1-2002

GEOL 432.01: Architecture of Sedimentary Deposits

Marc S. Hendrix
University of Montana - Missoula, marc.hendrix@mso.umt.edu

G432: Architecture of sedimentary deposits

Spring, 2002

Instructor: Marc Hendrix; 243-5278; marc@selway.umt.edu

Tentative syllabus and grading scheme

Date	Lecture Topic	Reading
1/28	Introduction to architectural analysis Introduction to fluid flow	Leeder, Ch. 4
1/30	Fluid types, shear stress & strain, Reynold's and Froude numbers Problem Set 1 assigned	
2/4	Velocity profiles Boundary layers, Burst and Sweep	Leeder, Ch. 5
2/6	Flow separation & Secondary currents; Flow visualization; Bernoulli's equation, bed roughness **PROB. SET 1 DUE;** LAB 1; (Intro to Bedforms 2.0)	
2/11	Grain movement; Stoke's Law, paths of grain motion;sedimentary transport	Leeder, Ch. 6
2/13	Unidirectional flow bedforms **LAB 1 DUE**; Problem Set 2 assigned	Leeder, Ch. 7
2/18	**NO CLASS – President's Day Holiday**	
2/20	Unidirectional bedforms continued **PROBLEM SET 2 DUE;** LAB 2; generation of bedforms in a flume	
2/25	Bidirectional flow bedforms	Leeder, Ch. 9
2/27	**LAB 2 DUE;** bedforms in cohesive sediment LAB 3: Analysis of hand-samples	Leeder, Ch. 10
3/4 3/6	Sediment gravity flows I Sediment gravity flows II	Leeder, Ch. 11, 12
3/11	**LAB 3 DUE**; Eolian processes	Leeder, Ch. 8

3/13	**MIDTERM (through eolian processes)**	
3/18	**NO CLASS - SPRING BREAK**	
3/20	**NO CLASS - SPRING BREAK**	
3/25	Paleocurrent analysis**;** **Review midterm and Lab 3**	
3/27	Allostratigraphic controls I	Leeder, Ch. 13
4/1	Allostratigraphic controls II	Leeder Ch. 14, 15
4/3	Continental environments I	Leeder, Ch. 17, 18 19, 20
4/8	Continental environments II	
4/10	Marginal marine environments I	Leeder, Ch. 21, 22 23, 24
4/11	*Exxon-Mobil Carbonate Sequence Strat class (tentative, optional)*	
4/12	*Exxon-Mobil Carbonate Sequence Strat class*	
4/15	Marginal marine environments I	
4/17	Shelf-slope-rise settings I	Leeder, Ch. 25, 26
4/22	Shelf-slope-rise settings II **Final presentation reading assignments due**	
4/24	Architectural controls on fluid flow I	TBA
4/29	Architectural controls on fluid flow II **Student final presentations I**	
5/6	**Student final presentations II**	
5/8	**Student final presentations III**	

THE FINAL EXAM WILL BE Monday, May 13 from 10:10 AM to 12:10 PM.

Grading Scheme and other commentary:

Reading:
You will be required to do a significant amount of reading for this class. The majority of reading in this class will be derived from Mike Leeder's Sedimentology and Sedimentary Basins. Additional or supplementary reading may be assigned throughout the semester.

Grading Scheme:
The grading scheme will be based on the following:
Exams = ~40% (approximately equally weighted at 20% each)
Labs = ~18% (3 at about 6% each)
Problem sets = ~12% (2 at 6% each)
In class presentations and papers = ~20% (presentation ~10%; paper ~15%)

Penalty for late work:
Late assignments drag down the entire class and make it difficult to move forward with the material at a constant pace. Therefore, late assignments will be assessed a 10% penalty (approximately one letter grade) for each day late. An assignment that is more than 5 days late will be given a zero.

Final paper/presentation:
At the end of the semester, each student will give one in-class presentation on a subject of interest and write a short paper (5-7 pages of text maximum) summarizing their findings. All presentations will be the final week of regular class meetings. Class presentations are designed to promote a curiosity-driven approach to learning using a seminar style format. To prepare the class for each presentation, each presenter should identify one paper that the entire class reads. This paper should be made available to the class by **Monday, April 22**. Hence, it will be necessary for each person to figure out their topic prior to that date. In addition to the one paper that the entire class reads, I expect each presenter to find at least two additional papers and discuss them during their oral presentation. Presentations are to last no more than 20 minutes with 5 minutes of discussion and 5 minutes of "peer evaluation". Note that the student talks count for approximately 10% of the overall course grade – I strongly recommended that each student practice their talk prior to giving it for the class. All papers will be due at class time on **Friday, May 8**. In addition to their content, papers will be graded on their writing quality.

Following is a list of potential topics; you may certainly elect to discuss something other than the items listed below:

playa lakes
gilbert deltas of Lake Bonneaville
non-marine sequence stratigraphy
lahars
contourites
sedimentation on the abyssal plain
alluvial fans in humid vs. arid environments
paleosols
tidal rhythmites