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### GEO 309.01: Sedimentation and Stratigraphy

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## **Syllabus – GEO 309 – Sedimentation and Stratigraphy – Spring Semester 2015 – 4 credits**

**Lecture:** Tuesday and Thursday 1:10 to 3:00 PM; CHCB # 304

**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](mailto:james.staub@umontana.edu)

**Text:** Principles of Sedimentology and Stratigraphy, 5<sup>th</sup> edition, Sam Boggs, Jr., 2012, Prentice Hall, ISBN 10: 0-321-64318-6

**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, 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 Environments
- Stratigraphy
  - Lithostratigraphy
  - Seismic and Sequence
  - Biostratigraphy
- Basin Analysis and Tectonics

**Grading:** There will be *two midterm exams* (18% 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 nine (9) *laboratory exercises* and/or *problem sets* posted on Moodle which will be graded and count as part of your final grade (18% of total grade). Assignments must be completed in a timely manner to receive credit. Due dates will be posted on Moodle.

There is a *Saturday field trip* on April 11<sup>th</sup>. We will leave at 9 AM and return by 6 PM. Participation in this trip will count as 3% of your total grade.

There is a *field exercise* as part of a *weekend long field trip* (Friday-Sunday) that is graded (13% of total grade). The field exercise is scheduled to start at *12 Noon on Friday, April 24th*. We will travel to the Billings area and we will be camping. We will return on the evening of April 26<sup>th</sup>. Your completed written field report is due on April 30<sup>th</sup> 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 12<sup>th</sup>*. In lieu of your participation, a *research term paper* is required to successfully complete this course using the following guidelines: 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 your paper topic before February 26<sup>th</sup>*. The term paper is due on the last day of class, Thursday, May 7<sup>th</sup>, by 4:00 PM.

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 (90 minutes) is on Tuesday, March 3<sup>rd</sup>; second midterm exam (90 minutes) is on Thursday, April 16<sup>th</sup>; the final exam (two hours) is on Tuesday, May 12<sup>th</sup> from 1:10 to 3:10 PM.

**STUDENT CONDUCT CODE:** Please be familiar with the UM Student Conduct Code. The Student Conduct Code can be found on the Vice President for Student Affairs [website](http://life.umt.edu/vpsa) (<http://life.umt.edu/vpsa>)

**COURSE ACCOMMODATIONS (DDS):** 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](http://life.umt.edu/dss) (<http://life.umt.edu/dss>) or call 406.243.2243 (Voice/Text).