

GEOLOGY 4401 - SEDIMENTARY PETROLOGY

Fall 2020

Department of Biology, Geology and Physical Sciences

Sul Ross State University

MonWedFri 9:00-9:50 Lab Alpine Wed 2-5; Midland TBA

Dr. Elizabeth Measures

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837-8117; main office 837-8112

WSB 315 office

WSB 216 mail box drop

OFFICE HOURS

call or email

Mon 1:30 to 3:30 pm

Tue 9 am to 10 am

Thrs Fri 2 pm to 3 pm

LAB INSTRUCTORS

TBA (Alpine); Joan Gawloski (Midland)

COURSE DESCRIPTION

The course covers the composition, characteristics, description, classification, occurrence, history, origin and interpretation primarily of sedimentary rocks. It also involves determination of the rock types in the source areas.

Laboratory work consists of examination of hand samples and thin sections of sedimentary rock types.

PRE-REQUISITES/CO-REQUISITES

Optical Mineralogy (GEOL 2405) and Stratigraphy and Sedimentation (GEOL 3408)

METHODS OF INSTRUCTION

The course consists of three hours of lecture and three hours (minimum) of lab work.

Possible day-long field trips, at least one is required.

TEXT

Sedimentary Petrology, 3rd ed, 2001, by Maurice Tucker, **ISBN:** 0-632-05735-1.

No lab text. Other readings from books and journals may be assigned to supplement the text.

REFERENCE MATERIALS

Other books to be used for reference will be available in the lab. Handouts will be provided in lab or posted on Blackboard for lecture. There is no lab book. Review material will be posted on Blackboard.

MATERIALS

Notebook/paper

pens & pencils

hand lens

CLASS ATTENDANCE AND CONDUCT POLICY

You are expected and required to be on time to lecture and lab, attend lectures and labs and to stay throughout the entire designated period.

Tardiness, leaving during class, or leaving class early are not acceptable except for serious, legitimate reasons (illness, appointments with specialists, family emergency, caregiver, emergency responder). Legitimacy will be determined by instructor. Keep instructor informed either before or after absences.

Schedule routine medical/dental appointments around lecture/lab times.

You are expected to be engaged, awake, and on task. Sleep at home not in class. Do not work on another class during this class.

If you are going to miss a lecture, or have missed a lecture, written notification (email) and documentation must be provided as soon as possible. Be sure to get the notes from another student in the class.

Arrangements for missed assignments must be done, and the make-up also done, within one week of the scheduled due date. Points will be deducted for late work.

Late assignments will not be accepted once graded papers are returned.
 You are expected to observe the University's Code of Student Conduct (see the Student Handbook).
 You may be asked to leave if you are disruptive or not observing the stated policy.

ELECTRONICS POLICY

Smart phone, cell phone, i-pod, laptop (etc.) usage is prohibited during lecture and lab, EXCEPT for the express purpose of recording or taking notes. Any recordings are NOT to be posted on any social media/web site.
 Smart phones, cell phones, i-pods, laptops (etc.) are to be turned OFF.
 Texting, checking email, playing games, surfing the internet, working on another class during class time are not acceptable.
 If you want to look-up something mentioned in lecture, do it after class.
 Multitasking does not work.
 Points will be deducted from tests for violation of this policy.
 If electronics are accessed during a test then the test will receive a grade of zero.
 If you need to be excluded from any of this policy, send an email to the instructor stating the reason(s) why you need access to these electronics during class.

FIELD TRIP(S)

MAYBE at least one required, day-long field trip and field exercise, possibly after midterm.

DISABILITIES ACCOMMODATION

ADA (Americans with Disabilities Act) Sul Ross State University is committed to equal access in compliance with the Americans with Disabilities Act of 1973. It is the student's responsibility to initiate a request for accessibility services. Students seeking accessibility services must contact Mary Schwartz-Grisham, M. Ed., LPC., in Counseling and Accessibility Services, Ferguson Hall, Room 112. The mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas. Telephone: 432-837-8203.

You will be provided with an accommodation letter which must be given to the instructor as early as possible in the semester.

GRADING AND EXAMINATIONS

The semester grade:

54% from lecture exams, three (includes final)

30% from laboratory

10% from presentation

6% other assignments and classroom department

Exams 1 and 2 only cover approximately 4.5 weeks of material. The last lecture exam is comprehensive (1/3 of the questions will cover exam 1 and 2 material).

Lab grading details will be provided on the lab syllabus.

Other assignments could be questions based on chapters in the text, quizzes, daily participation/attendance, and a required field trip exercise.

Scan homework and send as email attachment. Photos of homework taken with a phone are usually unreadable. Homework questions may appear in some format on exams.

Incomplete (I) grades are given where passing work has been done and only a minor part of the requirements are incomplete.

Grading Scale

100-90.00	A	
89.99-80.00	B	
79.99-70.00	C	
69.99-60.00	D	(D and lower does not count for Geology major credit)
<59.99	F	

SCHEDULE IS TENTATIVE AND SUBJECT TO CHANGE

MONDAY		WEDNESDAY		FRIDAY	
Aug 24	Intro	Aug 26	Sediment Descriptions	Aug 28	Sediment Descriptions
Aug 31	Sediment Descriptions	Sept 2	Sediment Descriptions	Sept 4	Sediment Descriptions & Cong, Breccia Descs
Sept 7	Labor Day Holiday - No Class	Sept 9	Conglomerate & Breccia Descriptions	Sept 11	Cong, Breccia & Sandstone Descs
Sept 14	Sandstone Descriptions	Sept 16	Sandstone Descriptions	Sept 18	Sandstone & Mudrock Descriptions
Sept 21	Mudrock Descriptions	Sept 23	EXAM # 1	Sept 25	Carbonate Descriptions
Sept 28	Carbonate Descriptions	Sept 30	Carbonate Descriptions	Oct 2	Carbonate Descriptions
Oct 5	Chert Descriptions	Oct 7	Evaporite Descriptions	Oct 9	Evaporite & Coal etc Descriptions
Oct 12	Coal etc Descriptions	Oct 14	Sed Iron and Phosph Descriptions	Oct 16	Volcaniclastics Descriptions
Oct 19	Sediment Interpretation	Oct 21	Cong/Breccia Interpretation	Oct 23	Sandstone Interpretation
Oct 26	EXAM # 2	Oct 28	Sandstone Interpretation	Oct 30	Mudrock Interpretation
Nov 2	Carbonate Interpretation	Nov 4	Carbonate Interpretation	Nov 6	Carbonate Interpretation
Nov 9	Carbonate Microfacies and Regional Rock Suites	Nov 11	Chert Interpretation	Nov 13	Evaporite Interpretation
Nov 16	Coal etc Interpretation	Nov 18	Sed Iron and Phosph Interpretation	Nov 20	Volcaniclastics Interpretation
Nov 23	Exam # 3	Nov 25	Thanksgiving Holiday No Class	Nov 27	Thanksgiving Holiday No Class
Nov 30	PRESENTATIONS	Dec 2	PRESENTATIONS		
TUESDAY - DEC 8 8 to 10 am		PRESENTATIONS			

EXPECTED STUDENT LEARNING/COURSE OBJECTIVES/OUTCOMES:

At the end of the semester, the successful student will be able to apply critical reasoning and problem solving skills to:

1. Identify, describe and apply the basic classification schemes for discrimination of the sedimentary rock types, in hand sample and thin section, of clastics, carbonates, coals, cherts, evaporites and volcanoclastics through lab assignments, and lecture and lab exams. (SLO 2)
2. Demonstrate ability to interpret and explain mechanisms and modes of transportation, deposition and environment from examination of a sedimentary rock, in hand sample and thin section, through lab assignments, and lecture and lab exams. (SLO 2)
3. Demonstrate ability to correctly and safely use basic geologic lab equipment (handlens, stereomicroscope and petrographic microscope) for examination, description and interpretation of sedimentary rocks through lab assignments and exams. (SLO 2)
4. Integrate different lithologies into a facies model and use this model and stratigraphic relationships to interpret the depositional history of a region through lab assignments, and lecture and lab exams. (SLO 1 and SLO 2 and SLO 4)
5. Identify and explain the the products and processes of diagenesis through lab assignments, and lecture and lab exams. (SLO 2)
6. Summarize and synthesize all aspects of sedimentary petrology in a class capstone field exercise that requires analysis of a sedimentary rock outcrop through the design and creation of a descriptive measured section. (SLO 2 and SLO 5)

GEOLOGY UNDERGRADUATE (BACHELOR OF SCIENCE) STUDENT LEARNING OBJECTIVES/OUTCOMES (SLO's):

1. The student will be able to apply a diverse body of Geologic information in the area of Earth history.
2. The student will be able to apply a diverse body of Geologic information in the area of mineralogy and petrology.
3. The student will be able to apply a diverse body of Geologic information in the area of structural geology and tectonics.
4. The student will be able to apply a diverse body of Geologic information in the area of stratigraphy.
5. The student will be able to apply a diverse body of Geologic information in the area of field techniques.

METHODS OF ASSESSMENT/EVALUATION – Learning outcome assessment will be made on the basis of three (3) Exams and weekly lab sessions and two (2) lab practicals. The exams will assess the application of critical reasoning and problem solving skills through short answer questions and multiple choice questions (with some diagrams). The graded exams will be reviewed by providing students with "point reclamation" questions over those items missed by a majority of the class. Lab exercises will apply examples of material covered in lectures. Homework assignments will assess student problem solving skills in applying, describing, and explaining aspects of clastic petrology, carbonate petrology and petrology of other sedimentary rocks.