



# TROPICAL ENTOMOLOGY

**ENY 3563/5566**

**Summer A 2021**

**Credits: 3**

## **PRINCIPAL INSTRUCTORS**

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## **LECTURERS**

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## **COURSE OBJECTIVES**

This course provides the student an overview of the ecology, diversity, and agricultural and veterinary importance of insects in the tropics. Insects are the most diverse multicellular organisms in the tropics. Their roles in nature have diversified into most habitats where they are fungivores, herbivores, necrophages, coprophages, saprophages, parasitoids, parasites, and predators. They provide critical ecosystem services such as decomposition, nutrient recycling, pollination, and biological control. Tropical insects are used as bioindicators of ecosystem health and conservation needs.

In this course, the student will learn:

1. Basic concepts about the tropics and tropical ecosystems
2. Faunistic richness of insects in the tropics
3. Seasonality and survival in tropical environments
4. Factors contributing to decline in insect diversity
5. Termites in tropical environments
6. Ants in tropical environments
7. Insect conservation
8. Tropical insect-plant interactions
9. Chemical ecology of tropical insects
10. Pollination of tropical plants by insects
11. Mimicry in tropical insects
12. Entomophagy in the tropics
13. Economic importance of tropical insects in tropical crops
14. Medical and veterinary importance of tropical insects

## **COURSE FORMAT**

The narrated PowerPoint presentations form a series of 14 **LECTURES** covering 14 basic themes listed above. All presentations are available in Canvas through UF eLearning ([elearning.ufl.edu](http://elearning.ufl.edu)). There are two **READING ASSIGNMENTS** to provide a broader perspective of the course. Participation in **DISCUSSIONS** (via Zoom, 9:30am MWF) is a critical component of this course. Live interaction with the instructors and other students is a very important part of the learning experience. A Zoom link is provided in the course's eLearning site. The lectures and readings should be viewed before the discussion session (see Course Outline), so that all students are able to answer questions posited during the discussion. Every lecture has five discussion questions associated with it. Students should also prepare any questions they have from viewing the presentations and present them in the appropriate discussion. Students should be willing to share opinions, perceptions, and experiences. Each session is recorded, and a link to each recording is provided.

## **COURSE SCHEDULE**

### **May 10: First Day of Class**

- Participant introductions, course overview, syllabus, student expectations and initial knowledge of tropical entomology.

**May 12: Ecological Diversity and the Tropics**

- Discussion of Lecture 1 with Dr. Cave

**May 14: Faunistic Richness of Insects in the Tropics**

- Discussion of Lecture 2 with Dr. Miller.

**May 17: Seasonality and Survival in Tropical Environments**

- Discussion of Lecture 3 with Dr. Miller.
- Deadline for approval of Featured Creature (Dr. Cave).

**May 19: Factors contributing to decline in insect diversity**

- Discussion of Lecture 4 and assigned reading #1 with Dr. Morawo
- Deadline for approval of oral presentation topic (Dr. Cave).

**May 21: Termites in the Tropics**

- Discussion of Lecture 5 with Dr. Scheffrahn.

**May 24: Ants in Tropical Ecosystems**

- Discussion of Lecture 6 with Dr. Diepenbrock.

**May 26: Insect Conservation**

- Discussion of Lecture 7 with Dr. Daniels.

**May 28: Midterm Exam**

- Exam open from 7:00am to 11:59pm.
- Synopses of Lectures 01–07 due.

**May 31: Memorial Day Holiday****June 2: Tropical Insect-Plant Associations**

- Discussion of Lecture 8 with Dr. Cave.

**June 4: Chemical ecology of tropical insects**

- Discussion of Lecture 9 and assigned reading #2 with Dr. Morawo.

**June 7: Pollinators of Tropical Plants**

- Discussion of Lecture 10 with Dr. Ellis & Dr. Mallinger.
- Featured Creature draft due (Dr. Cave).

**June 9: Mimicry and Entomophagy**

- Discussion of Lecture 11 with Dr. Cave.

**June 11: Insects in Tropical Agriculture I**

- Discussion of Lecture 12 with Dr. Cave.

### June 14: Insects in Tropical Agriculture II

- Discussion of Lecture 13 with Dr. Cave

### June 16: Medical and Veterinary Importance of Tropical Insects

- Discussion of Lecture 14 with Dr. Mathias.
- Featured Creature final version due (Dr. Cave).
- Graduate student presentation abstract due (Dr. Cave).

### June 18: Last Day of Class

- Graduate student presentations.
- Synopses of Lectures 08–14 due.
- Final exam open from noon June 18 to midnight June 19.

## STUDENT PERFORMANCE ASSESSMENTS

The **EXAMS** are on-line. The midterm exam (**May 28, 2021**) will cover Lectures 1-7 and reading assignment #1. The final exam (**June 18-19, 2021**) will only cover Lectures 8-14 and reading assignment #2. The format of the exam is in two parts. Part 1 has 35 multiple-choice questions (1 point each). Part 2 has 14 short answer questions (5 points each). There will be a time limit for each part. Each student is expected to write thoughtful short responses to three of each lecture's short answer questions. Each question's response should be academically well written in your own words, proofread for spelling and grammar, and be minimally 3-4 sentences in length. Copy/paste from any source is not acceptable.

Lecture **SYNOPSIS** are brief syntheses of the information presented in each lecture's PPT(s), assigned reading (if applicable), and discussion. You should write a well-written, coherent overview (not an outline) of the principal concepts and topics addressed to indicate you thoroughly studied the material and understand it. The synopsis must not exceed one page with text (font size 12) single-spaced and 1" margins on all sides. **Include your name on each synopsis.** Each lecture's synopsis should be delivered through the course's e-Learning site. Synopses of Lectures 01–07 are due at noon on the day of the midterm exam (May 28); synopses of Lectures 08–14 are due at noon on the first day of the final exam (June 18). **You need not wait until the deadline to submit a synopsis; they may be delivered individually at any time before the due date.** Each synopsis is worth 7.5 points. You may miss two synopses without penalty. There is no extra credit for submitting more than 12 synopses, but if more than 12 synopses are delivered, then the highest 12 scores will be calculated in the final grade. A synopsis delivered after the due date will be penalized 2 points for each calendar day it is late. **Proper grammar, correct spelling, and clear writing will be considered in the evaluation of these synopses.**

Each student is required to develop a "FEATURED CREATURE" (FC) fact sheet on an insect of the tropics that is not currently published or planned for FC ([entnemdept.ifas.ufl.edu/creatures/](http://entnemdept.ifas.ufl.edu/creatures/)). Students must upload their first draft and final submission through the course's eLearning site. **All deadlines are midnight of the due date.** Late submissions will be penalized 10% on the individual component grade for each 24 hours after **each** deadline.

The Tropical Featured Creature article grade will be determined through a multi-step evaluation process that includes topic approval, submission of a first draft, return of review evaluation, and submission of a final draft. Please be sure to read the following to ensure that you are meeting the deadlines. Visit [entomology.ifas.ufl.edu/creatures/FC\\_format.pdf](http://entomology.ifas.ufl.edu/creatures/FC_format.pdf) for the FC-specific guidelines.

1. Students must contact Dr. Cave to receive approval of their creature **BEFORE** proceeding. **The topic must be chosen and approved by May 17, 2021.** (10 pts.)
2. To be eligible for full credit, the first draft must be submitted through the course's site in UF eLearning by **June 7, 2021.** The draft is expected to be a nearly complete document with significant material provided in each category. Dr. Cave or one of the other instructors in that area of specialization will review and score these drafts for effort, form, and overall progress. (40 pts.). Reviewer comments will be provided no later than June 11, 2021.
3. Final drafts of FC fact sheets are due on **June 16, 2021.** You will be scored on the completeness of the overall document, thoroughness of the subject matter, incorporation of appropriate original or fully credited illustrations and/or images, incorporation (or not) of suggested revisions provided by the instructors (not all suggestions must be incorporated, but you must justify when recommendations are not incorporated), and proper grammar and punctuation. (50 pts.)

The **GRADUATE STUDENT ORAL PRESENTATION** is a synthesis of information from literature and/or experience on a topic directly related to any aspect of tropical entomology. The topic of the presentation will be decided by mutual agreement between Dr. Cave and the graduate student. The topic of the presentation must be finalized no later than **May 19, 2021.** No two presentations may be done on the same topic, so decide on a topic and have it finalized with Dr. Cave soon. PowerPoint slides must be utilized as visual aids. A maximum 300-word abstract with a list of at least five references (not cited in abstract) and no more than eight should be delivered by **June 16, 2021.** At least three journal articles or books must be included in the list and no more than four websites; provide the complete reference of all literature cited and the title and URL for all websites cited. Use of information gathered from Wikipedia is not allowed. The presentations will be delivered to the class on **June 18, 2021.** Duration of the oral presentation shall be 15 minutes (12 mins talk; 3 mins Q&A). *The duration of oral presentation or format of delivery may be modified based on class size.* There will be a brief question and discussion period with the class immediately following each oral presentation.

It is highly recommended that Dr. Cave review your draft abstract and slides before final submission. The presentation will be scored as follows:

- Approval of topic by May 19, 2021 – 5 points
- Quality and organization of slides – 20 points
- Quality of oral delivery – 20 points
- Meaningful, thorough, and well-organized content on subject matter – 40 points
- Abstract (due June 16, 2021) – 15 points

## STUDENT LEARNING ASSESSMENT

	<u>ENY3563</u>	<u>ENY5566</u>
Two exams (105 points each)	210 pts	210 pts
Twelve lecture synopses (7.5 points each)	90 pts	90 pts
Tropical Featured Creature article	100 pts	100 pts
Oral presentation	-----	100 pts
<b>TOTAL</b>	<b>400 pts</b>	<b>500 pts</b>

**NOTE:** Students registered for ENY5566 have requirements different from those for ENY3563 students.

## GRADES

A = 100-93%	B+ = 89-87%	C+ = 79-77%	D+ = 69-67%	
A- = 92-90%	B = 86-83%	C = 76-73%	D = 66-63%	E = 59-0%
	B- = 82-80%	C- = 72-70%	D- = 62-60%	

For information on current UF policies for assigning grade points, see  
<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

## ASSIGNED READING

### **Reading #1 (Lecture 4):**

Didham RK, Basset Y, Collins CM, Leather SR, Littlewood NA, Menz MHM, Müller J, Packer L, Saunders ME, Schönrogge K, Stewart AJA, Yanoviak SP and Hassall C (2020) Interpreting insect declines: Seven challenges and a way forward. *Insect Conservation and Diversity* 13: 103-114. DOI: 10.1111/icad.12408.

### **Reading #2 (Lecture 9):**

Vet LEM, Dicke M (1992) Ecology of infochemical use by natural enemies in a tritrophic context. *Annual Review of Entomology* 37: 141–172. DOI: 10.1146/annurev.ento.37.1.141.

## **UNIVERSITY OF FLORIDA POLICIES AND ASSISTANCE**

### **Absences and Make-Up Work**

Requirements for class attendance and make-up exams, assignments, and other work are consistent with university policies found at: [catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/](http://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/).

### **Online Course Evaluation Process**

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at [evaluations.ufl.edu](http://evaluations.ufl.edu). Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results are available to students at [evaluations.ufl.edu/results/](http://evaluations.ufl.edu/results/).

### **Academic Honesty**

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *“We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.”* You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: *“On my honor, I have neither given nor received unauthorized aid in doing this assignment.”*

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g., assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: [www.dso.ufl.edu/SCCR/honorcodes/honorcode.php](http://www.dso.ufl.edu/SCCR/honorcodes/honorcode.php).

### **Software Use:**

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

### **Campus Helping Resources**

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- University Counseling & Wellness Center, 3190 Radio Road, Tel: 352-392-1575, [www.counseling.ufl.edu/cwc/](http://www.counseling.ufl.edu/cwc/)

Counseling Services  
Groups and Workshops  
Outreach and Consultation

Self-Help Library  
Training Programs  
Community Provider Database

- ▪ Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)

### **Services for Students with Disabilities**

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services, and mediating faculty-student disability related issues. Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)

### **Distance Courses**

Each online distance learning program has a process for, and will make every attempt to resolve, student complaints within its academic and administrative departments at the program level. See [www.distance.ufl.edu/student-complaint-process](http://www.distance.ufl.edu/student-complaint-process).