

Historical Geology

Earth Sciences 210

Section: D100

Term: 2009 Spring

Instructor: Cindy Hansen

(Email: cdhansen@sfu.ca; Office: TASC1 Room 7009)

Discussion Topics: General: REQUIREMENT DESIGNATION: B-Sci

EASC 210 is an introductory Science Breadth (BR) course that deals with the historical development of geological thought and the study of Earth history from earliest Archean time through to the present. Historical Geology addresses the tectonic evolution of the continents as well as the evolution of life. It sets the various disciplines of Earth Sciences into their historical context. Pertinent geologic concepts include primary controls on sedimentation through time. The development of life on Earth will be discussed in relation to the major geological time periods, particularly with respect to significant evolutionary developments and mass extinctions. The interaction of tectonics, climate, and relative sea-level changes (including eustasy) upon evolutionary change are considered. Concepts presented in this course will reappear in higher-level EASC courses, so it is important for majors and minors to develop a basic understanding at this stage in your education.

Course Topics:

1. Historical development of geological thought and of geological principles.
2. The significance of the "sedimentary archives".
3. Evolutionary theory and the nature of the fossil record.
4. The relationship of time and geology.
5. The Earth's dynamic crust and plate tectonic theory.
6. Historical development of the Earth. The course will concentrate on the changes the Earth has experienced from Precambrian time, through the Paleozoic, Mesozoic and Cenozoic Eras. The changes considered encompass global distributions of land and seas, mountain building episodes, glacial cycles, and the evolution of life.

Course Objectives:

Historical Geology

Upon successful completion of this course, students will be able to:

Demonstrate familiarity with concepts of geologic time

Identify key fossil groups and age ranges, and then interpret the depositional significance of rocks

Summarize the Earth systems at major intervals of geologic time, including likely causes

Deduce/propose relationships between tectonism, climate, and sea-level from the rock record

Recognize controls on deposition and basic applications of facies-based interpretation

Appreciate the historical development of geological thought and geologic principles

Course Organization:

Two 50-minute lectures and one 3-hour laboratory period per week.

Grading:

Laboratory Assignments: 20%

Written Assignment: 5%

Mid-Term Exam: 30%

Final Laboratory Exam: 15%

Final Theory Exam: 30%

Required Texts: Course Text:

Levin, H. E., *The Earth Through Time*, 8th edition (2006), Wiley and Sons, 563p.
ISBN: 978-0-471-69743-5

Laboratory Manual: Handouts provided in lab.

Recommended Texts: None.

Materials/Supplies: Pencil, ruler, scientific calculator, pencil crayons.

Prerequisite/Corequisite: EASC 101 or GEOG 111.

Historical Geology

Notes: Labs begin in Week 1

Students are expected to have a solid background in rocks and plate tectonics from their first-year prerequisite course. Review chapters 4 and 7 in the course text (or from any first-year text) if you feel you need to brush up (this material will not be reviewed in class).

This outline is derived from a course outline repository database that was maintained by SFU Student Services and the University's IT Services Department. The database was retired in 2014 and the data migrated to SFU Archives in 2015.