

EASC 101 - 3 Physical Geology

Section: D200 - 2011 Fall

Instructor: Randal Mindell

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Description Topic:

General: REQUIREMENT DESIGNATION: B-Sci

Geology is the science that studies Earth - how it was formed, how it evolved, how it works, and how we can help to preserve it. EASC 101 is an introductory course to the Earth Sciences that has been designed both as a foundation course for Earth Science majors and as a terminal course for those in other disciplines. Lectures investigate geologic theory, while laboratory sessions focus on "hands on" exercises emphasizing rock and mineral identification, Earth structure and processes.

Course Topics:

1. The Layered Earth and Plate Tectonics

Earth's layers: crust / mantle / core vs. lithosphere / asthenosphere / mesosphere / outer core / inner core

Lithospheric plates, plate boundaries, development of plate tectonic theory, our local plate tectonic setting.

2. Earth Materials

Minerals: The composition, structure, and physical properties of minerals; mineral groups and common rock-forming minerals.

Rocks: Igneous, sedimentary, and metamorphic rocks; the processes that result in the formation of rocks, Earth's materials as economic resources.

3. Earth's Interior and Geologic Processes

Earthquakes, structural deformation (faulting/folding), mountain building, volcanism.

4. Geologic Time and Earth's History

Introduction to the geologic time scale, absolute vs. relative age dating methods.

5. Environments and Surface Processes

Glaciers, rivers, deserts, coastal environments

Mass wasting

6. Earth Resources

Groundwater, energy and minerals.

Course Organization: Two 1-hour lectures (Surrey Campus) and one 3-hour laboratory per week. (Burnaby Campus)

NOTE: This is a lab science course and lab attendance is mandatory. Labs begin in the second week of the semester.

Grading:

Laboratory Assignments and Pre-Lab Quizzes: 20%

Mid-Term Theory Test: 20%

Mid-Term Laboratory Test: 15%

Final Laboratory Test: 15%

Final Theory Test: (Cumulative) 30%

Required Text:

Course Text:

"Physical Geology, the Science of the Earth"; Fletcher, C. 2001 & Wiley; ISBN 978-0-471-22037-4

*Note that any introductory physical geology text book can be used but this is the text that will be the basis for instruction.

Laboratory Manual: The EASC 101 Laboratory Manual is required for the course and can be purchased at the University Book Store.

Please note that you cannot use second-hand lab manuals because students are required to write directly into their lab manuals. The book store does not buyback lab manuals.

Recommended Text:

None.

Material List:

Pencil, ruler, white eraser, calculator.

Prerequisite/Corequisite:

None.

Notes:

NOTE: Students with credit for GEOG 112 cannot take this course for further credit. GEOG 112 was offered in Geography as an introductory geology course, and was

replaced by EASC 101 in the mid1990s with the establishment of the Earth Sciences department.