

Entomology 402 – Field Crop Insects

Dr. Greg Sword

413 Entomology Research Lab Bldg.

Email: gasword@tamu.edu

Office Ph: 862-1702; **Departmental Office Ph:** 845-2516

Course Description: The biology and ecology of insect agricultural pests and the science underlying their management.

Number of credit hours: Three (3) (2 for lecture and 1 for the lab)

Lecture days and times: Tues, Thurs 9:35-10:25am in Heep 207

Lab days and time: Mon 1:50-4:40pm in Heep 205

Office hours: By appointment

Class website: eCampus site accessible through Howdy

Prerequisites: ENTO 201 (General Entomology) or equivalent. You should also have a fundamental understanding of basic biology as taught in introductory classes such as BIOL 113 & 114 (Introductory Biology), and BIOL 123 & 124 (Introductory Lab).

Required Resources:

i>clicker remote: We will be using i>clicker remotes routinely in lectures for a variety of interactive learning and assessment activities (approx. 26% of your total grade).

Handouts: Additional material for both lectures and labs will be made available via the class eCampus website. Lecture slides will be posted before classes for review.

Course format: Information will be presented in lectures supplemented with computer presentations, animated movies, and in class demonstrations as appropriate. Readings will reinforce lecture materials and provide supplemental information. Students are **EXPECTED** to read the material associated with each lecture **PRIOR TO** class. Lectures may start with an i>clicker quiz covering assigned readings.

Suggested Textbook: Pedigo, Larry P. and Rice, Marlin E. (2009) *Entomology and Pest Management*. 6th Edition. Pearson Prentice Hall. (Available in University Bookstore and on reserve in library)

Course Rationale: The aim of this course is to provide students with an introduction to the biology, taxonomy and management of insects as both pests and beneficial species in a range of agricultural systems.

Course Goals and Learning Outcomes:

- Provide an overview of insect biology, ecology and taxonomy
- Understand the impact of insects as pests and beneficial species in a variety of crops
- Recognize and identify major crop pest and beneficial insect species
- Know the basic theory and practice of integrated pest management

- Learn the science underlying current approaches to insect management in agriculture

Learning will be assessed using quizzes, exams, laboratory practicals and written assignments. Discussion will be encouraged in lectures and through cooperative group work in the laboratory. In the lab exercises, students will gain experience handling live and preserved insect specimens, identifying insect species, conducting experiments, analysing data and writing lab reports.

Schedule:

Week	Day	Lecture*	Lab
1	M Jan 13	-----	No class
	T Jan 14	Class introduction (Ch. 1)	
	TH Jan 16	Basic morphology (Ch. 2)	
2	M Jan 20	-----	No class – MKL Day
	T Jan 21	Classification I (Ch. 3)	
	TH Jan 23	Classification II (Ch. 3)	
3	M 27 Jan	-----	Insect morphology
	T 29 Jan	Life cycles (Ch. 4)	
	Th 31 Jan	Ecology –Populations & outbreaks (Ch. 5)	
4	M Feb 3	-----	Major insect orders
	T Feb 4	Ecology – Population regulation & Envi. effects & (Ch. 5)	
	TH Feb 6	Ecology – Migration & Movement (Ch. 5)	
5	M Feb 10	-----	Immature insects Major insect orders review
	T Feb 11	SWARMCHASERS	
	TH Feb 13	Introduction to IPM (Ch. 8, 16)	
6	M Feb 17	-----	QUIZ #1 - Insect morphology, orders & immatures (50 pts)
	T Feb 18	Surveillance and sampling (Ch. 6)	
	TH Feb 20	Case study – Dr. Mike Brewer – Initial response to an emerging pest (sorghum aphid)	
7	M Feb 24	-----	Cotton & Corn insects

		(25 pts)
T Feb 27	TEST #1 (100 pts)	
Th Feb 28	Economic damage to crops (Ch. 7)	
8 M Mar 3	-----	Field trip – A&M Farm ONLINE - Sorghum & wheat insects (25 pts)
T Mar 4	Natural enemies (Ch. 9)	
TH Mar 6	Case study - Suhas Vyavhare – Soybean insects	
9 Mar 10-14	Spring Break	
10 M Mar 17	-----	Cotton fleahopper lab (25 pts) ONLINE – Beneficial insects (25 pts)
T Mar 18	Cultural management (Ch. 10)	
TH Mar 20	Insecticides (Ch. 11)	
11 M Mar 24	-----	Insect Presentations (25 pts)
T Mar 25	Case study – Dr. Mo Way, Rice Insects [Assigned Reading: Way, M.O. (2014) Insect Management, In: <i>2014 Texas Rice Production Guidelines</i> , p. 59-81]	
TH Mar 27	Evolution and insecticide resistance (Ch. 17)	
12 M March 31	-----	Insect toxicology experiment Pt. I
T April 1	Biopesticides (Ch. 12)	
TH April 3	Plant resistance I (Ch. 13)	
13 M April 7	-----	Toxicology experiment Pt. II (25 pts)
T April 8	Case study – Dr. Charles Allen – The history of the boll weevil and IPM	
TH April 10	Plant resistance II (Ch. 13)	
14 M April 14	-----	<i>Bt</i> experiment Pt. I
T April 15	Case study – Dr. David Ragsdale – Soybean aphid IPM	

	TH April 17	Transgenic crops (Ch. 13)	
15	M April 21	-----	<i>Bt</i> experiment Pt. II (25 pts)
	T April 22	Case study – Boll weevil eradication	
	TH April 24	The Wonderful World of Thrips <small>[Assigned Reading: Cook et al. (2011) Biology, Crop Injury, and Management of Thrips (Thysanoptera: Thripidae) Infesting Cotton Seedlings in the United States. <i>Journal of Integrated Pest Management</i> 2:1-9]</small>	
16	M April 27	-----	-----
	T April 28	Last day of classes – Review session	
17.	F May 2 12:30-2:30	Final exam (Test #2 non-comprehensive) (100 pts)	

*Topic or schedule changes may occur at the discretion of the instructor due to extenuating circumstances or revised educational objectives.

Grading:

Final grade will be based on a total of **575** possible points obtained from the following:

I>clicker quizzes: 10 points each. We will use your best 15 scores for a total of **150** points. This is easy money for attending class.

Lecture test and final exam: 100 points each for a total of **200** points

Lab quiz: 50 points for a total of **50** points

Lab & online exercises: 25 points each for a total of **175** points

Total lecture points = **350 (61% of total)**

Total lab & online points = **225 (39% of total)**

Grading scale:

A = 575 – 517

B = 516 – 460

C = 459 – 402

D = 401 – 345

F ≤ 344

Assessment details:

1. **I>clicker quizzes:** We will use the I>clicker system during lectures to promote interaction and monitor lecture comprehension. We will use them for a minimum of 22 lecture quizzes, but guest lecturers may choose to pose additional quizzes as well. Regardless of the number of questions asked, each daily quiz score will be scaled to 10 points depending on the number of correct responses. Your final total score for the

lecture quizzes will be compiled from the best 15 of all your daily quiz scores (**150 pts**). These should be easy points, but too many zeros could be lethal. You know what that means. Come to class and pay attention.

2. **Lecture test and final exam:** There will be two tests covering the lecture material. The first will be mid-semester (**100 pts**) and the second (**100 pts**) will be given during the final exam period. The second test *WILL NOT* be comprehensive, and will only cover lecture material since the first test. Tests will primarily be multiple-choice questions covering only lecture topics, but may include some short answer questions.
3. **Lab quiz:** The single lab practical quiz (**50 pts**) will primarily cover insect identification, but may also include relevant biological questions. The lab quiz is intended to ensure that everyone is up to the same level in basic insect morphology and taxonomy. Depending on your background in entomology (remember ENTO 201 or equivalent is a prerequisite), this might be a review, but if you are rusty it may take some work to get up to speed.
4. **Lab exercises:** There will be four lab handouts that you will turn in for **25 pts** each.
5. **Online exercises:** There will be two online exercises you will complete for **25 pts** each.
6. **Insect presentation:** You will make one 10 min. presentation on the crop pest of your choice for **25 pts**.

Rules of conduct for and during exams and quizzes:

- There will be no excused trips to the bathroom or other excursions from the classroom during an exam.
- If one must leave the room during an exam, that student's exam must be terminated and submitted to the instructor. Exceptions will be made on a case-by-case determination at the instructor's discretion.
- Students arriving after the start of a test will be allowed to take the test at the discretion of the instructor.
- Tests for all students will end at the time allotted for the exam, even if the student started late.
- Examinations missed during an absence will be made up at the discretion of the instructor and only if the absence meets the guidelines of an official absence. *Make-up examinations are discouraged.*
- All materials (phones, books, papers, backpacks) are to be placed below the desk and remain on the floor until tests and quizzes has been terminated for all students.
- Test papers are to be flat on the desktop at all times – not held up and read.
- Talking to others while taking the test will be considered cheating and grounds for invoking academic dishonesty.
- No food or drinks will be permitted during an examination.

Attendance and class etiquette:

Lecture attendance: Texas A&M University expects all students to attend class and to complete all assignments. For official rules on attendance, please visit the student rules website (see <http://student-rules.tamu.edu/rule7.htm>). If you miss class on a regular basis, we will likely ask you to explain your repeated absences. You will also miss out on daily quizzes which could impact your grade.

Laboratory attendance: Attendance for the laboratory is mandatory, unless there is an official excuse (see above).

- Missed laboratory experiments cannot be made up, even if excused; however the student is still responsible for any information and preparation of a laboratory report.
- Laboratory quizzes will not be made up.

- Students more than 5 minutes late for the start of a quiz will not be allowed to take the quiz.
- Students will be held accountable for laboratory information regarding experiments, their theory and procedures, regardless of whether the experiment is performed.

Exams and quizzes: You will be required to take all quizzes and exams the days they are scheduled. Only the following absences are considered excused by Texas A&M University:

- Participation in an activity appearing on the university authorized activity list (see <http://studentactivities.tamu.edu/stuactweb/submainpages/authsponmain.htm>). If engaged on any of these activities please inform instructor or TA in advance.
- Death or major illness in a student’s immediate family. Immediate family may include: mother, father, sister, brother, grandparents, spouse, child, spouse’s child, spouse’s parents, spouse’s grandparents, stepmother, step-father, step-sister, step-brother, step-grandparents, grandchild, step-grandchild, legal guardian, and others as deemed appropriate by faculty member or student’s academic dean.
- Illness of a dependent family member.
- Participation in legal proceedings or administrative procedures that require a student’s presence.
- Religious holy day (see <http://student-rules.tamu.edu/append4.htm>). If observing a religious holiday please inform instructor or TA in advance.
- Illness that is too severe or contagious for the student to attend class (to be determined by Health Center or off-campus physician).
- Required participation in military duties.
- Mandatory admission interviews for professional or graduate school, which cannot be rescheduled.

Class etiquette and conduct:

- Students are expected to be in their seats and prepared for lecture at the time scheduled for the start of class. Personal conversations should cease at this time.
- If a student must be late, please enter quietly and be seated as close to the door as possible.
- If you have reason to be late consistently, please discuss why with the instructor and obtain approval.
- If a student is absent, the student remains responsible for all lecture or laboratory subjects discussed and materials provided during the period(s) of absence.
- No tobacco products are allowed (this is a University rule for the buildings).
- No cell phones in use or active.

Laboratory Safety:

The Department of Entomology is committed to the safety of all students and employees participating in teaching laboratories. To ensure that a safe environment is maintained in our teaching laboratories, it is expected that all students will adhere to general safety guidelines and emergency procedures, as well as course-specific and activity-specific safety instructions provided by faculty and teaching assistants. Laboratory safety and emergency procedures will be reviewed during the first class period and you will be asked to sign your acknowledgement of these instructions before attending further classes in this course.

Academic Integrity and Dishonesty

“An Aggie does not lie, cheat, or steal or tolerate those who do.”

The processes, procedures, rules and definitions associated with academic misconduct may be found at the websites listed below. All questions associated with academic misconduct should be

directed to the Aggie Honor System Office (AHSO) in the Academic Building, Suite 104 or by calling: (979) 458-3378.

Aggie Honor System Office: <http://www.tamu.edu/aggiehonor>
Rules & Definitions: <http://www.tamu.edu/aggiehonor/acadmisconduct.htm>

Cheating – Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.

- During an examination, looking at another student's examination or using external aids (for example, books, notes, calculators, conversation with others, or electronic devices) unless specifically allowed in advance by the instructor.
- Having others conduct research or prepare work without advance authorization from the instructor.
- Acquiring answers for any assigned work or examination from any unauthorized source. This includes, but is not limited to, using the services of commercial term paper companies, purchasing answer sets to homework from tutoring companies, and obtaining information from students who have previously taken the examination.
- Collaborating with other students in the completion of assigned work, unless specifically authorized by the instructor teaching the course. It is safe to assume that all assignments are to be completed individually unless the instructor indicates otherwise; however, students who are unsure should seek clarification from their instructors.
- Other similar acts.

Plagiarism – The appropriation of another person's ideas, processes, results, or words without giving appropriate credit.

- Intentionally, knowingly, or carelessly presenting the work of another as one's own (i.e., without crediting the author or creator).
- Failing to credit sources and attempting to pass off the work as one's own.
- Attempting to receive credit for work performed by another, including papers obtained in whole or in part from individuals or other sources. Students are permitted to use the services of a tutor (paid or unpaid), a professional editor, or the University Writing Center to assist them in completing assigned work, unless such assistance is explicitly prohibited by the instructor. If the student uses such services, the resulting product must be the original work of the student. Purchasing research reports, essays, lab reports, practice sets, or answers to assignments from any person or business are strictly prohibited. Sale of such materials is a violation of both these rules and State law.
- Failing to cite the World Wide Web, databases and other electronic resources if they are utilized in any way as resource material in an academic exercise.

Process and Procedures: <http://www.tamu.edu/aggiehonor/reporting.html>
Appeals: <http://www.tamu.edu/aggiehonor/appeal.html>

Americans with Disabilities Act (ADA) Policy Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Cain Hall or call 845-1637.