

Economic Entomology ENTM 4020 Spring Semester, 2012

Credit Hours: 4: (Lecture: MWF 11-11:50 am, Rouse 112; Lab: MWF 2-3:50 pm, FS 354)

Prerequisite: BIOL 1030 (Organismal Biology)

Instructor: **Dr. Henry Fadamiro**

Alumni Professor & Integrated Pest Management Coordinator

Office: 346 Funchess Hall

Phone: 844-5098 (office); 844-2495 (lab)

Email: fadamhy@auburn.edu

Office hours: MWF (8-10 am), or by appointment

Assistant Instructor: **Dr. Clement Akotsen-Mensah**

Research Fellow

Office: 321 Funchess Hall

Phone: 844-1457 / 844-2495 (lab) Email: akotscl@auburn.edu; Office hours: TBA

Teaching Assistant: **Kate Nangle**, Office: 376 Funchess Hall; Telephone: 844-1457 / 844-2495 (lab)

Email: kzn0004@tigermail.auburn.edu; Office hours: TBA

Course Objectives: To introduce students to the basic principles of entomology: What is an insect, what are their parts, and how do they work? What are the different types of insects/arthropods? What are the key arthropod pests of economically-important commodity groups? What are their major identification features and what kinds of damage do they cause? What are the main control strategies available for insect pests, and how do we implement those?

Grading System:

90-100%	A
80-89	B
70-79	C
60-69	D
Below 60	E

Breakdown of Grades:

Source	Points	% of Grade
Midterms (2)	175 (Midterm 1 = 100; Midterm 2 = 75)	35
Final Exam (NOT COMPREHENSIVE)	100	20
Lecture Quizzes (10)	50 (5 pts each)	10
Insect Collection	80	16
Lab Exams (2)	95 (Lab 1=50 pts, Lab 2=45 points)	19
Total	500	100

Textbooks:

- **Pedigo, L.P. & M.E. Rice. 2009. Entomology and Pest Management, 6th Edition. Prentice Hall. Upper Saddle River, NJ. 784 pp (EPM); Required text**
 - ISBN-13:978-0-13-513295-1
 - ISBN-10: 0-13-513295-9
 - Available in AU Bookstore and major online bookstores (from ~\$80)
- Castner, J.L. 2000. Photographic Atlas of Entomology and Guide to Insect Identification (Optional, highly recommended) **OR**
- Borror, D. J. & R.E. White. 1970. Peterson Field Guides: Insects (Optional, highly recommended).

Policy on Classroom Behavior:

Auburn University expects students to pursue their academic work with honesty and integrity.

Violations of this principle are listed in the University Policies

<https://sites.auburn.edu/admin/universypolicies/default.aspx>

Penalties can include suspension and expulsion. Academic dishonesty is an offense that will not be tolerated!

The instructor intends to follow the rules regarding "Faculty Responsibilities in the Instructional Program," "**Policy on Class Attendance,**" and "**Policy on Classroom Behavior**" outlined in the University Policies. The "**Student Academic Honesty Code**" will be strictly enforced. Disruptive behaviors in the classroom will not be tolerated. These include (but not limited to) arriving late to class/lab, talking and other forms of distractions, use of cell phones and other electronic devices without instructor's permission, refusal to comply with instructor's directions, physical threats, etc.

Policy on Class Attendance (excerpt from University Policies):

Students are expected to attend all their scheduled classes. College work requires regular class attendance as well as careful preparation. Specific policies regarding class attendance are the prerogative of individual faculty members. Faculty shall inform each class in writing at the beginning of the course regarding the effect of absences on the determination of grades.

The student is expected to carry out all assigned work and to take examinations at the class period designated by the instructor. Failure to carry out these assignments or to take examinations at the designated times may result in an appropriate reduction in grade.

Policy on Make-up Tests:

A lecture outline will be distributed at the beginning of each class. The outline will contain the main topics to be covered during that lecture period. Keep these outlines and use as guides for studying. A short quiz will be given almost every week starting on Week 2. No make-up quizzes will be given. However, make-up lecture tests (midterms) may be given with an appropriate written excuse or documentation from your Dean (or Associate Dean). If you missed (or anticipate missing) a test, you must inform me by email before or immediately (within 24 hours) after the test.

Arrangements to make up missed tests due to excused absences shall be initiated by the student. I excuse absences for the following reasons: a) Illness of the student or serious illness of a member of the student's immediate family. I require a note from the attending physician; b) Death of a member of the student's immediate family. I require a printed obituary or funeral notice; c) Trips for members of the student organizations sponsored by an academic unit, trips for University classes, and trips for participation in intercollegiate athletic events. I request formal notification from appropriate University personnel to document the student's participation in such activities or trips; d) Subpoena for court appearance. Written documentation required; e) Any other reason the instructor deems appropriate. For the sake of fairness, no make-up test will be given after students have been given back their graded answer sheets (usually within 2-3 calendar days of the test). **Again, you must produce a written excuse from your Dean (or Associate**

Dean). Simply providing a doctor's excuse is NOT sufficient. Because of multiple lab sessions and the difficulty with setting up additional lab tests, no make-up lab tests will be offered. Students MUST attend one of the multiple lab sessions. If you anticipate missing a lab test, you must inform me by email well in advance so we can arrange for you to take your lab test during one of the other sessions.

Students with demonstrated need to take the final examination before the scheduled date must present a written request from his or her dean (at least 2 weeks before the exam) requesting an early examination period. Students who require special assistance should discuss their needs with the instructor at the beginning of the semester. Please bring a memo from the Office of the Program for Students with Disabilities. If students do not have a memo, they should schedule an appointment with a member of the professional staff in that office (1228 Haley Center, 844-2096).

Special Accommodations:

Students needing special accommodations should contact the Office of Accessibility / Student Disability Program, located in 1228 Haley Center (Phone: 334-844-2096). Students with disabilities need to meet with the Instructor to turn in the proper paperwork (Accommodation forms required and 3 proctor forms - if needed) and discuss any special needs prior to the 2nd week of class in order to receive accommodations for this semester. (Accommodations are not retroactive). Absence accommodations must be discussed with the Instructor and students will need to send an email every class date that they are absent due to this reason. Excessive use of the absence accommodation will need to be discussed with the Program Director.

Auburn University Diversity Statement:

Diversity at Auburn University encompasses the whole of human experience and includes such human qualities as race, gender, ethnicity, physical ability, nationality, age, religion, sexual orientation, economic status, and veteran status. These and other socially and historically important attributes reflect the complexity of our increasingly diverse student body, local community, and national population. Diversity is a core value at Auburn University. The Office for Diversity and Multicultural Affairs strive to offer a comprehensive range of exemplary educational programs that foster and sustain an environment that promotes academic excellence, respects differences, and accepts inclusiveness. Students who interact with and learn about people from a variety of backgrounds are more apt to understand, appreciate, and excel in the community they inhabit. In this context, diversity is aligned with Auburn University's land grant mission of providing its students with a superior education in service to the needs of Alabama, the nation, and the world.

LECTURE SCHEDULE (Tentative)

Economic Entomology (ENTM 4020); Spring Semester 2012, MWF 11-11:50 am; Rouse 112

Lecture	Week	Topic	Required Reading
1 (Jan. 9)	1	Introduction; Abundance & Diversity of Insects	EPM:Chpt. 1
2 (Jan. 11)		Benefits of Insects; Pest Types	EPM:Chpt. 1
3 (Jan. 13)		Arthropod Characteristics/Classification	EPM:Chpt. 1
January 16: Martin Luther King Holiday			
4 (Jan. 18)	2	Arthropod Characteristics/Classification	EPM:Chpt. 1
5 (Jan. 20)		Insect Structure (Morphology)	QUIZ 1 EPM:Chpt. 2
6 (Jan. 23)	3	Insect Structure (Morphology)	EPM:Chpt. 2
7 (Jan. 25)		Insect Function	EPM:Chpt. 2
8 (Jan. 27)		Insect Function	EPM:Chpt. 2
9 (Jan 30)*	4	Insect Function	QUIZ 2 EPM:Chpt. 2
10 (Feb. 1)		Insect Life Cycle: Growth and Development	EPM:Chpt. 4
11 (Feb. 3)		Insect Life Cycle: Metamorphosis	EPM:Chpt. 4
12 (Feb. 6)	5	Insect Classification	QUIZ 3 EPM:Chpt. 3
13 (Feb. 8)		Insect Classification	EPM:Chpt. 3
14 (Feb. 10)		Insect Classification	EPM:Chpt. 3
15 (Feb. 13)	6	Insect Classification	EPM:Chpt. 3
16 (Feb. 15)		Insect Classification	QUIZ 4 EPM: Chpt. 3
17 (Feb. 17)		Insect Classification	EPM: Chpt. 3
(Feb. 20)	7	Midterm 1	
18 (Feb. 22)		Midterm 1 Review; Insect Ecology	EPM:Chpt. 5
19 (Feb. 24)		Predicting Biological Events/Degree-Day	EPM:Chpt. 5
20 (Feb. 27) **	8	Pest Surveillance and Sampling	QUIZ 5 EPM:Chpt. 6
21 (Feb 29)		Pest Surveillance and Sampling	EPM:Chpt. 6
22 (Mar. 2)		Economic Thresholds/Decision Making	EPM:Chpt. 7
March 5 – 8: NO CLASS (ESA Southeastern Branch Meeting)			
(Mar. 9)	9	Midterm 2	
March 12 – 16: Spring Break			
23 (Mar. 19)	11	Types of Insect Injury; Pest Management Theory	EPM:Chpt. 7
24 (Mar. 21)		Managing Insects with Resistant Plants	QUIZ 6 EPM:Chpt. 13
25 (Mar. 23)		Cultural Control (Ecological Management of the Crop Environment)	EPM:Chpt. 10
26 (Mar. 26)	12	Cultural Control	EPM:Chpt. 10
27 (Mar. 28)		Biological Control (Natural Enemies)	QUIZ 7 EPM:Chpt. 9
28 (Mar. 30)		Biological Control; Biopesticides	EPM:Chpt. 9 & 12
29 (Apr. 2)	13	Behavior-Modifying Chemicals – Attractants/Repellents	QUIZ 8 EPM:Chpt. 14
30 (Apr. 4)		Insect Growth Regulators	EPM:Chpt. 14
31 (Apr. 6)		Botanical Insecticides	EPM:Chpt. 11
32 (Apr. 9)	14	Conventional Insecticides: Introduction	EPM:Chpt. 11
33 (Apr. 11)		Conventional Insecticides: Safety & Regulation	QUIZ 9 EPM:Chpt. 11
34 (Apr. 13)		Conventional Insecticides: Insecticide Classes	EPM:Chpt. 11
35 (Apr. 16)	15	Conventional Insecticides: Insecticide Classes	EPM:Chpt. 11
36 (Apr. 18)		Conventional Insecticides: Formulations	EPM:Chpt. 11
37 (Apr. 20)		Insecticide Resistance: Causes; Prevention.	QUIZ 10 EPM:Chpt. 17
38 (Apr. 23)	16	Genetic Control: Sterile-Insect Technique/Review	EPM:Chpt. 15
Friday, May 4: FINAL EXAM: 12 noon – 2:30 PM (LS 112)			

* Jan 30 is 15th Class Day (Last day to withdraw from a course with no grade assignment)

** Feb 28 is Mid Semester (36th Class Day; Last day to withdraw from course with no grade penalty)

LAB SCHEDULE (Tentative)
Economic Entomology (ENTM 4020), Spring Semester 2012; MW 2-3:50 pm; Room 354 FS

<u>Lab</u>	<u>Topic</u>
1 (Jan. 23, 25)	Discuss Lab Outline; Microscopes; Arthropod classification; Movie: Alien Empire
2 (Jan. 30, Feb. 1)	Insect Collection, Mounting & Preservation; Basic Arthropod Morphology
3 (Feb. 6, 8)	Basic Arthropod Morphology
4 (Feb. 13, 15)	Insect Orders; Field Collecting of Insects
5 (Feb. 20, 22)	Insect Orders
6 (Feb. 27, 29)	Practical Exam # 1
<i>March 5 – 8: NO CLASS (ESA Southeastern Branch Meeting) – Work on collection</i>	
<i>March 12 – 16: Spring Break</i>	
7 (Mar. 19, 21)	Visit to Plant Sciences Greenhouse Facility; Field Collecting of Insects
9 (Mar. 26, 28)	Urban & Household Arthropod Pests
10 (Apr. 2, 4)	Arthropod Pests of Greenhouse, Ornamentals and Turfgrass
11 (Apr. 9, 11)	Arthropod Pests of Row, Fruit & Vegetable Crops; Biological Control Agents
12 (Apr. 16, 18)	Toxicity and Use of Insecticides; Integrated Pest Management; Insect Collection Due
13 (Apr. 23, 25)	Practical Exam #2

Laboratory Supplies Needed for Collecting Insects:

- 1 Styrofoam Collecting Box*
- Insect Pins: Size #3*
- Insect Collecting Vials/Alcohol
- Ziploc Bags
- Nets

*These items can be purchased through the F.S. Arant Entomology Club for ~ \$20 (exact amount TBD)

Required Insect Collection (80 points; 16% of the total grade):

Insect Collection must total 40 different arthropod species from at least 12 orders properly mounted and labeled. Identified to Class and Order. Up to 5 of the required 40 specimens can be immature insects (e.g., caterpillars, white grubs, maggots, nymphs). Up to 10 specimens can be displayed in alcohol vials. Limit to 3 specimens per insect order (up to 7 specimens are allowed for order Hemiptera). **On a separate piece of paper or other means (discussed in class), state whether each insect is destructive (pest) or beneficial (best guess).** Each specimen = 2 pts: ½ pt for being there, ½ pt for proper identification, ½ pt for correct determination of whether insect is a pest or beneficial, ½ pt for neatness, proper pinning/pointing/labeling and preservation (no missing parts). Extra credit will be given for collection of arthropods of major economic importance (List to be given in Lab 1).

Insect Collection is due on **YOUR 12th lab (week of April 16th).**