GEO 309.01: Sedimentation and Stratigraphy

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Syllabus – GEO 309 – Sedimentation and Stratigraphy – Spring Semester 2013 – 4 credits

Lecture: Monday and Wednesday 10:10 to 11:30 AM and Friday; 10:10 to 11:00 AM; CHCB # 348

Professor: James R. Staub: Office hours are from 2:00 to 3:00 PM on Monday and Wednesday; other times by appointment. CHCB # 353; phone 243-4953; james.staub@umontana.edu


Course Outcomes: To provide you with a basic working knowledge of the characteristic features of sedimentary rocks and the physical and chemical processes responsible for their origins and diagenesis. A working knowledge of stratigraphic principles, methods of correlation, and methods of paleographic reconstruction will also be provided by this course. In addition, concepts of basin analysis are introduced. These outcomes are achieved through class room lectures, a series of laboratory exercises and/or problem sets, library research culminating in a term paper, and a field exercise.

Class Format: Many ideas and materials will be presented in lectures that are not covered in the course text. You are accountable for all ideas and materials covered in the text as well as those presented in lecture.

Moodle Course Supplement: Class announcements, lecture slides, and laboratory exercises and problem sets will be posted on Moodle.

Course Content:
Introduction to Sedimentology and Stratigraphy
Weathering and Soils
Transport and Deposition of Siliciclastic Sediment
Sedimentary Textures
Sedimentary Structures
Siliciclastic Sedimentary Rocks
Carbonate Sedimentary Rocks
Chemical/Biochemical and Carbonaceous Sedimentary Rocks
Depositional Environments
  Controls on Sea Level
  Continental Environments
  Marginal Marine Environments
  Siliciclastic Marine Environments
  Carbonate and Evaporite Environments
Stratigraphy
  Lithostratigraphy
  Seismic, Sequence, and Magnetic Stratigraphy
  Biostratigraphy
  Chronostratigraphy
Basin Analysis and Tectonics

Grading: There will be two midterm exams (15% each). They will not be comprehensive. The final exam (30%) will be comprehensive. Exam questions will be short answer/essay, computational, hand specimen identification, photo analysis, etc. in format. Failure to take any of
the exams at the scheduled time will result in a grade of zero (0), unless prior arrangements are
made with the professor or a signed medical excuse from the attending physician is presented to
the professor.

There will be seven (7) laboratory exercises and/or problem sets posted on Moodle which will be
graded and count as part of your final grade (14% of total grade). Assignments must be
completed in a timely manner to receive credit. Due dates will be posted on Moodle.

A term research paper is required (13% of total grade) consisting of library research. The text of
the paper (not including the abstract, figures, and references) should be 10 to 12 pages in length
(one and one-half spaces for text) and follow is the Geological Society of America Bulletin
format. Schedule an appointment with the instructor to discuss paper your topic before February
22th. The term paper is due on the last day of class, Friday, May 10th, by 4:00 PM.

There is a field exercise as part of a weekend long (Friday-Sunday) field trip that is graded (13%
of total grade). The field exercise is scheduled to start at 12 Noon on Friday, April 26th. We will
Travel to the Billings area and we will be camping. We will return on the evening of April 28th.
Your completed written field report is due on May 3rd by 4:00 PM. If you cannot participate in
the field exercise/field trip for an acceptable reason (e.g., medical issue) you must discuss this
with the instructor by February 11th. In lieu of your participation, a second term paper following
the same guidelines from the previous paragraph on a second topic is required to successfully
complete this course.

Individual letter grades and final letter grades will be based on the following percentages: 100-
90% A, 89-80% B, 79-70% C, 69-60% D, 59% and below F. Plus and minus scores will be
assigned to letter grades following university guidelines.

Exam Dates: First midterm exam (one hour) is on Friday, March 1st; second midterm exam (one
hour) is on Friday, April 12th; the final exam (two hours) is on Monday, May 13th, at 10:10 AM.

Student Conduct Code: Please be familiar with the UM Student Conduct Code. It outlines the
rights and responsibilities of students at The University of Montana. Being a student at UM
presupposes a commitment to the principles and policies embodied in the code. The Student
Conduct Code can be found on the Vice President for Student Affairs web site at

Course Accommodations (DSS): Students with disabilities will receive reasonable
accommodations in this course. To request course modifications, please contact me as soon as
possible. I will work with Disability Services in the accommodation process. For more
information, visit the Disability Services website at http://life.umt.edu/dss or call 406.243.2243
(Voice/Text).