

Biology 4414:001, MC1, T01, T02, T03– Forensic Entomology- Spring 2022
Lecture M-W 11:00-12:15 WSB 107, Lab M 1:00-2:50 WSB 109
Syllabus

Instructor:

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

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

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.

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 700 points. (3-100pt 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 3 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.

SRSU Disability Services: Sul Ross State University (SRSU) is committed to equal access in compliance with Americans with Disabilities Act of 1973. It is SRSU policy to provide reasonable accommodations to students with documented disabilities. It is the student's responsibility to initiate a request each semester for each class. Students seeking accessibility/accommodations services must contact Rebecca Greathouse Wren, LPC-S, SRSU's Accessibility Services Coordinator at 432-837-8203 (please leave a message and we'll get back to you as soon as we can during working hours), or email rebecca.wren@sulross.edu. Our office is located on the first floor of Ferguson Hall (Suite 112), and our mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas, 79832.

TENTATIVE LECTURE OUTLINE

<u>DATE</u>	<u>LECTURE TOPIC</u>
Jan 10	Introduction & History of forensic entomology
Jan 12	Use of insects in investigations
Jan 17	Martin Luther king, Jr. Holiday – No Class
Jan 19	Forensically important flies
Jan 24	Forensically important flies cont.
Jan 26	Forensically important beetles
Jan 31	Forensically important beetles cont.
Feb 2	Exam I
Feb 7	Life cycles (Flies and Beetles)
Feb 9	Ecology of forensically important flies
Feb 7	Ecology of forensically important flies cont.
Feb 14	Ecology of forensically important beetles
Feb 16	Ecology of forensically important beetles cont.
Feb 21	Natural insect succession
Feb 23	Environment and insect succession
Feb 28	Aquatic insects in forensic investigations
Mar 2	Exam II
Mar 7	Spring Break
Mar 9	Spring Break
Mar 14	Sampling at the crime scene
Mar 16	Breeding specimens from the crime scene
Mar 21	Calculating post mortum interval
Mar 23	Forensic entomologists in court
Mar 28	Forensic entomologists in court cont.
Mar 30	Soil environment and forensic entomology
Apr 4	Entomotoxicology: drug and toxin detection in insects
Apr 6	Molecular methods in forensic entomology
Apr 11	Insect colonization of buried remains
Apr 13	Use of insect olfaction
Apr 18	Effects of climate change on forensic entomology

Apr 20	Entomological alteration of bloodstain evidence
Apr 25	Forensic implications of Myiasis
Apr 27	Review for Final Exam
Apr 28	Dead Day
May 3(T) 10:15 am	Final exam for MW 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.

SRSU Distance Education Statement: Students enrolled in distance education courses have equal access to the university's academic support services, such as library resources, online databases, and instructional technology support. For more information about accessing these resources, visit the SRSU website. Students should correspond using Sul Ross email accounts and submit online assignments through Blackboard, which requires secure login. Students enrolled in distance education courses at Sul Ross are expected to adhere to all policies pertaining to academic honesty and appropriate student conduct, as described in the student handbook. Students in web-based courses must maintain appropriate equipment and software, according to the needs and requirements of the course, as outlined on the SRSU website. Directions for filing a student complaint are located in the student handbook.

Libraries: The Bryan Wildenthal Memorial Library in Alpine. Offers FREE resources and services to the entire SRSU community. Access and borrow books, articles, and more by visiting the library's website, library.sulross.edu. Off-campus access requires logging in with your LoboID and password. Librarians are a tremendous resource for your coursework and can be reached in person, by email (srsulibrary@sulross.edu), or phone (432-837-8123).

Academic Integrity: Students in this class are expected to demonstrate scholarly behavior and academic honesty in the use of intellectual property. A scholar is expected to be punctual, prepared, and focused; meaningful and pertinent participation is appreciated. Examples of academic dishonesty include but are not limited to: Turning in work as original that was used in whole or part for another course and/or professor; turning in another person's work as one's own; copying from professional works or internet sites without citation; collaborating on a course assignment, examination, or quiz when collaboration is forbidden.

Classroom Climate of Respect: Importantly, this class will foster free expression, critical investigation, and the open discussion of ideas. This means that all of us must help create and sustain an atmosphere of tolerance, civility, and respect for the viewpoints of others. Similarly, we must all learn how to probe, oppose and disagree without resorting to tactics of intimidation, harassment, or personal attack. No one is entitled to harass, belittle, or discriminate against another on the basis of race, religion, ethnicity, age, gender, national origin, or sexual preference. Still we will not be silenced

by the difficulty of fruitfully discussing politically sensitive issues.

Diversity Statement: "I aim to create a learning environment for my students that supports a diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, socioeconomic class, age, nationality, etc.). I also understand that the crisis of COVID, economic disparity, and health concerns, or even unexpected life events could impact the conditions necessary for you to succeed. My commitment is to be there for you and help you meet the learning objectives of this course. I do this to demonstrate my commitment to you and to the mission of Sul Ross State University to create an inclusive environment and care for the whole student as part of the Sul Ross Familia. If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with me. I want to be a resource for you."

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 10	No Lab - Prep
Jan 17	University not open – MLK Jr. Day
Jan 24	Adult Flies (Muscidae)
Jan 31	Adult Flies II
Feb 7	Maggots
Feb 14	Adult Beetles (Coleoptera)
Feb 21	Larval Beetles (Coleoptera)
Feb 28	Midterm Lab Practical
Mar 7	Spring Break
Mar 14	Field techniques

Mar 21	Collecting insects from the crime scene
Mar 28	Breeding larva
Apr 4	Calculating post mortum
Apr 11	Class data collection
Apr 18	Statement of Witness
Apr 25	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.