

Biology 4410:001, VMC, V01 / 5407:001
Medical and Veterinary Entomology Syllabus-Fall 2024
Lecture M-W 11:00-12:15 WSB 107 or personal computer
Lab M 1:30-3:15 WSB 109, MC, and virtual

Instructor: Dr. Chris M. Ritzi

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Office hours: TR 9:30-10:45, W 2:00-5:00, or by appt.

Lab Coordinator

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Class Website: <http://sulross.blackboard.com>

Text: Mullen, G.R. and L.A. Durden. 2018. Medical and Veterinary Entomology. 3rd Edition. Academic Press. Boston, MA.

Course Description: This course will study the major insect, mite, and tick vectors of disease to man and associated animals. Students will learn to identify and understand the life cycles, morphology, and behavior of mosquitoes, ticks, mites, lice, fleas, and other disease vectors. Lectures will emphasize the major arthropod-transmitted disease cycles, such as malaria, Lyme disease, West Nile virus, leishmaniasis, and plague. The interaction between the disease-causing pathogen and the arthropod vector will also be covered, including biological and mechanical transmission of pathogens, as well as the mechanical damage that a parasite inflicts on its host. 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:

- 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.

Student Learning Outcomes for Graduates in the Program

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

- 1) Understanding and implementation of scientific methodology.
- 2) Utilization of field techniques toward addressing scientific questions.
- 3) Be able to utilize statistics toward the analysis of data within the discipline.
- 4) Be able to effectively disseminate scientific findings using both written and oral communication.

Course Learning Objectives:

- 1) Students will identify the basic groups of medical and veterinary important arthropods.
- 2) Students will describe and diagram the life cycles and vector biology of these parasites.
- 3) Students compare various methods of collecting ectoparasites, and learn the appropriate collecting method for the particular situation they face.
- 4) Students will assess the impact of medical and veterinary arthropods in terms of disease transmission.
- 5) Students will study the use and efficacy of forensic entomology.
- 6) Students will demonstrate a proficiency preservation and mounting techniques for preparing specimens for identification.

Marketable Skills:

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)). Graduate students will be graded on an addition 100 point project that will be incorporated into their lab activity, and take home exams separate from the in-class lecture exams.

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 (6 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.

If you are feeling ill, have a fever of 100 F, or are exhibiting any symptoms of COVID infection, please stay home and self-quarantine until you are either tested and cleared, or have been symptom free for over 10 days.

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.
- 4) For remote connections, please attend class as professionally as one would do in person (ie. Wearing proper clothes, not being disruptive or disrespectful to your peers, etc.)

TENTATIVE LECTURE OUTLINE

DATE	LECTURE TOPIC	CHAPTER
Aug 26	Introduction & Classification of Parasitic Arthropods	1 & 2
Aug 28	Hematophagy and Disease Transmission	3
Sept 2	Labor Day – No class	
Sept 4	Epidemiology of Vector-Borne Diseases	3
Sept 9	Epidemiology and Cockroaches	3 & 5
Sept 11	Beetles	8
Sept 16	Beetles continued	8
Sept 18	Exam I	
Sept 23	Flies (Diptera) and MothFlies/Sand Flies/Biting Midges	10 & 11
Sept 25	Biting Midges and Mosquito Taxonomy and Biology	12 & 14
Sept 30	Mosquito Viruses and Disease monitoring and control	14
Oct 2	Horse Flies and Deer Flies	15
Oct 7	Muscid flies and Myiasis (Bots, grubs) and Louse Flies	16 & 18
Oct 9	Black Flies & Tsetse Flies	13 & 17
Oct 14	Exam II	
Oct 16	Fleas of Importance	9
Oct 21	Fleas and Plague	9
Oct 23	Fleas and Murine Typhus	9
Oct 28	Lice and Louse-borne Typhus	6
Oct 30	Moths and Butterflies	20
Nov 4	True Bugs of Importance	7
Nov 6	Exam III	

Nov 11	Mites	25
Nov 13	Mites Part II	25
Nov 18	Ticks	26
Nov 20	Ticks Part II	26
Nov 25	Spiders & Scorpions	22, 23, 24
Nov 27	Thanksgiving Holidays – No Class Nov 27-29	
Dec 2	Ants, Wasps, and Bees	21
Dec 4	Ants, Wasps, and Bees	21
Dec 5	Dead Day (for this class)	
Dec 7 10:15 am	Final exam for MW 11:00 on Tuesday 7th	

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.

MEDICAL AND VETERINARY ENTOMOLOGY LABORATORY SCHEDULE

DATE	LABORATORY
Aug 26	No Lab – University Faculty meeting
Sept 2	Labor Day – No Lab
Sept 9	True Bugs and Beetles (Hemiptera & Coleoptera)
Sept 16	Lice (Phthiraptera)
Sept 23	Fleas (Siphonoptera)
Sept 30	Flies (Tabanidae & Muscidae)
Oct 7	Flies II (Culicidae, Psychodidae, & Simuliidae)
Oct 14	Flies III (Glossinidae, Muscoidea, & Hippoboscoidea)
Oct 21	Midterm Lab Practical
Oct 28	Mites (Acari)
Nov 4	Ticks (Acari)
Nov 11	Acari continued
Nov 18	Scorpions, Spiders, and kin (Cheliceriformes)

Nov 25 Hymenoptera

Dec 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.

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.

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.

Supportive Statement: I aim to create a learning environment for my students that supports various perspectives and experiences. I understand that the recent pandemic, economic disparity, and health concerns, or even unexpected life events may 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 a supportive 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.