# PREPROFESSIONAL

Entomology and Nematology are interdisciplinary biological sciences that focus on the study of insects, mites, ticks, spiders, nematodes, and related organisms. These creatures can have both helpful and harmful effects on food security, the environment, and the health of humans and other animals. Entomology and Nematology students study ecology, behavior, physiology, evolution, systematics, biodiversity conservation, arthropods of medical and veterinary significance, the management of insect/nematode pests, and invertebrates as models in many different fields of research, including biomedical sciences, bioinspired engineering, and biotechnology.

## About this Program

- **College:** Agricultural and Life Sciences (http://catalog.ufl.edu/UGRD/colleges-schools/UGAGL/)
- **Degree:** Bachelor of Science
- **Specializations:** Biological Science of Insects (http://catalog.ufl.edu/UGRD/colleges-schools/UGAGL/ENY_BS/ENY_BS02/) | Preprofessional (p. 1) | Urban Pest Management (http://catalog.ufl.edu/UGRD/colleges-schools/UGAGL/ENY_BS/ENY_BS07/)
- **Credits for Degree:** 120

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

### Department Information

The Entomology and Nematology Department prepares students for exciting careers in a large variety of fields. Entomology and Nematology majors can enter medical, veterinary, or dental school; progress to graduate study in entomology, nematology, or any of several other biological sciences such as ecology and evolutionary biology, horticulture, or zoology; or move directly to a variety of careers (including industry and government positions) in fields such as pest management, agriculture, ecotourism, biosecurity, science policy, and education
Website (https://entnemdept.ufl.edu/)

#### CONTACT

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Map (http://campusmap.ufl.edu/#/index/0970)

#### Curriculum

- Beekeeping Certificate
- Combination Degrees
- Entomology and Nematology
- Entomology and Nematology Minor
- Entomology and Nematology Minor UF Online
- Landscape Pest Management Certificate
- Medical Entomology Certificate
- Pest Control Technology Certificate
- Urban Pest Management Certificate

The Department of Entomology and Nematology offers the major. Faculty within the department specialize in a diverse array of fields, including systematics and evolutionary biology, ecology, behavior, physiology, medical and veterinary entomology, genomics and molecular biology, apiculture, agricultural and urban pest management, biodiversity conservation, and more. The department has a long tradition of sending students to graduate school and professional programs (including medical, veterinary, and dental school). Given the widespread importance of insects and nematodes, there are many employment opportunities for students with a degree in Entomology & Nematology.

## Preprofessional

The Preprofessional specialization prepares students for professional programs in medicine, veterinary medicine, dentistry, optometry, osteopathy, and more. It is designed to help students meet the most common prerequisites for medical and veterinary school, while also providing a foundation in insect science (including medical and veterinary entomology). Students in this specialization are encouraged to meet with a pre-health advisor as well as their major advisor in Entomology & Nematology.
More Info (https://www.advising.ufl.edu/pre-health/)

## Specialization Coursework

Below is a summary of the critical tracking courses and core and elective requirements. In addition to these courses, students must also complete all university- and college-level requirements (e.g., General Education coursework).

A grade of C or above is required for all core and elective courses. Students must also maintain a 2.0 cumulative GPA.

### Critical Tracking Courses

| Code | Title | Credits |
|---|---|---|
| BSC 2010<br>& 2010L | Integrated Principles of Biology 1<br>and Integrated Principles of Biology Laboratory 1 | 4 |
| BSC 2011<br>& 2011L | Integrated Principles of Biology 2<br>and Integrated Principles of Biology Laboratory 2 | 4 |
| CHM 2045<br>& 2045L | General Chemistry 1<br>and General Chemistry 1 Laboratory | 4 |
| CHM 2046<br>& 2046L | General Chemistry 2<br>and General Chemistry 2 Laboratory | 4 |
| MAC 2311 | Analytic Geometry and Calculus 1 | 4 |

### Core Requirements

| Code | Title | Credits |
|---|---|---|
| CHM 2210 | Organic Chemistry 1 | 3 |
| CHM 2211<br>& 2211L | Organic Chemistry 2<br>and Organic Chemistry Laboratory | 5 |
| ENY 2890C | Insect Research CURE | 3 |
| ENY 3005<br>& 3005L | Principles of Entomology<br>and Principles of Entomology Laboratory | 4 |
| ENY 4161 | Insect Classification | 3 |
| ENY 4660<br>& 4660L | Medical and Veterinary Entomology<br>and Medical and Veterinary Entomology Laboratory | 3 |
| MCB 3020<br>& 3020L | Basic Biology of Microorganisms<br>and Laboratory for Basic Biology of Microorganisms | 4 |
| NEM 3002 | Principles of Nematology | 3 |
| PHY 2053<br>& 2053L | Physics 1<br>and Laboratory for Physics 1 | 5 |
| PHY 2054<br>& 2054L | Physics 2<br>and Laboratory for Physics 2 | 5 |
| STA 2023 | Introduction to Statistics 1 | 3 |
| Approved Biochemistry course [1] | | 3 |
| Approved Evolution course [1] | | 3 |
| Approved Genetics course [1] | | 3 |
| Approved Insect Ecology or Behavior course [1] | | 3 |
| Approved Vertebrate Anatomy or Physiology course [1] | | 4 |

### Elective Requirements

15 credits of 3000- or 4000-level courses in Entomology & Nematology or other biological sciences[1], subject to approval by an academic advisor in the Entomology & Nematology program.

[1] See an academic advisor in for a list of courses that can be used to satisfy this requirement. Students are encouraged to use their elective credits to take any other courses that are required for admission to their intended professional program. Pre-med students may wish to take biomedical science courses as electives. Pre-vet students are encouraged to take courses in animal science or veterinary science as electives.

## Critical Tracking

Critical Tracking records each student's progress in courses that are required for progress toward 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 (https://cpm.flvc.org/advance-search/) 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 2311

- 2.5 GPA required for all critical tracking courses
- 2.0 UF GPA required

## Semester 2

- Complete 1 additional critical-tracking course, excluding labs
- 2.5 GPA on required for all critical tracking courses
- 2.0 UF GPA required

## Semester 3

- Complete 1 additional critical-tracking course, excluding labs
- 2.5 GPA required for all critical tracking courses
- 2.0 UF GPA required

## Semester 4

- Complete 1 additional critical-tracking course, excluding labs
- 2.5 GPA required for all critical tracking courses
- 2.0 UF GPA required

## Semester 5

- Complete all critical-tracking courses, including labs
- 2.5 GPA required for all critical tracking courses
- 2.0 upper division GPA required
- 2.0 UF GPA required

## Semester 6

- Complete either the Evolution or Genetics requirement: PCB 4674, ENY 4455C, AGR 3303, or PCB 3063
- 2.0 upper division GPA required
- 2.0 UF GPA required

## Semester 7

- Complete either CHM 2210 or PHY 2053
- 2.0 upper division GPA required
- 2.0 UF GPA required

## Semester 8

- Complete either CHM 2211 or PHY 2054
- 2.0 upper division GPA required
- 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 |
| MAC 2311 | Analytic Geometry and Calculus 1 (**Critical Tracking**; State Core Gen Ed Mathematics) | 4 |
| State Core Gen Ed Composition (University Writing Requirement: 6000 Words) | | 3 |
| State Core Gen Ed Humanities (http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext) | | 3 |
| | **Credits** | **14** |

| | | |
|---|---|---|
| **Semester Two** | | |
| Quest 1 (Gen Ed Humanities; Gen Ed Diversity Focus; University Writing Requirement: 4000 words) | | 3 |
| 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 |
| CALS Economics Requirement; select one: | | 3-4 |
| AEB 2014 | Economic Issues, Food and You | |
| AEB 3103 | Principles of Food and Resource Economics | |
| ECO 2013 | Principles of Macroeconomics | |
| ECO 2023 | Principles of Microeconomics | |
| State Core Gen Ed Social and Behavioral Sciences (http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext) | | 3 |
| | **Credits** | **16-17** |
| **Semester Three** | | |
| CHM 2045 & 2045L | General Chemistry 1 and General Chemistry 1 Laboratory (**Critical Tracking**; Gen Ed Physical Sciences) | 4 |
| ENY 3005 & 3005L | Principles of Entomology and Principles of Entomology Laboratory (Gen Ed Biological Sciences) | 4 |
| CALS Advanced Oral Communication course; select one: | | 3 |
| AEC 3030C | Effective Oral Communication | |
| SPC 2608 | Introduction to Public Speaking | |
| Gen Ed Composition (University Writing Requirement: 6000 Words) | | 3 |
| | **Credits** | **14** |
| **Semester Four** | | |
| Quest 2 (Gen Ed Social and Behavioral Sciences; Gen Ed International Focus; University Writing Requirement: 2000 words) | | 3 |
| CHM 2046 & 2046L | General Chemistry 2 and General Chemistry 2 Laboratory (**Critical Tracking**) | 4 |
| ENY 2890C | Insect Research CURE | 3 |
| NEM 3002 | Principles of Nematology | 3 |
| Genetics course; select one: | | 3-4 |
| AGR 3303 | Genetics (**Critical Tracking**) | |
| PCB 3063 | Genetics (**Critical Tracking**) | |
| | **Credits** | **16-17** |
| **Semester Five** | | |
| ENY 4161 | Insect Classification | 3 |
| CHM 2210 | Organic Chemistry 1 (**Critical Tracking**) | 3 |
| Vertebrate Anatomy or Physiology course | | 4 |
| APK 2100C | Applied Human Anatomy with Laboratory | |
| APK 2105C | Applied Human Physiology with Laboratory | |
| ZOO 3713C | Functional Vertebrate Anatomy | |
| ZOO 4307C | Vertebrate Biodiversity | |
| Approved electives [1] | | 6 |
| | **Credits** | **16** |
| **Semester Six** | | |
| CHM 2211 & 2211L | Organic Chemistry 2 and Organic Chemistry Laboratory (**Critical Tracking**) | 5 |
| Evolution course; select one: | | 3-4 |
| ENY 4455C | Social Insects (**Critical Tracking**) | |
| PCB 4674 | Evolution (**Critical Tracking**) | |
| CALS Advanced Written Communication Course; University Writing Requirement: 6000 words; select one: | | 3 |
| AEC 3033C | Research and Business Writing in Agricultural and Life Sciences | |
| ENC 2210 | Technical Writing | |
| ENC 3254 | Professional Writing in the Discipline | |
| Approved elective [1] | | 3 |
| | **Credits** | **14-15** |
| **Semester Seven** | | |
| ENY 4660 & 4660L | Medical and Veterinary Entomology and Medical and Veterinary Entomology Laboratory | 3 |
| PHY 2053 & 2053L | Physics 1 and Laboratory for Physics 1 (**Critical Tracking**) | 5 |

| | | |
|---|---|---|
| Biochemistry course; select one: | | 4 |
| BCH 3025 | Fundamentals of Biochemistry | |
| BCH 4024 | Introduction to Biochemistry and Molecular Biology | |
| CHM 3217 | Organic Chemistry/Biochemistry 1 | |
| Approved elective [1] | | 3 |
| | **Credits** | **15** |
| **Semester Eight** | | |
| PHY 2054 | Physics 2 | 5 |
| & 2054L | and Laboratory for Physics 2 (**Critical Tracking**) | |
| MCB 3020 | Basic Biology of Microorganisms | 4 |
| & 3020L | and Laboratory for Basic Biology of Microorganisms | |
| Insect Ecology or Behavior course; select one: | | 3 |
| ALS 3153 | Agricultural Ecology | |
| ENY 3451C | Insect Behavior | |
| ENY 4201 | Insect Ecology | |
| ENY 4202 | Ecology of Vector-Borne Disease | |
| ENY 4208 | Ecology and Conservation of Pollinators | |
| ENY 4453 | Behavioral Ecology and Systematics | |
| ENY 4455C | Social Insects | |
| ENY 4571 | Honey Bee Biology | |
| ENY 4573 | Beekeeping I | |
| Approved elective [1] | | 3 |
| | **Credits** | **15** |
| | **Total Credits** | **120** |

[1] 3000- or 4000-level courses in Entomology & Nematology or other biological sciences, subject to approval by an academic advisor in the Entomology & Nematology program.

## 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