

Turf and Ornamental Entomology

ENY 3510 / ENY 5516

3 credit hours

“Nature will bear the closest inspection. She invites us to lay our eye level with her smallest leaf, and take an insect view of its plain.” ~ Henry David Thoreau

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Instructor: Dr. Eileen A. Buss
Associate Professor and Extension Specialist
Entomology and Nematology Department
University of Florida/IFAS
1881 Natural Area Drive (room 3214, Steinmetz Hall)
Gainesville, FL 32611-0620
Office phone: 352-273-3976
Fax: 352-392-0190
Email: eabuss@ufl.edu

Office Hours: Because this is a web-based course, please make appointments via email or office phone. Actual insect and damage specimens are available to examine in the lab, if requested in a timely manner. If you're on campus, I encourage you to stop by.

Course Website: Lectures can be accessed in Sakai, by downloading and opening the current version of Mozilla Firefox or Chrome, and going to <https://lss.at.ufl.edu>. Students should view 2-3 narrated lectures each week to keep up with the schedule of topics, unless otherwise indicated. The student's UF Gatorlink username and password are necessary to log into the system. Tutorials are available in Sakai under "Help," if needed.

Course Communications: General questions of relevance to the whole class may be posted to the course's discussion board. Private questions may be sent to the instructor through the course management system (Sakai), or to eabuss@ufl.edu. Phone calls are also welcome. If leaving a message, indicate the best times during which you can be reached.

Required Text: Required readings (e.g., articles, book chapters) will be posted on Sakai. Students can choose to download and print these, or read them online. Graduate students have additional reading assignments.

Additional Resources: Distance students are required to purchase their own insect collection kits, but on-campus students may check out supplies from Nick Hostettler, located in the supply room/loading dock area of Steinmetz Hall. Any borrowed equipment must be returned before the end of the semester or the student will not receive a grade for the course. See the separate set of instructions for the collection for more information.

Course Description: Identification, biology, and management of common arthropod families and species inhabiting turfgrasses and popular ornamental plants in the urban environment (emphasis on the Southeastern U.S.) are discussed. Integrated pest management (IPM) (e.g., safe handling

and use of insecticides, biological and cultural control, plant resistance, etc.) is emphasized.

Prerequisite Knowledge and Skills:

- At least 1 semester of a college-level Biology course is encouraged, but not required.
- Students should be self-motivated, avoid procrastinating, and ask questions if needed.
- Students must have basic computer skills to navigate the course on Sakai.

Purpose of Course: This semester-long course was created to help current and/or future turf, ornamental plant, and tree managers learn to monitor, correctly identify, and then determine the best integrated pest management practices for use in their unique situations. It is a practical source of information that students can use in undergraduate or graduate degree programs, certificate programs, or in preparing for pesticide applicator licensing tests.

Course Goals and/or Objectives:

By the end of this course, students will be able to:

- Explain the rationale behind different IPM tactics in turf and ornamental pest management.
- Recognize arthropods in different horticulturally-important orders and families by sight and by written description.
- Differentiate arthropod signs and symptoms, and troubleshoot problems on various sites (e.g., lawns, golf courses, athletic fields, sod farms, woodlots, nurseries, greenhouses, or annual plant beds).
- Anticipate pest activity periods, evaluate turf and ornamental plant health, and create a practical management plan to solve major arthropod pest problems.

My Teaching Philosophy: Successful teaching involves presenting information in an organized and rational way so students are interested in the subject, understand the concepts, and can apply their new knowledge in everyday life. Quality teachers make their subjects real and, through their enthusiasm, personal experiences, or humor, motivate students to learn more and retain the information. Students who take this course are able to integrate different entomological specialties (e.g., insect behavior, toxicology, host-plant interactions, pest management), and see how the different facets work together to create and manage pests and grow healthier plants in the urban environment.

Course Policies:

“Attendance” Policy: You should view 2 to 3 narrated lessons each week to keep up with the scheduled quizzes and tests. Lectures can be accessed in Sakai, by opening Firefox or Chrome and going to <https://lss.at.ufl.edu>. Your UF Gatorlink username and password are needed to log into the system. Tutorials are available in Sakai under “Help.” If you are struggling through the course, please contact me so I can help. Let me know before you consider withdrawing – sometimes additional assistance or other options may exist so you can maximize your investment and still earn a passing grade.

Test Policy:

- Tests are closed-book (i.e., working with others or phone/web/textbook/note use during quizzes and tests, and copying and/or sharing test questions/answers with others, are prohibited). You are bound by the UF Honor Policy.
- Tests will be open for 60 minutes after they have been started. A quiz will be open for 15 minutes after starting it. Because students have different schedules and responsibilities, tests and quizzes will be available in Sakai for 3 days (but can only be taken once). The test will automatically open at 8:00 am the first day and close at midnight of the 3rd day.
- If the test is not finished within the time period, it will be automatically submitted. **DO NOT** try to reopen it or start a new test – it will cause Sakai problems.
- Save your answers frequently, in case of power failure or software glitches. Caution: if you login to a test/quiz and then logout, Sakai will not let you back in and the test will be graded on the work that was done. Contact the UF Computing Help Desk (352-392-4357; helpdesk@ufl.edu) to document problems, or a makeup test/quiz cannot be offered.
- A grade shown in Sakai upon submission of a test/quiz is **only** a partial score. Sakai doesn't grade short answer or essay questions. Please allow the instructor a week for grading because of her busy schedule.
- Concerns about grades can be discussed privately after the assessment period has closed.

Make-up Policy: No make-up tests or quizzes will be given, unless the student makes previous arrangements with the instructor or can document an excused absence. Unexcused absences will receive a zero. Any requests for make-ups due to technical issues **MUST** be accompanied by the UF Computing Help Desk ticket, indicating the date and time when you reported the problem. You **MUST** e-mail me within 24 hours; I can still deny giving make-ups, as previously stated.

Assignment Policy: Late assignments will not be accepted without proper documentation of an emergency or technological problem. All written assignments must be submitted through TurnItIn so both the student and instructor will see the report generated. Plan ahead...

Insect Collection: Everyone enrolled in this course must prepare a modest specimen collection. I want you to become plant inspectors, get away from the computer, see where the insects are living, and respect their diversity, stealth, and the beauty of their complicated little lives (whether the insects are “pests” or not). Instructions on the number of specimens, acceptable orders and families, how to prepare specimens, the due date, etc., will be posted in a separate file under Assignments. If you are strongly opposed to killing insects, then alternate arrangements may be possible.

To achieve the best score on the collection, follow the instructions, read the chapter on “Collecting and preserving insects” by D. J. Borror and R. E. White, and focus on Lecture 1.7. I highly recommend collecting extra specimens, practicing your pinning technique on damaged or duplicate specimens, and using the best insects in your final collection. **DO NOT** mail vials inside a specimen box that also has pinned insects, or the collection will be destroyed in transit.

Instead, place the vials (in a sealable bag) and specimen box inside another box, surround them with paper, bubble wrap, or other padding, and write FRAGILE around the outside of the box.

Featured Creature Article: **Graduate students** must write a new Featured Creature article (for examples, see: <http://entomology.ifas.ufl.edu/creatures>). You may select from a list of pests and beneficial arthropods provided by the instructor or suggest a topic and obtain approval. The format for each article must conform to the headings and type of information found in most of these Featured Creature articles (a file with instructions will be posted under Assignments).

After your topic is approved, you will upload a thorough first draft through Assignments and TurnItIn to determine its originality. I will edit and grade the draft, return it, and you must submit a complete final draft through Sakai in Assignments. Students must request permission for use of any illustrations/pictures. You may pursue publishing a high quality Featured Creature online, if the article is reviewed again by an entomology faculty member, and submitted with a resume or CV. This would occur after the semester is over and is the student's responsibility.

Netiquette / Communication Courtesies: All class members are expected to follow the rules of common courtesy in all communications, written and verbal. The file is on the course homepage and is available at <http://teach.ufl.edu/resources/syllabus-templates/>.

Course Technology: A computer/device that can view PowerPoint and pdf files, has adequate memory and speed, and meets the minimum standards for UF computer use is needed. The following website explains the University of Florida computer hardware and software policy: http://dell.techhub.ufl.edu/computer_requirement.html. The current version of Firefox (Mozilla) must be downloaded from the internet to access the course materials: <http://www.mozilla.org/en-US/firefox/new/>.

Getting Help:

For technical difficulties with E-learning in Sakai, please contact the UF Computing Help Desk (352-392-4357; helpdesk@ufl.edu). You will be issued a ticket number – print and save this!

University Policy on Accommodating Students with Disabilities: Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation before submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

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. Other resources are available at <http://www.distance.ufl.edu/getting-help>.

University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575,
(<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, 352-392-1601 (<http://www.crc.ufl.edu/>).

Should you have any complaints with your experience in this course, please visit
<http://www.distance.ufl.edu/student-complaints> to submit a complaint.

Grading Policies:

Each student will have 4 lecture exams (100 points each), an insect collection (80 points), and 10 graded quizzes (10 pts each). In addition, graduate students must complete a Featured Creature article (100 points) and participate in a case study discussion (20 points). *Total possible points for students:* for ENY3510: 580 pts; for ENY5516: 700 pts.

Grading Scale:

A	90 - 100%
B+	88 - 89%
B	80 - 87%
C+	78 - 79%
C	70 - 77%
D+	68 - 69%
D	60 - 67%
E	< 60%

The UF Grading Policy is at: <http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html>.

Course Schedule: ENY 3510 / ENY5516: Turfgrass and Ornamental Entomology

Module	Lesson	Reading	Assignment	Assessment
	Welcome to the class video 1.0 Overview of the course and syllabus	Syllabus	Complete "get to know you" form Due: 9/2/14 11:59 PM	
1. Introduction to Entomology				
	1. How insects become pests	How insects become pests; regulatory pest mgmt		
	2. External insect form and function	Insect Structure & Function, pp. 21-47		
	3. Insect physiology			Quiz 1 9/2 - 9/4
	4. How insects grow and transform			
	5. Classifying insect relatives	Pests In & Around the FL Home, pp. 187-193, 248-9, 261-262		
	6. Classifying horticulturally-important insects	List of important orders		Quiz 2 9/9 - 9/11
	7. How to collect and preserve insects	Collecting & Preserving		
2. Insects and Their Environment				
	1. Concepts of insect ecology		GRAD STUDENTS: Due by 4 pm, 9/9/14: Featured Creature topic	
	2. Insect communication			Quiz 3 9/16 - 9/18
	3. How insects select host plants	Indirect defense via tritrophic interactions		
	4. Plant defenses against insects	Managing insects with resistant plants		TEST 1 (lect. 1.1 - 2.4) 9/23 - 9/25
3. The Foundation: Integrated Pest Management				
	1. Strategies of integrated pest management	Pests In & Around the FL Home, pp. 235-237		
	2. Monitoring tools and techniques	Flor. & Nurseries, pp. 134-141; Turf sampling		
	3. Biological control	Insect Structure & Function, pp. 44-47		Quiz 4 9/30 - 10/2
	4. ID of common predators & parasitoids			
	5. Non-chemical controls of pests	Trees, stress and pests		

4. Chemical Control of Insects			
	1. History of insecticide use	Introduction to safe pesticide handling	Quiz 5 10/7 – 10/9
	2. Insecticide chemical classes & modes of action		
	3. Formulations, toxicity & spill management		
	4. “Natural” insecticides and home remedies	Graduate Students Only: Microbial Insecticides	GRAD STUDENTS: Due by 4 pm, 10/8/14: Featured Creature 1st Draft MUST be uploaded into TurnItIn - Sakai
	5. Insecticide application technologies		TEST 2 (lect. 3.1 – 4.5) 10/14 – 10/16
5. Insect Feeding Damage (aka. Feeding Guilds) on Ornamentals, Trees, and Shrubs			
	1. Insect borers: Beetles	Pests In & Around the FL Home, pp. 267-270	
	2. Other insect borers		
	3. Common defoliators	Pests In & Around the FL Home, pp. 250-262	Quiz 6 10/21 – 10/23
	4. Common leafminers	Pests In & Around the FL Home, pp. 263-264	
	5. Common gall makers	Pests In & Around the FL Home, pp. 265-266	
	6. Sucking insects: true bugs (Hemiptera) and mites	Pests In & Around the FL Home, pp. 238-249	Quiz 7 10/28 – 10/30
	7. Sucking insects: Bug-like insects (formerly Homoptera)		GRAD STUDENTS: Due by 4 pm, 10/28/14: Upload Final Featured Creature into TurnItIn - Sakai
6. Special Cases: Issues and Pests on Key Plants			
	1. Key pests in protected culture	Pests In & Around the FL Home, pp. 271-273	
	2. Key pests of palms		Quiz 8 11/4 – 11/6
	3. Key pests of conifers		
	4. Key pests of subtropical shrubs		
	5. Key pests of groundcovers, ornamental grasses, and flower beds		TEST 3 (lect. 5.1 – 6.5) 11/11 – 11/13
7. IPM in Turfgrass and Turfgrass Pests			
	1. Implementing IPM in different urban turf	Pests In & Around the	

	environments	FL Home, pp. 207-208; Insecticide reduction on lawns		
	2. Foliage feeders	Pests In & Around the FL Home, pp. 209-214		
	3. Stem and/or thatch feeders	Pests In & Around the FL Home, pp. 215-221 Graduate Students: Pgs. 271-273 in Pests In and Around the FL Home	All insect collections due in lab by 4 pm on 11/19/14	Quiz 9 11/18 – 11/20
	4. Root feeders	Pests In & Around the FL Home, pp. 222-228		
8. Other Pests and Considerations				
	1. Nuisance and vertebrate pests in turf	Pests In & Around the FL Home, pp. 287-293, 304-312		Quiz 10 12/2 – 12/4
	2. Stinging and biting pests in the landscape	Pests In & Around the FL Home, pp. 93-106, 229-232 Graduate Students Only: Pgs. 64-65, 86-90 in Caterpillars of Eastern Forests		
	3. Butterfly gardening and attracting insects into a landscape	FL Wild-flowers & butterflies		TEST 4 (lect. 7.1 – 9) 12/8 - 12/10

Final Exam: *This course has no comprehensive final exam.*

Disclaimer: This syllabus represents my current plans and objectives. As the semester progresses, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.

Holidays: 9/1, 10/17, 11/11, 11/13-21

Last day of class is 12/10/14.

Grades are due on 12/22.

Plagiarism: Plagiarism is a serious problem in academia today, especially with the ease of obtaining information from the World Wide Web. Plagiarism is defined as representing the words or ideas of another person as one's own, without attribution to the source. All words and ideas must be attributed to a source unless they are considered common knowledge (i.e., widely known by many people and found in many different sources). There are many kinds of plagiarism, as you will read on the Guide to Plagiarism website referenced below.

Plagiarism is unethical, unacceptable in science, and prohibited by the UF Student Honor Code (<http://www.dso.ufl.edu/students.php>). The consequences for plagiarism while at the University of Florida range from receiving a grade of zero for the plagiarized assignment or a failing grade for the course, to, for repeated offenses, expulsion from the university. Plagiarism after graduate training calls into question one's scientific integrity and can lead to banning of publication in journals and the loss of jobs/careers.

In some countries, it is an acceptable practice to write in a manner that faculty members at the University of Florida consider to be plagiarism. Students studying in our university and with plans to publish their research in the English language need to know what plagiarism is and how to avoid it.

Students who plagiarize will be caught and consequences will be applied. I check all written assignments using an anti-plagiarism software called Turnitin® (<http://www.at.ufl.edu/~turnitin/about.html>). Students who plagiarize will receive a grade of zero on the assignment. The second instance of plagiarism in the course will result in an automatic failing grade in the course.

For further information and examples of plagiarism, I strongly suggest that you please read the George Smathers' Library Guide to Plagiarism at <http://www.uflib.ufl.edu/msl/07b/students.html>.

Please understand that our purpose in bringing to your attention the matter of plagiarism is to help train you to be ethical scientists, not to impugn your character.

University Policy on Academic Misconduct: In 1995 the UF student body enacted an honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

In adopting this honor code, the students of the University of Florida recognize that academic honesty and integrity are fundamental values of the university community. Students who enroll at the university commit to holding themselves and their peers to the high standard of honor required by the honor code. Any individual who becomes aware of a violation of the honor code is bound by honor to take corrective action. The quality of a University of Florida education is dependent upon community acceptance and enforcement of the honor code.

The Honor 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.

On all work submitted for credit by students at the university, the following pledge is either required or implied: **"On my honor, I have neither given nor received unauthorized aid in doing this assignment."**

The university requires all members of its community to be honest in all endeavors. A fundamental principle is that the whole process of learning and pursuit of knowledge is diminished by cheating, plagiarism and other acts of academic dishonesty. In addition, every dishonest act in the academic environment affects other students adversely, from the skewing of the grading curve to giving unfair advantage for honors or for professional or graduate school admission. Therefore, the university will take severe action against dishonest students. Similarly, measures will be taken against faculty, staff and administrators who practice dishonest or demeaning behavior.

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean or Student Honor Court. (Source: 2012-2013 Undergraduate Catalog)

It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by the instructor. This policy will be vigorously upheld at all times in this course.

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.