

Biology 4420:001, MC1, & 5407:001– Forensic Entomology- Spring 2016
Lecture M-W-F 11:00-11:50 WSB 107 Lab M 1:00-2:50 WSB 109
Syllabus

Instructor:

Dr. Chris M. Ritzi

Office: Warnock Science Building – 216

Phone: 837- 8420

Email: critzi@sulross.edu

Office hours: MW 8:30-10:30, T 2-4, or by appt.

Ethel Matthews

Fox 104

685-6733

ematthews@midlandcollege.edu

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

Text: Byrd, J. H. and J. L. Castner. 2010. Forensic Entomology: The Utility of Arthropods in Legal Investigations. CRC Press. New York. 681p.

Haskell, N. H. and R. E. Willians, Eds. 2008. Entomology and Death: A Procedural Guide, 2nd Edition. Ed. Forensic Entomology Partners, Clemson, SC, USA.

Course Description: This course will study the various insects associated with forensic investigations. It will cover the use of insect related evidence in legal investigations, and how that evidence can be collected, analyzed, and used in a court of law. Students will learn to identify and understand the life cycles, morphology, and behavior of flies and beetles associated with forensic investigations. Lectures will emphasize the major aspects of forensic entomology, from calculating post mortum, the different types of data that can be obtained from insects, the effects of the environment on forensic entomology, and other aspects of the field. Laboratory studies will emphasize taxonomy and identification, as well as collection techniques.

Program Learning Outcomes

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

- 1) Demonstrate an understanding of evolution by natural selection.
- 2) Demonstrate an integration of environmental awareness into everyday modern life.
- 3) Understanding how to incorporate molecular biology into the study of the whole organism.
- 4) Demonstrate utilization of various field techniques toward addressing scientific questions in the discipline.
- 5) Conduct basic laboratory experiments utilizing standard observational strategies.

Student Learning Objectives:

- 1) Students will identify the basic insects of forensic importance.
- 2) Students will be able to explain how insects are used during legal investigations.
- 3) Students will be familiar with the methods used to collect insects from a crime scene.
- 4) Students will assess the stage of insects discovered to estimate time of death.
- 5) Students will understand why and when insects become valuable evidence.

Grading: Your grade will be assigned based on the percentage of points you get out of a total possible 800 points. (4-100pt exams, 50 pt Arthropod paper, 5-10 pt quizzes, 100 pts Participation and Attendance, 200 pts lab exams (2-100 pt lab practicals))

Tests: There will be a total of 4 exams, each worth 100 points. Lab practicals will be offered as Midterm and final lab exams, as well, also worth 100 points each. If you miss an exam and have a legitimate excuse, contact me within 24 hours of the test and we will arrange a make-up test. If you do not contact me within 24 hours, you will receive a zero on that exam.

Attendance: Students missing 20% of lectures (9 lectures) OR labs (3 labs) may be dropped from the class per the SRSU catalog. Any student dropped for excessive absences will receive an F for the course grade. Please notify your instructor BEFORE missing class for authorized activities, death in the family, or illness. Exams missed for any reason must be made up within one week of the originally scheduled date. **REGARDLESS OF WHY AN ABSENCE OCCURS, YOU MAY BE GIVEN AN F FOR THE COURSE GRADE IF YOU ACCUMULATE SIX ABSENCES.**

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

- 1) Please do not talk to others in class while the instructor is lecturing. If you have a question, ASK THE INSTRUCTOR! That's what I'm here for.
- 2) No eating, chewing, dipping, etc.
- 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.

TENTATIVE LECTURE OUTLINE

DATE	LECTURE TOPIC
Jan 20	Introduction
Jan 22	History of forensic entomology
Jan 25	Use of insects in investigations
Jan 27	Forensically important flies
Jan 29	Forensically important flies cont.
Feb 1	Forensically important flies cont.
Feb 3	Forensically important beetles
Feb 5	Forensically important beetles cont.
Feb 8	Forensically important beetles cont.
Feb 10	Exam I
Feb 12	Life cycles (Flies and Beetles)
Feb 15	Ecology of forensically important flies
Feb 17	Ecology of forensically important flies cont.
Feb 19	Ecology of forensically important beetles

Feb 22	Ecology of forensically important beetles cont.
Feb 24	Ecology of forensically important beetles cont.
Feb 29	Natural insect succession
Mar 2	Environment and insect succession
Mar 4	Environment and insect succession cont.
Mar 7	Aquatic insects in forensic investigations
Mar 9	Acarology in Life and Death
Mar 11	Exam II
Mar 14	Spring Break
Mar 16	Spring Break
Mar 18	Spring Break
Mar 21	Sampling at the crime scene
Mar 23	Breeding specimens from the crime scene
Mar 25	Calculating post mortum interval
Mar 28	Calculating post mortum interval cont.
Mar 30	Forensic entomologists in court
Apr 1	Forensic entomologists in court cont.
Apr 4	Exam III
Apr 6	Soil environment and forensic entomology
Apr 8	Entomotoxicology: drug and toxin detection in insects
Apr 11	Molecular methods in forensic entomology
Apr 13	Entomological alteration of bloodstain evidence
Apr 15	Cuticular hydrocarbons
Apr 18	Use of insect olfaction
Apr 20	Insect colonization of buried remains
Apr 22	Forensic implications of Myiasis
Apr 25	Effects of climate change on forensic entomology
Apr 27	Future of forensic entomology
Apr 29	Graduate presentations
May 2	Graduate presentations
May 4	Graduate presentations
May 6	Dead Day
May 11 10:15 am	Final exam for MWF 11:00

Note – This outline is subject to change for reasons of course interest, time constraint, or instructor whim. The exams will be administered on the dates given, unless material relevant for a given exam has not been covered. Under such cases, an exam may be moved a class period or two to aid in the clarity and understanding of the material.

Graduate Credit – Graduate students will be required to do an independent mini-project associated with forensic entomology. All mini-projects will need to be vetted with the professor by the end of February. They should consist of a field or laboratory investigation of an aspect of forensic entomology. Data is to be collected and analyzed during the term, and an oral presentation is to be delivered to the class by the end of the semester. The write up and the presentation will each count toward an additional 100 points each toward the final grade.

FORENSIC ENTOMOLOGY LABORATORY SCHEDULE

DATE	LABORATORY
Jan 18	University not open – MLK Jr. Day
Jan 25	No Lab - Prep
Feb 1	Adult Flies (Muscidae)
Feb 8	Adult Flies II
Feb 15	Maggots
Feb 22	Adult Beetles (Coleoptera)
Feb 29	Larval Beetles (Coleoptera)
Mar 7	Midterm Lab Practical
Mar 14	Spring Break
Mar 21	Field techniques
Mar 28	Collecting insects from the crime scene
Apr 4	Breeding larva
Apr 11	Calculating post mortum
Apr 18	Class data collection
Apr 25	Statement of Witness
May 2	Final Lab Practical

We might combine or collapse one or two of these labs to conduct more field and outdoor learning activities. Please be aware that this lab schedule is subject to change based on specimen availability, weather, and class interest.