

# Sedimentology and Stratigraphy - Geology 1020

Tuesday and Thursday 11-12:15, Thaw Hall 203 (4 Credits)

**Class Description:** The goal of this intermediate to advanced level course is to provide you with the basic knowledge and tools to understand how sediments are produced, transported, and deposited. Emphasis will be placed on the fundamentals of fluid flow, sediment transport, physical properties of sediments, formation of sedimentary structures and the environments in which sedimentary rocks form. You should have a solid understanding of how, where, and why different sedimentary rocks form and how to interpret the environment of deposition based on the rock type by the end of this class.

**Prerequisites:** Geology (GEOL 0800) and Geology Laboratory (GEOL 0055).

**Instructor:** Dr. Mark Abbott, Geology and Planetary Science

**Office:** SRCC 404; **Phone:** 412-624-1408; **Email:** mabbott1@pitt.edu

**Office Hours:** Tu 12:15-1:15, F 3:30-4:30 and *by appointment*.

I do my very best to have an *open-door* policy and strongly encourage students to come see me with questions even if it is not my office hours. If you are having trouble with a concept or a section of the class please come see me before it becomes a bigger problem.

**Required Text:** Sedimentary Geology-second edition 2004 2nd Author: Donald R. Prothero and Fred Schwab Publisher: W. H. Freeman.

**Laboratory:** Required. Tuesday 3:00-4:50 in Thaw Hall room 203. All lab exercises must be completed and turned in on time. Lab exercises cannot be made up without a written excuse. The laboratory exercises are worth 30% of your grade.

**Class Participation and Attendance:** Required. Brief exercises may be given during class periods and will be counted toward the class participation part of your grade (5%).

**Examinations:** There will be a mid term and a final exam (see attached schedule). They will cover separate blocks of material presented in the lectures and reading assignments. The final exam will be cumulative, but will emphasize the last block of material.

**Paper:** A 10 to 12-page research paper – **see handouts**. The goal of this exercise is to allow you to pick a topic of interest, conduct library research and write a formal research paper. I expect you to use at least 5 sources of primary literature (peer-reviewed journals) and include figures and tables to illustrate your points. References must be properly cited. Turn in both a paper and electronic copy of the manuscript. The paper counts for 20% of your grade.

**Field Trip:** There will be a mandatory overnight field trip to Seneca Rocks West Virginia from **Friday through Sunday (October 23-25)**. We will be leaving at 2pm on Friday from the side parking lot at SRCC and returning at 8pm on Sunday. We will be camping at a group campsite at the Seneca Shadows campground and you will be responsible for your own tent, sleeping bag, etc. Food planning and preparation will be discussed in class. A formal report on the field trip will be due following the trip.

**Web Site:** The course web site is located at:  
<http://www.pitt.edu/~mabbott1/climate/mark/Teaching/teaching.html>

The site will contain the syllabus, announcements and assignments for the class. I tend to revise the class schedule as the term progresses, so please check there for the most current class information.

**Grade Summary:**

|   |     |
|---|-----|
| Laboratory grade  | 30% |
| Class participation and attendance                                | 5%  |
| Mid Term Exam   | 20% |
| Paper (see next page for due dates)                               | 20% |
| Field trip participation and report (see next page for due dates) | 5%  |
| Final exam  | 20% |

**Disability Resources:** If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Office of Disability Resources and Services, 216 William Pitt Union 412-624-7890 as early as possible in the term.

**Academic Integrity:** All students are expected to adhere to the Academic Integrity Policy of the University pertaining to cheating and plagiarism. Cheating/plagiarism will not be tolerated. Students suspected of violating the University of Pittsburgh Policy on Academic Integrity, noted below, will be required to participate in the outlined procedural process as initiated by the instructor. A minimum sanction of a zero score for the quiz, exam or paper will be imposed.

*The integrity of the academic process requires fair and impartial evaluation on the part of faculty and honest academic conduct on the part of students. To this end, students are expected to conduct themselves at a high level of responsibility in the fulfillment of the course of their study. It is the corresponding responsibility of faculty to make clear to students those standards by which students will be evaluated, and the resources permissible for use by students during the course of their study and evaluation. The educational process is perceived as a joint faculty-student enterprise which will perform involve professional judgment by faculty and may involve – without penalty- reasoned exception by students to the data or views offered by faculty.*

Senate Committee on Tenure and Academic Freedom (February 1974)

**Make-Up Policy on Exams and Late Work:** None. There are no make-up exams or field trips unless there are absolutely unavoidable circumstances and a written excuse is provided. Make-up exams consist of essay questions. I will accept late work for one week after the due date, but it will be reduced by a letter grade.

**Course Organization:** The lecture schedule is subject to change.

| <b>Day</b> | <b>Date</b> | <b>Lecture Topic</b>  | <b>Reading Assignment</b> |
|------------|-------------|---|---------------------------|
| T          | Sept 1      | Introduction  | Chp 1 and 2               |
| H          | Sept 3      | Sedimentary rocks and weathering                                    | Chp 1 and 2               |
| T          | Sept 8      | Sedimentary rocks and weathering                                    | Chp 1 and 2               |
| H          | Sept 10     | Clastic transport   | Chp 3                     |
| T          | Sept 15     | Clastic transport   | Chp 3                     |
| H          | Sept 17     | <b>Research question due</b> , Sedimentary structures               | Chp 4                     |
| T          | Sept 22     | Sedimentary structures  | Chp 4                     |
| H          | Sept 24     | <b>Outline and references due</b> , Sandstones and conglomerates    | Chp 5                     |
| T          | Sept 29     | Mudrocks  | Chp 6                     |
| H          | Oct 1       | Siliciclastic diagenesis  | Chp 7                     |
| T          | Oct 6       | Terrestrial sedimentary environments                                | Chp 8                     |
| H          | Oct 8       | Terrestrial sedimentary environments                                | Chp 8                     |
| T          | Oct 13      | <b>Peer-review draft due</b> , Terrestrial sedimentary environments | Chp 8                     |
| H          | Oct 15      | Terrestrial sedimentary environments                                | Chp 8                     |
| T          | Oct 20      | <b>Return graded peer-reviewed draft</b> , Coastal environments     | Chp 9                     |
| H          | Oct 22      | <b>Mid-Term Exam</b>  | Chp 1-9                   |
| Fri - Sun  | Oct 23-25   | <b>Overnight field trip (2pm Fri to 8pm Sun)</b>                    | Handouts                  |
| T          | Oct 27      | Siliciclastic marine and pelagic environments                       | Chp 10                    |
| H          | Oct 29      | Siliciclastic marine and pelagic environments                       | Chp 10                    |
| T          | Nov 3       | <b>Field trip report due</b> , Carbonate rocks                      | Chp 11                    |
| H          | Nov 5       | Carbonate environments  | Chp 12                    |
| T          | Nov 10      | <b>Faculty draft of paper due</b> , Carbonate environments          | Chp 12                    |
| W's        | Nov 11      | <b>Oral presentations during lab – 12 minutes</b>                   |                           |
| H          | Nov 12      | Lithostratigraphy   | Chp 15                    |
| T          | Nov 17      | Lithostratigraphy   | Chp 15                    |
| H          | Nov 19      | Biostratigraphy   | Chp 16                    |
| T          | Nov 24      | Biostratigraphy   | Chp 16                    |
| H          | Nov 26      | <b>No Class - Thanksgiving</b>                                      |                           |
| T          | Dec 1       | Geophysical and chemostratigraphic correlation                      | Chp 17                    |
| H          | Dec 3       | Geophysical and chemostratigraphic correlation                      | Chp 17                    |
| T          | Dec 8       | Geochronology and chronostratigraphy                                | Chp 18                    |
| H          | Dec 10      | <b>Final paper due</b> , Review                                     |                           |
|            |             | <b>Final Exam in Thaw Hall 203</b>                                  |                           |