

**Biology 4414:001, MC1– Forensic Entomology- Spring 2020**  
**Lecture M-W-F 10:00-10:50 WSB 107, AMS A06 Lab M 1:00-2:50 WSB 109**  
**Syllabus**

**Instructor:**

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Office hours: MWF 11-11:50, TR 9-10:30, or by appt.	MWF 9:30-5:00 PM

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

**Text:** Byrd, J. H. and J. L. Castner. 2012. Forensic Entomology: An Introduction. 2<sup>nd</sup> edition. Wiley Blackwell. New York.

Haskell, N. H. and R. E. Willians, Eds. 2008. Entomology and Death: A Procedural Guide, 2<sup>nd</sup> 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.

**Student Learning Outcomes**

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

- SLO1 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.
- SLO2 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.
- SLO3 The student will be able to use biological instrumentation to solve biological problems using standard observational strategies.
- SLO4 The student will develop writing skills by summarizing and critiquing recent relevant biological literature.

**Course 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.

**Marketable Skills:** A student getting a degree in the Biological sciences would be expected to acquire the following marketable skills by graduation.

- 1) Students will be able to organize, analyze, and interpret data.
- 2) Students will be proficient at using presentation software.
- 3) Students will acquire experience in managing time and meeting deadlines.
- 4) Students will gain the ability to speak effectively and write concisely about scientific topics.
- 5) Students will acquire experience and guidance in the development of professional email correspondence.

**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 NINE 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 13	Introduction
Jan 15	History of forensic entomology
Jan 17	Use of insects in investigations
Jan 20	Martin Luther king, Jr. Holiday – No Class
Jan 22	Forensically important flies
Jan 24	Forensically important flies cont.
Jan 27	Forensically important flies cont.
Jan 29	Forensically important beetles
Jan 31	Forensically important beetles cont.
Feb 3	Forensically important beetles cont.
Feb 5	<b>Exam I</b>
Feb 7	Life cycles (Flies and Beetles)
Feb 10	Ecology of forensically important flies
Feb 12	Ecology of forensically important flies cont.
Feb 14	Ecology of forensically important flies cont.
Feb 17	Ecology of forensically important beetles
Feb 19	Ecology of forensically important beetles cont.
Feb 21	Ecology of forensically important beetles cont.
Feb 24	Natural insect succession
Feb 26	Environment and insect succession
Feb 28	Environment and insect succession cont.
Mar 2	Aquatic insects in forensic investigations
Mar 4	Acarology in Life and Death
Mar 6	<b>Exam II</b>
Mar 9	Spring Break
Mar 11	Spring Break
Mar 13	Spring Break
Mar 16	Sampling at the crime scene
Mar 18	Breeding specimens from the crime scene
Mar 20	Calculating post mortum interval
Mar 23	Calculating post mortum interval cont.
Mar 25	Good Friday Holiday – No class
Mar 27	Forensic entomologists in court
Mar 30	Forensic entomologists in court cont.
Apr 1	Forensic entomologists in court cont.
Apr 3	<b>Exam III</b>
Apr 6	Soil environment and forensic entomology
Apr 8	Entomotoxicology: drug and toxin detection in insects
Apr 10	Good Friday holiday – No Class
Apr 13	Molecular methods in forensic entomology
Apr 15	Entomological alteration of bloodstain evidence
Apr 17	Cuticular hydrocarbons
Apr 20	Use of insect olfaction

Apr 22	Insect colonization of buried remains
Apr 24	Forensic implications of Myiasis
Apr 27	Effects of climate change on forensic entomology
Apr 29	Review for Final Exam
Apr 30	Dead Day
May 1(F) 10:15 am	<b>Final exam</b> for MWF 10:00

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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 13	No Lab - Prep
Jan 20	University not open – MLK Jr. Day
Jan 27	Adult Flies (Muscidae)
Feb 3	Adult Flies II
Feb 10	Maggots
Feb 17	Adult Beetles (Coleoptera)
Feb 24	Larval Beetles (Coleoptera)
Mar 2	Midterm Lab Practical
Mar 9	Spring Break
Mar 16	Field techniques
Mar 23	Collecting insects from the crime scene

Mar 30	Breeding larva
Apr 6	Calculating post mortum
Apr 13	Class data collection
Apr 20	Statement of Witness
Apr 27	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.