Geol. 4421: Vertebrate Paleontology—Spring, 2022

Instructor: Dr. Tom Shiller
Office: WSB 319
Email: thomas.shiller@sulross.edu
Office Hours: Tuesday and Wednesday, 2-5:00 pm; Thursday, 3:30-5:00 pm; or by appointment

Course Description: This course will focus on advanced topics related to vertebrate life in Earth's history. Topics to be discussed include vertebrate evolution, systematics, taphonomy, and paleoecology. Lecture topics will be supplemented with both laboratory and field exercises. Students will study skeletal material from extinct and extant vertebrates, learn to prepare fossil bone, observe taphonomic processes, and prospect for vertebrate fossil bones in the field.

General Objectives: Each student will develop:
1. Knowledge of vertebrate life in the past
2. Knowledge about how vertebrates have evolved over time
3. An understanding of modern statistical techniques in classifying vertebrate taxa
4. Knowledge of the processes responsible for the limited vertebrate fossil record
5. A knowledge of how vertebrates lived in the past and the ecosystems they inhabited

Student Learning Objectives: Each student will demonstrate the ability to:
1. Identify and describe different vertebrates based on skeletal remains
2. Properly prepare vertebrate fossil bones in the laboratory and in the field
3. Use cladistics software to estimate the phylogeny of extinct vertebrates
4. Interpret the environments in which different vertebrates lived based on characteristics of the rocks in which they were found
5. Responsibly find and collect vertebrate fossil bones in the field

Learning Outcome: Students will have an understanding of vertebrate life history and how extinct vertebrates are studied in the field of paleontology.

Grades: There will be four exams during the semester covering topics discussed in lecture. There will be two comprehensive lab exams during the semester covering topics discussed in lab. Lab participation will be scored based on attendance and lab notes. There will be a final lab report due following the taphonomy lab exercise. There will be one required field trip during the semester and a follow-up report. Students will also be assigned lists of key terms to define, related to material being discussed in lecture. Finally, there will be an activity involving cladistical analysis assigned later in the semester utilizing data in Excel. There will be two comprehensive lab exams during the semester covering topics discussed in lab. Lab participation will be scored based on attendance and lab notes.

4 Exams—10% each (40% total grade)
Field Trip Report—10%
Cladistics Activity—10%
Key Terms—20%
Lab—20%

Attendance: Attendance in lecture is expected and will not be counted toward the final grade. There will be one required weekend field trip to Big Bend National Park during the semester.

Plagiarism and Cheating: Plagiarism and cheating will not be tolerated. Anyone caught copying the work of others will receive an automatic zero on the assignment or exam. A second occurrence will warrant expulsion from the course.

Students with Special Needs: 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. Alpine students seeking accessibility/accommodations services must contact Mary Schwartze Grisham, M.Ed., LPC, 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 mschwartze@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, SUI Ross State University, Alpine. Texas, 79832.

Class Schedule: Note: dates and topics may be subject to change during the semester.

Date	**Topics**	Lab
1/11	Intro. to Vert. Paleo., Finding and Preparing Fossil Bones	
1/18	Vertebrate Origin	Types of Joints
1/25	Vertebrate Origin, Early Paleozoic Fishes	Teeth and Dermal Bones
2/1	**Exam 1**	Cranial Bones
2/8	Early Tetrapods and Amphibians, Early Amniotes	Cranial Bones Cont.
2/15	Triassic Tetrapods	Vertebrae, Shoulder Girdle and Ribs
2/22	**Field Trip (2/19-22)**	No Lab
3/1	**Exam 2**	Arm and Manus
3/7-11	SPRING BREAK	SPRING BREAK
3/15	Evolution of Fishes after the Devonian, Dinosaurs, Pterosaurs, Crocs., and Other Reptiles	**Lab Practical Exam**
3/22	Birds	Pelvic Girdle
3/29	Mammals and Human Evolution	Leg and Pes
4/5	**Exam 3**	Morphometrics
4/12	Systematics	Cladistics
4/19	Paleoecology, Taphonomy	Cladistics 2
4/26	Ancient Verts. of the Big Bend and northern Mexico, Dead Day	Lab Final
5/2	**FINAL EXAM (6-8 pm)**	

Geology BS marketable skills:

1. Student will be able to conduct field work.
2. Student will be able to use field equipment.
3. Student will be able to use lab equipment.
4. Student will be able to use library resources.
5. Student will be able to communicate in written and oral format.