

GEOLOGY 304
SEDIMENTARY GEOLOGY
SPRING 2006
Prerequisites: GEOL 101, 102, 302

Instructors: Rick Diecchio, 3040 David King Hall Marci Robinson, 3039 David King Hall
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Office hours: Wed 12 noon – 2 pm Wed 12 noon – 1 pm
Class time: lecture: Mon & Wed 10:30-11:45 am lab: Mon or Wed 1:30-4:15 pm

Text: Prothero & Schwab, *Sedimentary Geology*, 2nd ed., 2004, W H Freeman & Co

References (* available in lab room, ** library reserve):

- (AMG) * Adams, MacKenzie, Guilford, *Atlas of sedimentary rocks under the microscope*, 1984
* Folk, *Petrology of Sedimentary Rocks*, 1974
** Matthews, *Dynamic Stratigraphy*, 2nd edition, 1984
(S27) * Scholle, *Carbonate Rock Constituents, Textures, Cements, and Porosities*, AAPG Memoir 27, 1978
(S28) * Scholle, *Constituents, Textures, Cements, and Porosities of Sandstones*, AAPG Memoir 28, 1979

The objective of this course is to provide each of you with a basic understanding of the methods of observation, analysis and interpretation of sediment, sedimentary rocks and strata at scales ranging from microscopic to global.

<u>DATE</u>	<u>TOPIC</u>	<u>READINGS</u>
Jan 23	introduction	ch. 1
25	weathering & soils lab 1 - particle identification	ch. 2 Folk p. 62-99
30	transport & deposition of sedimentary particles	ch.3
Feb 1	sedimentary structures lab 2 - particle size analysis	ch.4 ch.5 (p 81-91)
Feb 6	siliciclastic textures	ch.5
8	siliciclastic seds: sandstones & conglomerates lab 3 - siliciclastic sedimentary rocks	ch.5 ch.5 (S28, AMG)
13	siliciclastic seds: mudrocks, diagenesis	ch.6, 7
15	depositional environments: terrestrial lab 4 – drill core logging	ch. 8
20	depositional environments: coastal clastic	ch. 9
22	depositional environments: clastic marine lab – review of siliciclastics	ch. 10
27	chemical sedimentary rocks - limestones	ch.11
Mar 1	EXAM 1 (chapters 1-10) lab 5 – limestones	ch.11 (S27, AMG)

6	evaporites, limestone diagenesis	ch. 11, 14 (276-279, 283-290)
8	carbonate environments lab 6 - compilation of stratigraphic column	ch. 12
Mar 13, 15 SPRING BREAK		
20	cherts & phosphorites	ch. 13 (263-269)
22	ironstones lab 7 –miscellaneous sedimentary rocks	ch. 14 (279-283)
27	fossil fuels	ch. 13 (269-274)
29	lithostratigraphy lab 8 – stratigraphic correlation	ch. 15 (302-322)
Apr 3		
5	lithostratigraphy event stratigraphy, magnetostratigraphy lab 9 – electric well logs	ch. 15 (331-339), App. A ch. 15 (328-331), 17 (377-384) ch. 17 (356-361)
10	biostratigraphy	ch. 16, App. A (485-487)
12	seismic & sequence stratigraphy lab 10 - stratigraphic maps & diagrams	ch. 17 (361-376) ch. 19 (423-437)
17	sea-level & climate record	ch. 15 (322-328)
19	EXAM 2 (ch. 11 – 17) lab – field trip preparation (ALL MEET WEDNESDAY)	
21-23 FIELD TRIP		
24	chronostratigraphy	ch. 18, App. A
26	isostasy lab 11 - chronostratigraphic correlation	Matthews, ch. 9 fig 17.19
May 1		
3	basin analysis & tectonics secular changes in stratigraphic record lab – review	ch. 19 (424-454) ch. 12 (259-261), Fig 15.6, ch.19 (454-459)
May 10 (Wed) FINAL EXAM 1:30 PM (includes lecture & lab material; comprehensive)		
Grading:	Exam 1: 40 points	Final Exam: 50 points
	Exam 2: 40 points	Lab: 60 points
		Participation: 10 points

All exams must be taken as scheduled. Make-ups will not be given, unless for truly exceptional circumstances, and then only if scheduled **PRIOR** to the exam.

Lab: Lab is considered an important and essential part of this course. Please take lab seriously, which means attending the entire lab each week, and thoughtfully completing the entire lab report each week. Labs are intended to require several hours of effort outside of the formal lab meeting. **All labs are due**

at the beginning of the lab period one week after they are assigned, unless otherwise specified.

Labs will be graded on a 5 point scale: 1 or 2 = inadequate, 3 = adequate, 4 = good, 5 = excellent. The field trip will constitute 2 lab grades. Your lowest lab grade will be dropped. The total point value of your highest 12 out of 13 labs (11 labs + 2 for field trip) will constitute your lab grade (out of 60 possible points). A late lab will receive no more than 3 points. Any labs submitted after that lab assignment has been returned to the class will receive no more than 2 points.

Honor Code: You are expected to adhere to the honor code. All graded work, including lab exercises, are expected to be individual efforts, unless teams are specifically assigned. **Students are encouraged to discuss the theory and procedures among themselves in lab, but each student is expected to complete each lab assignment individually.** Labs that indicate unassigned joint efforts will be returned without a grade.

Field trip will run from Friday afternoon 4/21 until Sunday evening 4/23. We will stay in some type of cabin or bunkhouse, and will travel in a university van. Expenses will be less than \$50 for meals. Field trip will be worth 2 lab grades.

Safety: Lab work will require that you use glass slides, rock and sediment samples, microscopes, and dilute hydrochloric acid. Careful handling of these materials will insure a safe environment for all. An eye wash station is available in the classroom.

Personal safety on the field trip is of primary concern. There are normal risks associated with any form of fieldwork, including, but not limited to, personal injury accidents, natural hazards, wild animals, transportation accidents, victimization by criminal activity, and illness. These can be compounded when we are in remote areas. By participating in the field trip, you will knowingly and voluntarily accept these risks. Responsible and careful behavior on the part of all participants will help provide a safe environment for all. While on the trip, let's try to always be conscious of this. Field trip participants are responsible for providing their own health insurance and are fully responsible for expenses incurred for any medical care or other emergency assistance received.

Equipment for lab: Please bring the following equipment to lab each week: a calculator, hand lens, colored pens or pencils (at least red, blue, and black), straightedge and engineers scale.