

# Geology 398E – Depositional and Diagenetic Environments

## Monday, 6:00 - 8:40 PM - Spring 2001

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*Office hours will be scheduled as necessary during the semester.*

**Text: D. R. Prothero and F. Schwab, Sedimentary Geology, W. H. Freeman, 1996.**\_\_

<u>Class Date</u>	<u>Topic</u>
January	15 No Class - MLK Holiday
	17 Introduction, class scope, field trip plans, depositional systems and categories of sedimentary rocks: binocular scope introduction, Shell sample examination guide
	22 Weathering, erosion and transport: sample examination
	24 Introduction to siliciclastic rocks, Sandstones: sandstone analysis
	27 Field Trip #1 – Outcrops, diagrams and measured sections
	29 Sandstones, cont.: sandstone analysis and description
	31 Sandstones cont.: sandstone analysis and description
February	5 Conglomerates: conglomerate analysis and description
	7 Mudrocks: shale analysis and description
	12 Mudrocks cont.: shale analysis and description
<b>Project #1 DUE</b>	14 Alluvial and Fluvial sediments: no lab
	17 Field Trip #2 - Hunting Island, Johnson Creek
	18 Field Trip #2 - Hunting Island, Johnson Creek
	19 Lacustrine and Eolian sediments: analysis and description
	21 Coastal sediments: analysis and description
	26 Coastal and marine sediments: analysis and description
	28 Marine and pelagic sediments: analysis and description
March	5 No Class – Spring Break
	7 No Class – Spring Break
<b>Project #2 DUE</b>	12 Introduction to Biogenic and Chemical Rocks: hand samples
	14 Carbonate Rocks: carbonate analysis and description
	19 Carbonate Rocks and environments: carbonate analysis and description
	21 Carbonate Rocks and environments: environmental systems
	23 Field Trip #3 – TN/KY Pennsylvanian section
	24 Field Trip #3 - TN/KY Pennsylvanian section
	25 Field Trip #3 - TN/KY Pennsylvanian section
	26 No Class
<b>Project #3 DUE</b>	28 Cherts, siliceous and other biogenic rocks: hand samples
April	2 Chemical Rocks: hand samples
	4 Further discussion on diagenesis: no lab
	9 Stratigraphy Concepts – Lithostratigraphy: facies analysis
	11 Biostratigraphy, Chronostratigraphy: stratigraphic code, zonation
	13 Field Trip #4 - TN/KY Mississippian to Ordovician section
	14 Field Trip #4 - TN/KY Mississippian to Ordovician section
	15 Field Trip #4 - TN/KY Mississippian to Ordovician section
	16 No Class
	18 Correlation: seismic stratigraphy, geophysical logs, magnetostratigraphy
	23 Basin Analysis, Tectonics: basin analysis
	25 Concepts in geological mapping: mapping tools
	30 Work on final project
May	9 Final, 5 PM, <b>Project #4 Due</b>

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### **Class Objectives and Information**

My objective for this class is for you to learn the basics of sedimentary rock depositional type and style with resulting diagenesis. Basic sedimentology and stratigraphy will be discussed. Field examination and hands on sample analysis will be a very large part of our class activities and there will be hand and microscopic examination of sedimentary rocks.

We will use the Shell Sample Examination Manual as a guide to rock descriptions. You will be expected to read this manual.

Several scientific papers will be reviewed outside of class. These papers will discuss aspects and techniques of sedimentary rock geological interpretations. Many of these papers may be briefly discussed in class. A fair amount of time may be spent researching resources and data from the internet.

Four interpretive projects will be completed for the class. These projects will include the use of geological concepts and techniques related to the study of sedimentary rocks. The projects will become progressively more complex during the course. Some of the projects may be collaborative efforts.

The final exam will cover key concepts discussed in class.

The field trips are an integral and important part of the class. We will work to keep expenses and time to a minimum.

If you have a physical, psychological, and/or learning disability which might affect your performance in this class, please contact the Office of Disability Services, 126A B&E, (803) 641-3609, as soon as possible. The Disability Services Office will determine appropriate accommodations based on medical documentation.

Good writing and communication is valued in this course. Please remember the written work you produce in this class can be included in your rising junior writing portfolio. For further information on the portfolio requirement please consult your USCA Undergraduate and Graduate Bulletin or visit Dr. Lynn Rhodes, Director of Writing Assessment or Mr. Karl Fornes, Director of the Writing Room.

The Prothero and Schwab text is excellent and you will be expected to read and understand the material.

### **Grading**

Grades will be based on completion of the projects, class participation and a final exam. There will be four projects.

Project #1	(15 points) – completion of a measured outcrop section
Project #2	(15 points) – measured beach section and tidal delta map
Project #3	(20 points) – sample description and strip logs
Project #4	(25 points) – depositional and sediments map of the Cumberland Plateau region
Final	(25 points)
Total	100 points, 91-100=A, 81-90=B, 71-80=C, 61-70=D, <61 you loose!