

**Biology 4305/5307.X01 – Applied Entomology Syllabus
Mid Winter 2019: M-F 8:30-12:30 WSB 107 (Jan 3-17)**

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Class Website: <http://http://sulross.blackboard.com/> & <http://faculty.sulross.edu/critzi/>

Text: Thacker, J.R.M. 2002. An Introduction to Arthropod Pest Control. Cambridge University Press. (ISBN 0-521-56787-4). You will be also be responsible for either picking up or making a copy of each day's materials from Blackboard, as well as supplying supplemental materials. A large part of this course will be presenting outside articles, so be prepared for some library hunting.

Course Description: In this course we will read and discuss a variety of papers and topics that helped to shape the world of applied entomology. The goal for each class is to understand what theory or idea is being presented at the time, and how it is applied in the world around us. It is everyone's responsibility to read for each class period, and to be prepared to discuss the topics. Since this is a two week class, everyone should be prepared to discuss every day of class. Additionally, each student will be designated as a "moderator" at least once each week for their particular paper discussions. Discussions are meant to be insightful and intelligent, although they can also be passionate and from the heart if it is appropriate (ie. something you have strong personal feelings about).

Program Learning Outcomes

The graduating biology student graduating with a BS in Biology should be able to:

- 1) The student will be able to demonstrate an understanding of basic biological concepts, including but not limited to evolution via natural selection, cell theory, and the role and function of DNA.
- 2) The student will be able to demonstrate utilization of various field techniques toward addressing scientific questions in the specific discipline. These field techniques can include, but are not limited to, plant collection and processing, various animal collection techniques, ecological surveying and sampling, and biodiversity indexing.
- 3) The student will be able to use biological instrumentation to solve biological problems using standard observational strategies.
- 4) The student will develop writing skills by summarizing and critiquing recent relevant biological literature.

Course Objectives: Over the course of this class, I hope the following objectives will be met:

1. To instill a sense of awe and excitement about insects and other arthropods.
2. To train the student in the skills required by a professional research

entomologist, and understand the various ways in which insects can be controlled.

3. To implement the scientific method, and approaches used in the development of theory in entomology.
4. To analyze research papers for effectiveness and efficiency.

Tests: There will be 2 tests over the course of the class, a midterm and a final. Each exam will be worth 100 points.

Grading: You will be assessed 400 points based on exams, presentations, abstracts, participation, and preparedness for each day's class. Beyond the exams (100 points each), additional points for the class will come about from papers and presentations given over the term. Each oral paper presentation (4 for grads; 2 for undergrads) will be worth 25 points each. Additionally, to ensure that everyone has been reading papers beyond those covered in class, short written abstracts (worth 25 points) will be required over 2 additional papers (instructions to follow). The remainder of the grade will be based on participation and preparedness for class discussions. Graduate credit will be assessed based on additional oral presentations on a subject to be chosen during class.

Attendance: Students missing 20% of lectures (3 lectures) shall be dropped from the class with an F per the SRSU catalog. Please notify your instructor BEFORE missing class for authorized activities, death in the family, or illness.

Lecture courtesy: The general rules of classroom etiquette are below.

- 1) This is a graduate/advanced class, so feel free to talk about the material as a group. This doesn't mean you should talk about other things during the class.
- 2) No eating, chewing, dipping, etc. (unless it is a brown bag session)
- 3) Please turn cell phones and pagers to silent while in class. They are disruptive to the entire class, and detract from learning.

Students with disabilities will be provided reasonable accommodations. If you would like to request such accommodations because of physical, mental, or learning disability, please contact the ADA Coordinator for Program Accessibility at 837-8203, FH 112.

Schedule of Topics	Tentative Date
Introduction: Fundamentals of Entomology & Insects	Jan 3 rd
History	Jan 4 th
Botanical Pesticides	Jan 7 th
Synthetic Chemical Pesticides	Jan 8 th
Paper Discussion and MidTerm	Jan 9 th
Biological Control	Jan 10 th
Genetic/Endocrine Control	Jan 11 th
Cultural Control	Jan 14 th
IPM	Jan 15 th
Paper Discussion	Jan 16 th
Final Exam	Jan 17 th

Topics to Include

Principles and Strategies of Insect Control:

Ecological Principles

Sampling

Yield/Loss Assessment

Control Strategies

Insecticides

Host Plant Resistance

Natural Enemies

Cultural Controls

Interference

Quarantine & legislation

IPM

Pests and Pest Management of selected crops (as time permits)

Cotton

Orchards

Corn

Small grains and Legumes

Vegetables

Ornamentals & Households

Medical-Veterinary

Abstracts of Journal Articles (Oral and Written)

Objectives:

This assignment is given so that the student will complete the following course objectives:

- a) Obtain and appreciate the understanding of the scope of applied entomology and its subdisciplines.
- b) Learn the basic entomological terminologies and vocabulary necessary to enter the entomology literature with confidence.
- c) Learn how to use the entomology literature.

Assignments:

Each graduate student will be required to read one journal article in each of the following areas (undergraduates need to pick 2 of the 4):

1. Chemical control
2. Biological Control
3. Cultural control
4. IPM

Procedures:

1. Peruse the entomology journals in the invertebrate collection or at the library.
2. Read the article of your choice looking for the following:
 - a. What is the investigator trying to prove/demonstrate? Etc.
 - b. What equipment and/or special techniques were used?
 - c. What were the basic findings of the research?
 - d. Was the experimental design appropriate to test the objectives? What flaws in design do you see (How would you do this project differently?)
 - e. Was the data presentation (tables, figures, etc.) clear and understandable (do they “stand by themselves” as information?)
3. The articles need to be turned in the day before you present them, so that others in the class have the opportunity to read them as well. That being said, try to be kind to your fellow students (and professor) and do not pick monographs to read.
4. Orally present the paper to the rest of the class. Conduct the presentation as though it was your own work (ie. thesis defense behavior and attention to detail) AND be prepared to discuss the strengths/weaknesses of the work.

Written summaries

In addition to the oral presentations, graduate students will be responsible for turning in 2 additional papers as written summaries. Basically follow the same approach as above, but write out the “presentation”. Follow the following format, turning in one summary near the end of each week of class on Wednesday (Jan 9th and 16th).

Applied Entomology Name:

Author’s name, Date of article

Title of article

Journal name, volume (issue number), pages

1. Area of article
2. Equipment/techniques used – brief description of research methods
3. Basic problem/question investigator attempted to solve
4. Basic conclusions, any special comments on quality of technique, data, style, etc.