

CARBONATE PETROLOGY - GEOL 5326

Fall 2024

TueThrs 9:30 – 10:45 am

Geology Program; Natural Sciences Department; ALPS College; Sul Ross State University

Dr. E Measures

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WSB 315

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Office hours:

Mon 2 to 5

Thrs 2:30 to 5

can't make these times?

call or email to make an appointment;

weekly schedule is posted next to office door

COURSE DESCRIPTION

Origin, classification, and diagenesis of ancient and modern carbonate rocks and sediment. From SRSU Catalog

Carbonate petrology deals with the origin, description, classification, and interpretation of limestones and dolostones. The emphasis will be on carbonate stratigraphy and interpretation of microfacies. Local and regional examples will be examined.

METHODS OF INSTRUCTION

Course consists of 3 hours of lecture per week and several optional one-day trips. While the emphasis of the course is on carbonate depositional environments, some petrographic exercises will be required including an independent project which will require collecting and preparation of samples. Outside readings and discussions of the articles are also a part of the course.

FIELD TRIPS

Up to four, one-day to half day, field trips will be offered and will examine local carbonates.

TEXTS (most on reserve in Library)

Origin of Carbonate Sedimentary Rocks. 2016. James and Jones. Wiley

Carbonate Sedimentology. 1991. Tucker and Wright. Wiley-Blackwell.

Carbonate Depositional Environments, AAPG Memoir 33. 1983. Scholle & others, eds.

Carbonate Facies in Geologic History. 1975. Wilson. Springer-Verlag.

Readings/homeworks will be assigned from these texts.

Articles from geologic journals will be assigned.

MATERIALS

Notebook/paper

pens & pencils

STUDENT RESPONSIBILITIES STATEMENT

All full-time and part-time students are responsible for familiarizing themselves with the **Student Handbook** and the Undergraduate & Graduate Catalog and for abiding by the **University** rules and regulations. Additionally, students are responsible for checking their Sul Ross email as an official form of communication from the university. Every student is expected to familiarize him/herself with the requirements of such laws.

ATTENDANCE POLICY

Attendance is expected in lectures. Come on time and do not leave during class or leave class early. Lecture exams and exercises missed cannot be made up at a later time **unless** prior arrangements are made. If you are going to miss an exam/homework/deadline for a legitimate reason, let the instructor know AHEAD of time. Be sure to have documentation.

Use of electronic devices, not specifically related to taking notes or recording lecture, is not acceptable.

You are expected to check your Sul Ross e-mail and to access Blackboard.

DISABILITIES ACCOMMODATION

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 for accessibility services. Students seeking accessibility/accommodations services must contact Mrs. Mary Schwartz Grisham, LPC, SRSU's Accessibility Services Director at 432-837-8203 or email mschwartz@sulross.edu, or contact Alejandra Valdez at 830-758-5006 or email alejandra.valdez@sulross.edu. The office is located on the first floor of Ferguson Hill, room 112. The mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas 79832. Students will be provided an accommodation letter which must be given to the instructor as early as possible in the semester.

GRADING/METHODS OF ASSESSMENT/EVALUATION

| The semester grade/assignments: | Grading Scale: | |
|---|----------------|---|
| 66% from lecture exams (3) | 100-90.00 | A |
| 10% from homework assignments | 89.99-80.00 | B |
| 24% from term research reports/projects (2) | 79.99-70.00 | C |
| | 69.99-60.00 | D |

Exams will occur about every 4 to 5 weeks. Various formats will be used for the questions. Samples will also be included on exams

Homework will be from text/article readings.

Term research reports/projects: 1) a literature search and synthesis of a topic related to carbonates presented in a written report; 2) an original research project based on sample collection, preparation, description, and interpretation of carbonates resulting in a written report and an oral presentation.

COURSE SCHEDULE tentative

| | | |
|-------|---------|---|
| Wk 1 | TueThrs | Intro & Review of Carbonate sedimentation |
| Wk 2 | TueThrs | Classification of Carbonate Rocks |
| Wk 3 | TueThrs | Techniques of Carbonate Petrography |
| Wk 4 | TueThrs | Microfacies |
| Wk 5 | TueThrs | Diagenesis; Exam 1 |
| Wk 6 | TueThrs | Stratigraphy of Carbonates |
| Wk 7 | TueThrs | Carbonate Platforms |
| Wk 8 | TueThrs | Reefs |
| Wk 9 | TueThrs | Permian Reef Complex |
| Wk 10 | TueThrs | Bahamas; Exam 2 |
| Wk 11 | TueThrs | Persian Gulf |
| Wk 12 | TueThrs | Dolomite |
| Wk 13 | TueThrs | Ancient Carbonate Deposits |
| Wk 14 | TueThrs | Ancient Carbonate Deposits |
| Wk 15 | TueThrs | Presentation |
| Wk 16 | | Exam 3 |

Field trip dates: to be announced in class

EXPECTED STUDENT LEARNING OUTCOMES & COURSE OBJECTIVES

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

- * identify and describe carbonate hand samples and thin sections using carbonate rock classification schemes (SLO 1 & SLO 3)
- * interpret and explain the depositional environments (sedimentary processes and settings) that produce various types of carbonate rocks from examination of hand samples and thin sections (SLO 1 & SLO 3)
- * collect carbonate samples and prepare them in the lab (SLO 3)
- * writing a paper describing and interpreting a suite of carbonates and then orally presenting the paper (SLO 4)

GEOLOGY MASTER OF SCIENCE STUDENT LEARNING OUTCOMES (SLO's)

1. The student will be able to apply diverse bodies of Geologic information in the area of advanced sedimentary geology.
2. The student will be able to apply diverse bodies of Geologic information in the area of advanced igneous/metamorphic processes, structure and tectonics.
3. The student will be able to apply diverse bodies of Geologic information to field and lab research and techniques.
4. The student will be able to communicate diverse bodies of Geologic information through the standard scientific format of an oral presentation based on a written paper.

GEOLOGY MASTER OF SCIENCE MARKETABLE SKILLS

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