SUNY Cortland
Department of Geology
GLY 471 - Stratigraphy
Fall, 2016

Credit Hours: 3
Lecture: Bowers 339, TU and TH 11:40-12:30
Lab: Bowers 336, TU 1:15-4:05
Web: http://paleo.cortland.edu/class/strat/

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Office Hours: WE: 2-4, TH: 2-5

> *The sediments are a sort of epic poem of the Earth. When we are wise enough perhaps we can read in them all of past history*
>
> *—Rachel Carson, 1951*

The purpose of this course is for students to learn how ancient environments may be reconstructed by interpreting sedimentary rocks and the processes of sedimentation. This broad goal can be divided into three course objectives: that the student by the end of the course (i) is, using a variety of techniques, able to recognize and describe the physical properties of common sedimentary rocks and sedimentary structures in hand samples and in thin section; (ii) becomes knowledgeable in the basic principles governing sedimentological processes in modern environments, and (iii) is able to integrate observations from sedimentary rocks and stratigraphic sequences and formulate interpretations of ancient depositional environment(s).

It is assumed that students have also completed introductory courses in Physical and/or Historical Geology **and** Petrology.

Required Materials

Required Text: Nichols, G. 2009. *Sedimentology & Stratigraphy*, 2nd edition. Wiley-Backwell.

Additional required readings will be kept on reserve in the Library or available online. You will also be **required** to obtain a hand lens (10x is sufficient) for examination of hand samples and a rock hammer for use in the field.

Attendance Policy

You are expected to attend all lectures and laboratories; however, attendance *per se* will not be part of your grade assessment. Each student, however, will be responsible for material missed and any assignments due on the day of an absence. Unless otherwise excused (see below)

make-up quizzes and exams will not allowed. Excused absences include your illness, a death or other family emergency.

A Writing Intensive Course

This course is a writing intensive (WI) course. As a WI course, you will be expected to write a lengthy research paper (approximately 20 pages) based largely upon sedimentologic and stratigraphic data collected in the field. Several components of the research paper will be initially submitted as separate documents throughout the semester and will be critiqued, assessed and returned thus providing students an opportunity to refine and revise their work when the final research paper is handed in at the end of the semester.

Grading:

Your grade will be based upon your performance in laboratory and quizzes, a field project with research paper, writing assignments, the two one-hour exams and a final exam- each with laboratory component. The breakdown of your grade is as follows:

Laboratories and writing assignments	20 %
Field Project/Paper	20 %
First Hour Exam	20 %
Second Hour Exam	20 %
Final exam:	20 %
TOTAL	100 %

Students With Disabilities

If you are a student with a disability and wish to request accommodations, please contact the Office of Student Disability Services located in B-40 Van Hoesen Hall or call (607) 753-2066 for an appointment. Information regarding your disability will be treated in a confidential manner. Because many accommodations require early planning, requests for accommodations should be made as early as possible.

COURSE OUTLINE

GLY 471Stratigraphy & Sedimentology

Fall, 2016

Lecture Topic	**Reading**
PART I: SEDIMENTS AND SEDIMENTARY ROCKS	
Introduction to sedimentology and stratigraphy	Chap. 1
Clastic (Terrigenous) Sediments	
Constituent Components and mineralogy of sedimentary rocks	Chap. 2
Physical properties of sedimentary rocks: texture, etc.	Chap. 2
Classification of clastic rocks	Chap. 2
Biogenic and Chemical Sediments and Sedimentary Rocks	
Constituent components and mineralogy of biogenic and chemical rocks	
Limestones and dolostones	Chap. 3
Cherts, phosphates, and organic deposits	Chap. 3
Evaporites and other chemical rocks	Chaps. 3
PART II: PROCESS OF DEPOSITION AND SEDIMENTARY STRUCTURES	
Transporting particles and fluvial dynamics	Chap.: 4
Sedimentary structures	Chap.: 4
PART III: DEPOSITIONAL MODELS	
Sedimentary processes and facies analysis	Chap. 5
Weathering and origin of sedimentary processes	Chap. 6
Terrestrial environments: alluvial, fluvial, lacustrine, and eolian	Chap. 7-10
Near-shore and deltaic environments	Chaps. 11-13
Marine and Pelagic environments	Chaps. 14-16
PART IV: SED ROCKS AND STRATIGRAPHIC PRINCIPLES	
Diagenesis and lithification	Chap. 18
Stratigraphic principles	Chap. 19
Biostratigraphy and geologic time	Chap. 20, 21
Seismic and Sequence stratigraphy	Chap. 22, 23
Basin Analysis and Environments through time	Chap. 24