

GEOL 3408 – Stratigraphy and Sedimentation

Fall - 2024

Section: 001

Lecture Times: Tr: 12:30-1:45 pm

Instructor: Dr. Tom Shiller

Office: WSB 319

Office Hours: Tuesday and Thursday, 9-11:00 am; Wednesday, 1-3:00 pm; or by appointment

e-mail: thomas.shiller@sulross.edu

Materials Required:

Sedimentology and Stratigraphy, 2nd edition. 2009. Gary Nichols. ISBN-10: 1405135921

No lab text.

Course Purpose:

This course will cover the processes of weathering, transportation and deposition of sediment, and the formation of sedimentary rock. Stratified sedimentary rocks and their spatial/temporal relationships are a chief topic in this course. The sub-disciplines of stratigraphy to be covered include lithostratigraphy, the study of rock strata; biostratigraphy, the study of fossils in sedimentary rocks and how they relate to geologic time; and sequence stratigraphy, the study of patterns of sedimentary strata and how they relate to sedimentological processes and to global events.

Student Learning Objectives: Each student will demonstrate the ability to:

1. Identify, interpret and explain aspects of sediment and sedimentation as they have recorded Earth history and have differed through Earth history; SLO # 1 ... apply a diverse body of geologic information in the area of Earth history.
2. Contrast sedimentary depositional environments and their facies and evaluate their change and importance through Earth history; SLO # 1 ... apply a diverse body of geologic information in the area of Earth history.
3. Identify, interpret and explain aspects of lithostratigraphy, biostratigraphy, seismic stratigraphy and sequence stratigraphy; SLO #2 ... apply a diverse body of geologic information in the area of stratigraphy.
4. Illustrate, analyze and evaluate a stratified sediment or rock sequence; SLO #2 ... apply a diverse body of geologic information in the area of stratigraphy.
5. Demonstrate familiarity with and use of field techniques used in the study of sedimentology and stratigraphy; SLO #3 ... apply a diverse body of geologic information in the area of field techniques.
6. Devise and design a schematic representation of a real-world stratified sediment or rock sequence; SLO #3 ... apply a diverse body of geologic information in the area of field techniques.

Homework:

There will be two take-home assignments given during the semester requiring independent research, critical thinking, and technical writing. Assignments will be given **during class** and will not be available on Blackboard. A due date will be given on the day homework is assigned. Late projects will be accepted at 50% of your earned point value by 6 pm. on the due date (including immediately after class); 25% value by the end of the following day, and 0% after that. Each homework assignment is worth 5% of your total grade. If you are planning on missing class for a Sul Ross sanctioned event or other valid reason, homework must be turned in early (prior to the absence).

Exams:

There will be four exams covering sections discussed following the previous exam. These exams will comprise primarily short answer and essay questions. You may **not** use your notes for exams. Special arrangements will need to be made for make- up exams. Exams will be curved at the professor's discretion.

Field Trips:

There will be two mandatory field trips: a one-day trip to Shafter, Texas and a two-day trip to Big Bend NP. Both will have associated assignments that will be completed and turned in for a grade.

Grading System:

4 Exams = 60% (15% each); 2 Homeworks = 10% (5% each); 2 Field Trips = 10% (5% each); Lab = 20%

Letter Grading: Final course grade will be based on a percentage of the total points as follows:

90.00-100% = A
80.00-89.90% = B
70.00-79.90% = C
60.00-69.90% = D
Less than 60.00% = F

Attendance and Make-up Policy:

The only acceptable excuses for missing class are those due to illness, approved Sul Ross sanctioned events, and observation of religious holidays. All excused absences **must** be documented on paper. Please inform the professor at least 1 week prior to missing class (e-mail, note on office door, etc....). With an appropriate excuse, you must make up missed quizzes/exams **within 10 days** of the last day of the absence or you have failed to meet your course responsibilities and will receive a zero.

Student athletes:

You are given a full week to return the completed documentation: your progress (attendance and grade) to your coach, so when you present that card to me, I will take it and return it to you the following class period. Alternatively, you can bring it to my listed office hours and I will look up your progress then. I will not complete them at the beginning or end of class. No exceptions.

Classroom Conduct:

The Student handbook states under Student Misconduct, number 21, "Such prohibition includes disorderly classroom conduct that obstructs, interferes with, inhibits and/or disrupts teaching and/or classroom activities." Behavior which is included in this category: 1) persistent talking to ones' neighbors during lecture, 2) coming to class late or leaving early, 3) the use of cellular phones or MP3 devices in the classroom. **CELL PHONES MUST BE TURNED OFF IN CLASS.** This includes texting, emailing and social networking. (*If you are a member of an EMS/VFD group or have a child in day care and they must be able to reach you, let me know and we will discuss.*) Offenders of this policy will be asked once to stop and 5 points will be taken from their grade. If it occurs a second time, the offender will be instructed to leave the classroom, and there will be a meeting with the Dean of Student Life. If there are further incidents, UDPS will be called and offenders will be physically ejected from the classroom and will likely be expelled from the University. **CHEATING AND PLAGIARISM WILL NOT BE TOLERATED:** Any student caught cheating on an exam or quiz will receive an automatic **zero** on that assignment. If a student is caught cheating second time, additional disciplinary actions will be taken. Any student plagiarizing information on an assignment will receive an automatic zero for that assignment.

ADA Statement

SRSU Accessibility Services. Sul Ross State University (SRSU) is committed to equal access in compliance with the 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 Mrs. Mary Schwartz Grisham, LPC, SRSU's Accessibility Services Director or Ronnie Harris, LPC, Counselor, at 432-837-8203 or email mschwartz@sulross.edu or ronnie.harris@sulross.edu. RGC students can also contact Alejandra Valdez, at 830-758-5006 or email alejandra.valdez@sulross.edu. Our office is located on the first floor of Ferguson Hall, room 112, and our mailing address is P.O. Box C122, Sul Ross State University, Alpine, Texas, 79832.

Lecture and Lab Schedule for the Fall 2024 Semester:*This calendar is subject to change with prior notice, at the instructor's discretion.*

| Week of | Lecture Topics | Chapters | Lab |
|----------------|---|-----------------|---|
| 8/26 | Intro to strat. & sed. | 1 | No lab |
| 9/2 | Labor Day (9/4) , Review of sed. rocks and minerals | 2 | Review of sed. rocks and mins. |
| 9/9 | Types of sediment | 2,3 | Sand |
| 9/16 | Sedimentary structures, Exam 1 | 4 | Sed. Structures (part I) |
| 9/23 | Alluvial fan deposits, Field Trip 1 (9/28) | 9 | Sed. Structures (part II) |
| 9/30 | Stream deposits | 9 | Sieve Sed. Analysis |
| 10/7 | Delta deposits, beach deposits, Exam 2 | 12,13 | Lab Practical Exam |
| 10/14 | Estuarine deposits, shallow marine deposits | 13,14 | Isopach and Structural Contour Maps (part I) |
| 10/21 | Deep marine deposits, | 16 | Isopach and Structural Contour Maps (part II) |
| 10/28 | Shallow marine carbonates, Exam 3, Field Trip 2 (11/2) | 15 | Permian Basin |
| 11/4 | Stratigraphic principles, lithostratigraphy | 19 | No Lab |
| 11/11 | Lithostratigraphy, biostratigraphy | 19,20 | Correlation |
| 11/18 | Biostratigraphy | 20 | LAB FINAL EXAM |
| 11/25 | Subsurface Stratigraphy, THANKSGIVING | 20,22 | Thanksgiving Holiday |
| 12/2 | Subsurface, sequence stratigraphy | 22,23 | |
| 12/9 | Final Exam | | |

Geology BS marketable skills:

- * The student will be able to conduct field work.
- * The student will be able to use field equipment.
- * The student will be able to use lab equipment.
- * The student will be able to use library resources.
- * The student will be able to communicate in written and oral format.