

Stratigraphy and Sedimentation

Earth Sciences 201

Section: D100

Term: 2008 Spring

Instructor: Dr. James MacEachern

Discussion Topics: General:

EASC 201 is an introduction to the nature, origin and interpretation of stratified earth materials. The course has as prerequisites Physical Geology (EASC 101) or GEOG 111 and Historical Geology (EASC 102 or EASC 210). The course integrates principles of stratigraphy with principles of process sedimentology in order to develop techniques for the interpretation of sedimentary facies, prediction of facies architecture, reconstruction of paleogeography and resolution of depositional history.

Course Topics:

1. Introduction to sedimentology, including: chemical sedimentation, clastic process sedimentology, basis of flow regime theory, identification and interpretation of physical and biogenic sedimentary structures.

2. The character of facies, including: the facies concept, the use of facies associations, applications of Walther's Law, development of facies models, and the interpretation of depositional environments.

3. The character of facies associations in depositional settings ranging from terrestrial to deep marine environments.

4. Introduction to stratigraphy, including: stratigraphic principles, lithostratigraphy, biostratigraphy, and chronostratigraphy.

5. Genetic stratigraphy, including: allostratigraphy, genetic stratigraphic sequences, an emphasis on sequence stratigraphy, relative sea level and eustacy vs. tectonics, systems tracts and depositional environments, reconstruction of depositional history.

Course Organization:

Two 1-hour lectures and One 2-hour laboratory class per week.

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Grading: 1. Written Laboratory Assignments: 25%

2. Mid-Term Theory Exam: 15%

3. Final Laboratory Exam: 20%

4. Final Theory Exam: 40%

Required Texts: Boggs, S. Jr. 2006. Principles of Sedimentology and Stratigraphy, Fourth Edition, Prentice Hall, 662p.

Students may also find Walker, R.G. and N.P. James (eds.), 1992, Facies Models: Response to Sea Level Change, Geological Association of Can

Recommended Texts: None.

Materials/Supplies: None.

Prerequisite/Corequisite: Physical Geology (EASC 101) or GEOG 111 and Historical Geology (EASC 102 or 210).

Notes: None.

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