ENTOMOLOGY AND NEMATOLOGY | 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:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>ENY 3005</td>
<td>Principles of Entomology</td>
<td>2</td>
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<tr>
<td>ENY 3005L</td>
<td>Principles of Entomology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>ENY 4161</td>
<td>Insect Classification</td>
<td>3</td>
</tr>
<tr>
<td>ENY 4660</td>
<td>Medical and Veterinary Entomology</td>
<td>2</td>
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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:
- 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.
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 4
and Integrated Principles of Biology Laboratory 2 (Critical Tracking; Gen Ed Biological Sciences)

STA 2023 Introduction to Statistics 1 (Gen Ed Mathematics) 3

BCH 3023 State Core Gen Ed Humanities 3
BSC 3023 State Core Gen Ed Social and Behavioral Sciences 3

Semester Three
Credits 16-17
- AEC 3033C Effective Oral Communication 3
- CHM 2045 General Chemistry 1 4
& 2045L and General Chemistry 1 Laboratory (Critical Tracking; Gen Ed Physical Sciences)

PCB 2441 Biological Invaders 3
Select one: 3-4
- PHY 2004 Applied Physics 1 and Laboratory for Applied Physics 1 (Gen Ed Physical Sciences)
- PHY 2020 Introduction to Principles of Physics (Gen Ed Physical Sciences)

Eclectic (Gen Ed International or Diversity) 3

Semester Four
Credits 16-17
- AEC 3033C Research and Business Writing in Agricultural and Life Sciences 3
- CHM 2046 General Chemistry 2 4
& 2046L and General Chemistry 2 Laboratory (Critical Tracking; Gen Ed Physical Sciences)

Gen Ed Composition; Writing Requirement 3
Select one: 3
- Gen Ed Humanities
- Gen Ed Social and Behavioral Sciences

Semester Five
Credits 13
- ALS 4162 Consequences of Biological Invasions 3
- ALS 3005 and Principles of Entomology Laboratory (Gen Ed Biological Sciences; must be taken on campus) 3
& 3005L
- PLP 3002C Fundamentals of Plant Pathology 4
- PLS 3004C Principles of Plant Science or Principles of Horticulture Crop Production 3
or HOS 3020

Approved Electives
Credits 3

Semester Six
Credits 16
- ENY 4660 Medical and Veterinary Entomology 3
& 4660L and Medical and Veterinary Entomology Laboratory (must be taken on campus) 3
- NEM 3002 Principles of Nematology 3
Select one: 3
- PLC 3013C Control of Plant Diseases 3
- IPM 3022 Fundamentals of Pest Management 3
- ENY 3510C Turf and Ornamental Entomology

Approved Elective Credits 3
- Law and policy elective

Summer After Semester Six
Credits 15
- Approved internship 3

Semester Seven
Credits 3
- 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

Semester Eight
Credits 12
- ALS 4163 Challenges in Plant Resource Protection 3
- Approved electives 6
- Approved internship 3

Total Credits 120

Approved Electives

Law and Policy Elective: Select One

Geographic Information Systems Elective: Select One

Other courses require advisor approval

Approved Electives: 15 Credits
### 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

$I = Introduced; R = Reinforced; A = Assessed$

<table>
<thead>
<tr>
<th>Courses</th>
<th>SLO 1</th>
<th>SLO 2</th>
<th>SLO 3</th>
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</thead>
<tbody>
<tr>
<td>AEC 3030C</td>
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<td>A</td>
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</tr>
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<td>R, A</td>
<td></td>
<td>R, A</td>
</tr>
</tbody>
</table>

### Assessment Types

- Assignments
- Exams
- Course grades
- Research collection

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### 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.