

ENTOMOLOGY AND NEMATOTOLOGY | BIOSECURITY

Entomology and nematology are biological sciences dealing with insects, mites, ticks, spiders, and nematodes.

About this Program

- **College:** Agricultural and Life Sciences
- **Degree:** Bachelor of Science
- **Credits for Degree:** 120
- **Specializations:** Basic Science | Biosecurity | Ecotourism | Preprofessional | Urban Pest Management
- **Additional Information**
- **Related Entomology and Nematology Programs**

To graduate with this major, students must complete all university, college, and major requirements.

The Department of Entomology and Nematology offers the major. Faculty within the department cover areas in systematics, ecology, medically significant arthropods, social insects, insect management, physiology, behavior, evolution and natural ecosystem cycles. The department has a long tradition of sending students to medical, veterinary and dental school. Graduate school prospects are also high and employment options using entomology are versatile.

Related Entomology and Nematology Programs

- Combined Degree
- Entomology and Nematology minor

Biosecurity

In this specialization, students receive instruction in biosecurity emphasizing areas of entomology, nematology, plant pathology and weed science. The curriculum focuses on the study of invasive species, including their detection, identification, exclusion, regulation and management. Emphasis is placed on understanding the impacts nonindigenous species can have on financial, legal, political and social systems.

Students will find employment in agribusiness or government agencies concerned with biosecurity, agro-terrorism, pest management, crop production and environmental protection. This specialization is excellent preparation for graduate study in the University of Florida Plant Medicine Program (PMP), a professional doctoral program leading to the Doctor of Plant Medicine (D.P.M.).

Except with undergraduate coordinator permission, students are expected to complete the following courses on campus; other ENY courses can be taken online:

Code	Title	Credits
ENY 3005	Principles of Entomology	2
ENY 3005L	Principles of Entomology Laboratory	1
ENY 4161	Insect Classification	3
ENY 4660	Medical and Veterinary Entomology	2

ENY 4660L	Medical and Veterinary Entomology Laboratory	1
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Minimum grades of C are required for all core courses. Students must maintain a 2.0 cumulative GPA for specialization electives with no individual course grade less than C-.

Critical Tracking

Critical Tracking records each student's progress in courses that are required for entry to each major. Please note the critical-tracking requirements below on a per-semester basis.

Equivalent critical-tracking courses as determined by the State of Florida Common Course Prerequisites may be used for transfer students.

Semester 1

- Complete 2 of 5 critical-tracking courses, excluding labs: BSC 2010/BSC 2010L, BSC 2011/BSC 2011L, CHM 2045/CHM 2045L, CHM 2046/CHM 2046L, MAC 1147
- 2.5 GPA on math and science courses
- 2.0 UF GPA required

Semester 2

- Complete 1 additional critical-tracking course, excluding labs
- 2.5 GPA on math and science courses
- 2.0 UF GPA required

Semester 3

- Complete 1 additional critical-tracking course, excluding labs
- 2.5 GPA on math and science courses
- 2.0 UF GPA required

Semester 4

- Complete 1 additional critical-tracking course, excluding labs
- 2.5 GPA on math and science courses
- 2.0 UF GPA required

Semester 5

- Complete all critical-tracking courses, including labs
- 2.5 GPA on math and science courses
- 2.0 UF GPA required

Model Semester Plan

To remain on track, students must complete the appropriate critical-tracking courses, which appear in bold. These courses must be completed by the terms as listed above in the Critical Tracking criteria.

This semester plan represents an example progression through the major. Actual courses and course order may be different depending on the student's academic record and scheduling availability of courses. Prerequisites still apply.

Course	Title	Credits
Semester One		
BSC 2010 & 2010L	Integrated Principles of Biology 1 and Integrated Principles of Biology Laboratory 1 (Critical Tracking ; State Core Gen Ed Biological Sciences)	4

Select one:		3
ENC 1101	Expository and Argumentative Writing	
ENC 2210	Technical Writing	
ENC 3254	Professional Writing in the Discipline (State Core Gen Ed Composition; Writing Requirement)	
IUF 1000	What is the Good Life (Gen Ed Humanities)	3
MAC 1147	Precalculus Algebra and Trigonometry (Critical Tracking; State Core Gen Ed Mathematics)	4
	Credits	14

Semester Two

Select one:		3-4
AEB 2014	Economic Issues, Food and You (Gen Ed Social and Behavioral Sciences)	
ECO 2023	Principles of Microeconomics (Gen Ed Social and Behavioral Sciences)	
BSC 2011 & 2011L	Integrated Principles of Biology 2 and Integrated Principles of Biology Laboratory 2 (Critical Tracking; Gen Ed Biological Sciences)	4
STA 2023	Introduction to Statistics 1 (Gen Ed Mathematics)	3
State Core Gen Ed Humanities		3
State Core Gen Ed Social and Behavioral Sciences		3
	Credits	16-17

Semester Three

AEC 3030C	Effective Oral Communication	3
CHM 2045 & 2045L	General Chemistry 1 and General Chemistry 1 Laboratory (Critical Tracking; Gen Ed Physical Sciences)	4
PCB 2441	Biological Invaders	3
Select one:		3-4
PHY 2004 & 2004L	Applied Physics 1 and Laboratory for Applied Physics 1 (Gen Ed Physical Sciences)	
PHY 2020	Introduction to Principles of Physics (Gen Ed Physical Sciences)	
Elective (Gen Ed International or Diversity)		3
	Credits	16-17

Semester Four

AEC 3033C	Research and Business Writing in Agricultural and Life Sciences	3
CHM 2046 & 2046L	General Chemistry 2 and General Chemistry 2 Laboratory (Critical Tracking; Gen Ed Physical Sciences)	4
Gen Ed Composition; Writing Requirement		3
Select one:		3
Gen Ed Humanities		
Gen Ed Social and Behavioral Sciences		
	Credits	13

Semester Five

ALS 4162	Consequences of Biological Invasions	3
ENY 3005 & 3005L	Principles of Entomology and Principles of Entomology Laboratory (Gen Ed Biological Sciences; must be taken on campus)	3
PLP 3002C	Fundamentals of Plant Pathology	4
PLS 3004C	Principles of Plant Science	3
or HOS 3020	or Principles of Horticulture Crop Production	

Approved elective		3
	Credits	16

Semester Six

ENY 4660 & 4660L	Medical and Veterinary Entomology and Medical and Veterinary Entomology Laboratory (must be taken on campus)	3
NEM 3002	Principles of Nematology	3
Select one:		3
PLP 3103C	Control of Plant Diseases	
IPM 3022	Fundamentals of Pest Management	
ENY 3510C	Turf and Ornamental Entomology	
Approved elective		3
Law and policy elective		3
	Credits	15

Summer After Semester Six

Approved internship		3
	Credits	3
Semester Seven		
ALS 4161	Exotic Species and Biosecurity Issues	3
ENY 4161	Insect Classification (must be taken on campus)	3
PLS 4601C	Principles of Weed Science	3
Approved elective		3
Geographic information systems elective		3
	Credits	15

Semester Eight

ALS 4163	Challenges in Plant Resource Protection	3
Approved electives		6
Approved internship		3
	Credits	12
	Total Credits	120

Approved Electives**Law and Policy Elective: Select One**

Code	Title	Credits
AEB 4085	Agricultural Risk Management and the Law	3
AEB 4123	Agricultural and Natural Resource Law	3
AEB 4242	International Trade Policy in Agriculture	3
ECO 3704	International Trade	4
FNR 4660	Natural Resource Policy and Economics	3

Geographic Information Systems Elective: Select One

Code	Title	Credits
FOR 3434C	Forest Resources Information Systems	3
URP 4273	Survey of Planning Information Systems	3

Approved Electives: 15 Credits**Other courses require advisor approval**

Code	Title	Credits
AGR 3303	Genetics	3
AGR 4214C	Applied Field Crop Production	3
ALS 3133	Agricultural and Environmental Quality	3
ALS 4161	Exotic Species and Biosecurity Issues	3
ALS 4162	Consequences of Biological Invasions	3
AOM 3333	Pesticide Application Techniques	3
BCH 3023	Elementary Organic and Biological Chemistry	3
BOT 3151C	Local Flora of North Florida	3
BOT 3503 & 3503L	Physiology and Molecular Biology of Plants and Physiology and Molecular Biology of Plants Laboratory	5

ENY 3222C	Biology and Identification of Urban Pests	3
ENY 3228	Urban Vertebrate Pest Management	2
ENY 3510C	Turf and Ornamental Entomology	3
ENY 3563	Introduction to Tropical Entomology	3
ENY 4210	Insects and Wildlife	3
ENY 4455C	Social Insects	3
ENY 4573	Beekeeping	3
ENY 4701	Forensic Entomology	3
ENY 4905	Problems in Entomology	1-5
FOR 3004	Forests, Conservation and People	3
FRC 3212	Introduction to Citrus Culture and Production	3
HOS 3305	Introduction to Plant Molecular Biology	3
HOS 4304	Horticultural Physiology	3
IPM 3022	Fundamentals of Pest Management	3
MCB 2000 & 2000L	Microbiology and Microbiology Laboratory	4
ORH 3513C	Environmental Plant Identification and Use	3
ORH 4242C	Arboriculture ¹	4
PCB 3063	Genetics	4
PCB 3601C	Plant Ecology	3
PHY 2005 & 2005L	Applied Physics 2 and Laboratory for Applied Physics 2	4
PLP 3103C	Control of Plant Diseases	3
PLP 4222C	Introduction to Plant Virology ²	3
PLP 4242C	Introduction to Plant Bacteriology ³	3
PLP 4653C	Basic Fungal Biology	4
PMA 4570C	Field Techniques in IPM ⁴	2
PUR 3000	Principles of Public Relations	3
SWS 3022 & 3022L	Introduction to Soils in the Environment and Introduction to Soils in the Environment Laboratory	4
SWS 4116	Environmental Nutrient Management ⁵	3
WIS 2552	Biodiversity Conservation: Global Perspectives	3
WIS 3401	Wildlife Ecology and Management	3
ZOO 4205C	Invertebrate Biodiversity	4
ZOO 4307C	Vertebrate Biodiversity	4

Academic Learning Compact

The entomology and nematology curriculum develops an excellent knowledge base and an understanding of concepts and fundamental practices. Through formal courses, laboratory experimentation and individual research experience, students will learn how the scientific method is applied to the biological world at the whole organism and population levels. Students will learn to evaluate hypotheses, to acquire and interpret experimental data, and to communicate results effectively in appropriate styles. Special focus will be information on insect identification, morphology, behavior, physiology and ecology.

Before Graduating Students Must

- Pass the entomology and nematology competency exam, which will be tailored to individual specializations.
- Complete requirements for the baccalaureate degree, as determined by faculty.

Students in the Major Will Learn to Student Learning Outcomes (SLOs)

Content

1. Identify insects and describe and explain insect morphology, physiology and behavior.

Critical Thinking

2. Acquire, analyze and synthesize entomological information.

Communication

3. Communicate proficiently in the sciences in oral and written forms.

Curriculum Map

I = Introduced; R = Reinforced; A = Assessed

Courses	SLO 1	SLO 2	SLO 3
AEC 3030C			A
AEC 3033C			A
ENY 3005	I, A	I, A	I
ENY 3005L	A	A	
ENY 4161	R, A		R, A

Assessment Types

- Assignments
- Exams
- Course grades
- Research collection