop and demonstrate professional competence. A maximum of 6 hours credit per semester or summer session is permitted. Faculty approval of projects proposal prior to enrollment, and written or oral reports are required. (Typically offered: Irregular) May be repeated for up to 9 hours of degree credit.