

GG 309/W - SEDIMENTOLOGY AND STRATIGRAPHY - SPRING, 2007

Lecture: TR 10:30-11:45; Lab: W 1:30 - 4:20 PM

Instructor: Dr. Craig Glenn: POST 720A; 956-2200; glenn@soest.hawaii.edu. Office Hours after class or by appt.

Teaching Assistant: Francois Paquay, paquay@hawaii.edu, POST 734, 956-3728, Office Hours by appt.

REQUIRED TEXTS:

- (1) Boggs, Principles of Sedimentology and Stratigraphy/2006, 4th Edition (3rd Edition (2001) is acceptable)
- (2) Bates & Jackson, Dictionary of Geological Terms/Paperback, any edition is acceptable
- (3) Strunk & White, The Elements of Style/Paperback, any edition is acceptable

REQUIRED (!) SUPPLIES: 10X or 20X HAND LENS; 1 complete set colored pencils. A FLASH DRIVE.

Course Grade: 3 Midterms + Quizzes 60%, Labs 25%, Term Paper 10%, Class Participation 5+%

This course is designated as Writing Intensive. UHM requires that students must complete all writing assignments to pass the course with a D or better; students who do not complete all writing assignments will fail the course.

| Date | Topic | Readings, Boggs, 4 th Edition (3ed Ed. in parentheses when different) |
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| PART I: PRINCIPLES OF STRATIGRAPHY | | |
| Jan | 09 (tue) | Introduction, discussion of course. Quiz. p.xvi-xix, 513-520 (3ed Ed. p. xvi-xviii, 581-590) |
| | 10(wed) | Lab: Microscope Assignments & Term Paper Discussion |
| | 11 (thur) | Stratigraphy Overview; Lithostratigraphy Chap. 15 & 12 (3ed Ed. 18 & 13) |
| | 16 (tue) | Lithostratigraphy/Biostratigraphy (Time Scale Quiz) Chap. 14 (3ed Ed. 17) |
| | 17 (wed) | Lab: Exercise in Physical Stratigraphy & Correlation |
| | 18 (thur) | Magnetostratigraphy//Sr. Isotopes/Oxygen Isotope Stratigraphy Chap. 13, 15.4 (3ed Ed. 16, 18.5) |
| | 23 (tue) | Oxygen Isotopes/Milankovitch Cycles/Seq. Strat. Ch. 12.4, 15.4 (3ed Ed. 13.4, p. 607-617) |
| | 24 (wed) | Lab: Exercise in Physical Stratigraphy & Correlation Continued |
| | 25 (thur) | Seismic Sequence Stratigraphy (Film) CRG Handout. Scan Ch. 13 (3ed Ed. Scan Ch. 14 & 15) |
| | 30 (tue) | Sequence Stratigraphy (in-class Practicum) As above and Handouts |
| | 31 (wed) | Lab: Dr. Johanna Resig - Biostratigraphy Practicum Chap. 14 (3ed Ed. 17) |
| Feb. | 01 (thur) | Review for Midterm – Come with questions! Due: Approved Paper Topic & 5 References w/1 Paragraph Summaries of Each |
| | 06 (tue) | MIDTERM EXAMINATION I The Various Elements of Stratigraphy |
| | 07 (wed) | Lab: Student Presentations of Their Paper Topics, 10 Min. Each |
| PART II: SEDIMENTARY ENVIRONMENTS AND PROCESSES | | |
| | 08 (thur) | Weathering Reactions and Soils Chap. 1 |
| | 13 (tue) | Sedimentary Textures Chap. 2&3 |
| | 14 (wed) | Lab: Sedimentary Textures Chap. 2&3 |
| | 15 (thur) | Particle Transport and Bedforms Chap. 2&4 Due: 15 References w/ Summaries of Each |
| | 20 (tue) | Primary Sedimentary Structures Chap. 4 Due: Paper Outline w/Embedded Citations and Complete References Cited |
| | 21 (wed) | Lab: Sedimentary Structures |
| | 22 (thur) | Primary Sedimentary Structures Chap. 4 |
| | 27 (tue) | Alluvial and Fluvial Environments p. 241-257 (3ed Ed. p. 267-284) |
| | 28 (wed) | Lab: Sedimentary Structures (Cont'd) |

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| March | 01 (thur) | Marginal Marine Environments Due: Paper Introduction w/Citations with All References Cited | Chap. 9 (3ed Ed. Chap. 10) |
| | 06 (tue) | Shelf Environments | Chap. 10 (3ed Ed. Chap. 11) |
| | 07 (wed) | Lab: Siliciclastic Shelves Exercise | |
| | 08 (thur) | Shelf/Deep Marine Environments | As above, Handouts |
| | 13 (tue) | Deep Marine Environments | As Above, Handouts |
| | 14 (wed) | Lab: Siliciclastic Shelves Exercise (Cont'd) | |
| | 15 (thur) | Deep Marine Environments (Deep Sea Fan Film) Due: Paper Discussion with it's Complete References | |
| | 20 (tue) | Midterm Review: Come with questions! | |
| | 21 (wed) | Lab Period: MIDTERM EXAMINATION 2 | |
| | 22 (thur) | Introduction to Siliciclastic Rocks/ Ss Provenance Studies | Chap. 5 |

26-30 Spring Break (GG 305 Mainland Field Trip departs 3/22 evening, returns 4/2)

PART III: ROCKS CAN TALK!

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| April | 03 (tue) | SS Prov. Rev., Qtz Arenities, Arkoses, Litharenites | Chap. 5 |
| | 04(wed) | Lab: Siliciclastics Lab 1 | |
| | 05 (thur) | Graywackes and Siliciclastic Diagenesis | Chap. 5 |
| | 06 (Fri) | Due: Complete Paper with Tables, Figs., Refs <u>Due for External Review</u> | |
| | 10 (tue) | Carbonate Minerals & Carbonate Rock Classifications | Chap. 6 |
| | 11 (wed) | Lab: Carbonate Lab 1 | |
| | 12 (thur) | Carbonate Environments and Communities | Chap. 11 (Chap. 12) |
| | 13 (Fri) | Due: Paper Returned from External review to Author for Final Revisions | |
| | 17 (tue) | Carbonates: Arid vs. Humid | |
| | 18 (wed) | Lab: Carbonate Field Trip to Barbers Point | |
| | 19 (thur) | Carbonate Diagenesis | Chap. 6.8 (6.9), Handouts |
| | 24 (tue) | Dolomites | Chap. 6 |
| | 25 (wed) | Lab: Sed Rock Synthesis Exercise | |
| | 26 (thur) | Dolomites/Evaporites | Chap. 6/7 |
| | 27 (Fri) | Due: Revised Final Paper in Electronic Format | |
| May | 01 (tue) | When Evaporite Giants Ruled | Chap. 7 |
| | 02 (wed) | <i>The Good, The Bad & The Ugly</i> : Phosphorites Feed the Earth, Notions of Stinking Oceans & Stinky Muds, Stinky Skies | Chap. 7 |
| | | LAST DAY OF CLASSES | |

10 (THURSDAY)

MIDTERM EXAMINATION 3 9:45 – 11:45

The following web links are supplemental and may not be used in lieu of hard copies of the required texts

SKUNK, JR: THE ELEMENTS OF STYLE: www.bartleby.com/141/)

A GLOSSARY FO GEOLOGY TERMS: <http://www.webref.org/geology/geology.htm>

GEOLOGY AND EARTH SCIENCE DEFINITIONS: <http://geology.com/geology-dictionary.shtml>

DICTIONARY OF GEOLOGIC TERMS: <http://www.geotech.org/survey/geotech/dictiona.html>

FROMAGERS SOFT ROCK WEB RESOURCES: <http://www.fromage.ethz.ch/links.html>