EARTH AND ENVIRONMENTAL SCIENCE 5702: SEDIMENTARY PETROLOGY

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Class Time: MF 10-11:50am
Class Room: BE 306

OBJECTIVES OF THE COURSE:

By the end of this course, I will expect that you will be able to:

1. Understand the processes of erosion, transport, and deposition and know how to use basic equations to calculate the energy of a system.
2. Identify a large range of minerals in thin section that are commonly found in sedimentary rocks.
3. Use a petrographic microscope and other geochemical tools to complete a provenance analysis.
4. Understand basic diagenetic processes and know what these can tell us about the history of the region.

RECOMMENDED BOOKS:

2. Adams, A.E., MacKenzie, W.S. & Guilford, C. 1984. Atlas of Sedimentary Rocks under the microscope. Prentice Hall. I'll have a copy in the lab for you to use in lab, but if you will be doing a lot of petrography, this is a good reference for you.
3. Allen, JRL. 1985. Principles of Physical Sedimentology. This text is out of print, though Blackwell still sells it, I think. If you really like sed mechanics, this is the book for you. I have PDFs of some of the chapters for you to use.

EXPECTATIONS:

1. **Attendance and participation in class discussions**

Attendance and participation in class and lab is expected. You will participate in discussions of articles and you will need to give a presentation on your assigned rock type. More information about this will follow.

2. **Labs**

Each lab will have to be turned in on the date stated on the lab, generally at the start of the following lab. I will provide additional information about my expectations on these labs when we get to them. We will be working in two rooms: the flume lab and the petrography lab. You will need to get a key to the petrography lab from Shelah.

3. **Exams**

There are 3 exams in this class: two midterms and a final. The final is cumulative. Material from the labs, the lecture, and the textbook are all fair game for the exam. I do not expect you to remember all of the equations for the exams, but I do expect you to know how to use them and know the units involved.

4. **Field Trip and Data collection in the field**

We will be going into the field to look at some sections and collect data and samples for your final project. More information will be provided in a separate handout.

5. **Final project / presentation**

The Field Trip, Petrography Lab and Provenance Labs are all part of a larger final project that you will be presenting during the last week of class. During the last full week of class, students will each be required to present their work to me individually during a scheduled time and submit an abstract. Each student will sign up for a 20 minute block of time. Fifteen minutes will be for your presentation, and 5 minutes will be for questions.

GRADING

Class participation; discussions: 5%
Lab assignments/ exercises: 30%
Rock type presentation: 10%
Final Project: 15%
Midterms: 20% (10% for each)
Final Exam: 20%
Total: 100%

GRADING POLICY

A+ (98-100%); A (94-97%); A- (90-93%); B+ (87-89%); B (83-86%); B- (80-82%);
C+ (77-79%); C (73-76%); C- (70-72%); D (60-69%); F (59% or below)

BLACKBOARD:

The class web site on Blackboard will be an important tool in the class, so be sure to be familiar with all of the functions on it. Class materials, announcements, assignments, and links to web sites will also be posted at the site.

DISABILITY RESOURCES AND SERVICES

Any student who has a need for accommodation based on the impact of a disability should contact me privately to discuss the specific situation as soon as possible. Contact Disability Resources and Services at 215-204-1280 in 100 Ritter Annex to coordinate reasonable accommodations for students with documented disabilities.

STUDENT AND FACULTY ACADEMIC RIGHTS AND RESPONSIBILITIES POLICY (#03.70.02)

Freedom to teach and freedom to learn are inseparable facets of academic freedom. The University has a policy on Student and Faculty Academic Rights and Responsibilities (Policy #03.70.02), which can be accessed at the following link: http://policies.temple.edu/getdoc.asp?policy_no=03.70.02.

PLAGIARISM

Plagiarized material will not be accepted in this course. The writing center at Temple has a good web site explaining plagiarism, specifically focusing on different forms of plagiarism: http://www.temple.edu/writingctr/student_resources/avoiding_plagiarism.htm

TENTATIVE SCHEDULE

Week starting:	Topic:	Readings and HW:
August 26	Introduction to Sedimentary Petrology; the sedimentary cycle Sedimentation Mechanics: Fluid properties Dimensional Analysis	Allen Ch. 1.1-1.8 **HW: Dimensional Analysis Lab**
September 2	Monday: no school Fluid properties in the Flume lab	Allen Ch. 3.1-3.3; 3.6 **HW: Flume observations and Particle Settling**
September 9	Sedimentation Mechanics: Particle Motion Field trip prep and stratigraphy review *****Field Trip on Saturday 9/14*****	Allen Ch. 1.9-1.11; 4.1-4.5 **HW: Transport Lab**
September 16	Sedimentation Mechanics: Erosion and transport Sedimentation Mechanics: Deposition	Allen Chapter 4.6-4.10 **HW: Alluvial Sedimentation Lab**
September 23	MONDAY: Exam 1 Sedimentation Mechanics: Bedforms	**HW: Bedforms Lab**
September 30	Bedforms in the flume lab Turbidites in the flume lab	**HW: Write-up** of Jackfork field trip guide & Jackfork articles
October 7	The Jackfork Controversy class discussion Composition and Classification of Sed Rocks	**HW: Jackfork Lab**
October 14	Sediment texture Sediment Mineralogy	Folk, 1980 pgs. 3-14; 63-100 **HW: Petrography Tutorial (BB Quiz)**
October 21	**Student Presentations** on miscellaneous other Sed Rocks- carbonates, evaporites, phosphates, ironstones, etc.	Selected Readings
October 28	MONDAY: Exam 2 Petrography in petro lab (note: be sure to get a key to this lab)	**HW: Petrography Lab**
November 4	Tectonics and Sedimentation Provenance; intro to Provenance lab	**HW: Provenance Lab (Part I)**
November 11	Provenance Provenance Lab (Part I) in petro lab	Treatise of Geochem 7.15 **HW: Provenance Lab (Part II)**
November 18	Diagenesis	Treatise of Geochem 7.07 **HW: Diagenesis Lab**
November 25	Diagenesis Lab in petro lab (continue to work on this concurrent with the presentations next week)	
December 2	**Student Presentations** to The Sed Pet Society of Temple (SPST) Special Session on Provenance of Paleozoic Rocks in Pennsylvania	
December 9	**Final Exam on 12/9 at 10:30**	

*** talk to me ASAP if you are going to GSA or AGU so we can figure out a time for you to take the exam***