

**Biology 4607/5607 sec:201, 2MC, 2V1 – Arachnida of the Trans Pecos – Summer II
2024
Lecture M-F 9:00-10:30 Lab 10:30-1:30 WSB 107 & virtual
Syllabus**

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

Text: Jackman, J.A. 1999. A Field Guide to Spiders and Scorpions of Texas. Gulf Publishing, Lanham, MD and Bradley, R.A. 2013. Common Spiders of North America. University of California Press, Berkeley, CA.

Course Description: This course will focus on classification, identification, ecology, evolution, physiology, conservation, and the economic importance of various Arachnid groups, including but not limited to spiders, scorpions, and vinegaroons, as well as centipedes and millipedes.

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.

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 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 the arthropods.
2. To train the student in the skills required by a professional research arachnologist, who develops and transmits new knowledge.
3. To familiarize the student with the student with the scientific method, and approaches used in the development of theory in arachnology.
4. To improve the student's skills in quantitative biology.
5. To train the student in the identification of arthropods other than the insects, to at least the family level.

Course Structure: In order to accomplish the above objectives, the following activities will be integrated by the student into an understanding of the science of arachnology:

1. Lectures will cover the basic biology of Arachnida and key topics of current concern and study.
2. Laboratories will provide practical experience with arachnid form and function, identification, and ecology.
3. A required arachnid collection will aid the student in learning about habitats in which arachnids live, their lifestyles, and other aspects of their lives.
4. Several field trips will be offered over the course of the term. These are intended to provide field experience as a group, and introduce students to a variety of means of arachnid collecting.
5. Tests and examines will enable students to gauge progress in learning the material.
6. Reading the textbook should be considered required for preparation for the class. The recommended book provides a very interesting coverage of arachnid life and taxonomy, and it is highly suggested that students consult the book often when identifying arachnids. The reading and studying of this material is to be self-paced, and students are individually responsible for the content covered in this course.
7. Students must appreciate that this is a lecture and laboratory course. Learning is the responsibility of the student, while the instructor aids by presenting information for the student to assimilate.

Grading: Your grade will be assigned based on the percentage of points you get out of a total possible 600 points. (100pt exams (2), 100pt Lab notebook, 50pt preview collection, 50 pt participation and attendance, 200pts from arachnid collection).

Tests: There will be a total of 2 exams, each worth 100 points. Quizzes may be given throughout the semester to assess material between exams. If you miss an exam or quiz 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.

Collection: The collection will consist of a variety of families of various different arachnid groups. As this course spans the breath of 3 Arthropod classes (Arachnida, Diplopoda, and Chilopoda), variety is more important than repetition. Also, although I do encourage the building of our invertebrate collection, I would prefer to not lay waste and depopulate all the arachnida in the region. At this time, there is not a minimum/maximum number of specimens needed for the collection. Instead, collections will be graded based on diversity and abundance in relation to each other. This will help to standard collections for the course, as well as to adjust for weather and collection availability. Each specimen must be correctly prepared, labeled, and in good condition. More information about collections will be presented later.

Note – Collections are very time consuming and tend to be the biggest stumbling block for completing the course. To avoid a lot of stress trying to find enough different types of arachnids, it is imperative to start collecting NOW.

Preview Collection: To make sure you are off to a good start, a subset of your collection will be **due on Jul 18**. This preview of **at least 10 specimens** will be graded on correct preparation, labeling and preservation techniques. Identifications are not required (but will be considered if provided). Some slide mounted as well as alcohol preps are required at this time.

Attendance: Students missing 20% of lectures (5 lectures) shall 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. Excused exams or quizzes may be made up on the day of the final exam.

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.

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) If you are going to attend class, please do so. Leaving and returning to class repeatedly is disruptive, as well as showing up after half the period is over.
- 4) Please turn cell phones and pagers to silent while in class. They are disruptive to the entire class, and distract others as well.

Tentative Lecture Outline

<u>Date</u>	<u>Lecture topic</u>	<u>Chapter</u>
Jul 8	Introduction, Arthropod characteristics and classification. Moon Phase Waxing New Moon	
Jul 9	Order Scorpiones	Set up Berlese Funnels
Jun 10	Order Scorpiones	Main Campus collecting
Jul 11	Order Araneae	Hancock Hill collecting
Jul 12	Order Araneae continued	Trip to the SRSU Ranch
Jul 13	Moon Phase – Half Moon Waxing	
Jul 15	Order Solifugae	Blacklighting to the Post
Jul 16	Order Uropygi	
Jul 17	Trip to Balmorhea Lake	
Jul 18	Order Amblypygi	Preview Collection due
Jul 19	Order Acari	
Jul 21	Moon Phase – Full Moon	
Jul 22	Order Acari continued	Blacklighting to Sanderson
Jul 23	Order Acari continued	
Jul 24	Midterm Exam	Blacklighting at the SRSU ranch
Jul 25	Order Opiliones	
Jul 26	Trip to the Rio Grande (all day trip)	
Jul 27	Moon Phase – Half Moon Waning	
Jul 29	Order Pseudoscorpiones	
Jul 30	Field Collecting	
Jul 31	Order Schizomida/ Order Palpigradi	
Aug 1	Field Collecting	
Aug 2	Trip to Terlingua Ranch (possible overnight)	
Aug 4	Moon Phase – New Moon	
Aug 5	Work on Collections	
Aug 6	Order Ricinulei	
Aug 7	Work on Collections	
Aug 8	Work on Collections	

Aug 9	Work on Collections	
Aug 12	Collections Due by 5pm	Moon Phase – Half Moon Waxing
Aug 13	Review for Final	
Aug 14	9:00am Final Lecture Exam	

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/Honors Course Credit Requirement: As with all modified undergraduate for graduate course credit classes, this course has extra requirements above and beyond those for the undergraduates. The extra length in which must be taken will include a small scale research project and write-up to be included with your arachnid collection. The research project must be approved by your instructor prior to beginning, and should work to understand a particular ecological or geographical aspect of arachnology. Examples of potential projects (yet not limited to these) include the predators of a specific plant species or community, a survey of particular ecological habitat (sand dunes, wetland, or other unique vegetative area), a survey of a particular niche (funnel spiders, fossorial arthropods, aquatic mites), or a intensive survey of one groups emphasized in this course (scorpions, solfugids, whip-scorpions, pseudoscorpions, spiders, ticks, etc.). Please keep this separate project independent of your primary course collection, although you may use spacer tags in your main collection to refer to your special project collection for grading and fulfilling your collection requirements.

The write-up for this project should be stylized as a note or short manuscript following the instructions to authors for the journal, *Southwestern Naturalist*. You must include relevant citations, and document why you choose this particular study, the methods and materials you employed to conduct your study, what you found/collected, and what you think it means or tells us about the question you asked.

For grading purposes, this special collection and write-up will be worth a combined 200 points (100 points for collection and 100 points for the final paper). These are due at the start of the final exam on Wednesday Aug 14th. If you complete your collection and paper earlier than this, early submissions are encouraged.