

SUNY Cortland
Department of Geology

GLY 171 -- Earth Science

Credit hours: 4

Semester: Spring 2007

Lecture: Van Hoesen A-14, MWF 10:20-11:10

Lab: Bowers 346

Email: darlingr@cortland.edu

Web page: <http://web.cortland.edu/darlingr/class/earthscience/index.html>

Professor: Dr. Robert Darling

Phone: 753-2923

Office: Bowers 323

Office hrs: TR 9:00-11:30 am or by appt.

Text: Tarbuck & Lutgens, 2003, Earth Science, 11th edition, Prentice Hall.

Course Description: (A) Basic concepts and principles of geology, meteorology, and oceanography. Three lectures and one two-hour laboratory per week. Not open to geography, mathematics, or science majors or to students with credit for GLY 160 or 261. (4 cr. hr.)

Grading Policy: Lecture counts 65% of your grade, Laboratory counts 35%. There are 4 hour exams, each of which counts 12.5% of your final grade; the writing assignments count 15% of your final grade (WA-1 is worth 10%; WA-2 is worth 5%).

Attendance Policy: Attendance is mandatory. Exam questions are derived from lecture material. Therefore, students who regularly attend lectures will have a decisive advantage over those who do not. If you miss an exam, you will be given a chance to make it up **only** if your absence was a valid absence. Valid absences are those due to approved College activities (see "Matriculation Guidelines" regarding this policy) or due to illness (a note from the Health Center is required). It is always best to talk to me about an expected absence before it occurs, when possible, so that we can work out a make up time. If you are ill and can't make class, please e-mail me **before** class begins.

Disability Statement: If you are a student with a disability and wish to request accommodations, please contact the Office of Student Disability Services located in B-1 Van Hoesen Hall or call (607) 753-2066 for an appointment. Information regarding your disability will be treated in a confidential manner. Because many accommodations require early planning, requests for accommodations should be made as early as possible.

Conceptual Framework: This course adheres to the spirit of the SUNY Cortland Conceptual Framework regarding liberal learning.

Course Requirements: All course requirements must be completed to receive a grade.

Course Schedule and Activities:

| Dates: | Topic: | Readings from Text Book |
|-----------|--|-------------------------|
| Jan 22 | Intro to Geology (scientific method) | p. 2; p. 6-10; 310-312 |
| Jan 24 | Earth's Interior & Intro to Plate Tectonics | p. 14-19 |
| Jan 26 | Plate Boundaries, Hot Spots | p. 222-233 |
| Jan 29 | The Ocean Floor & Plate Tectonics | p. 233-241 |
| Jan 31 | Plate Tectonic Pioneers (WA-1 assigned) | p. 233-241 |
| Feb 2 | Igneous rocks: Textures & Mineral Composition | p. 54-59 |
| Feb 5 | Igneous rocks: Plutonic & Volcanic rocks | p. 54-59 |
| Feb 7 | Magma & Plate Tectonics, Volcanic processes (WA-1 due) | p. 250-267 |
| Feb 9 | Volcanoes & Volcanic Processes | p. 250-267 |
| Feb 12 | Exam 1 | |
| Feb 14 | Mechanical Weathering Processes on Earth | p. 84-86 |
| Feb 16 | Chemical Weathering Processes on Earth | p. 86-90 |
| Feb 19 | Sedimentary Rocks + Environments | p. 61-67 |
| Feb 21 | Metamorphic rocks | p. 67-74 |
| Feb 23 | Geologic Dating (absolute) | p. 322-327 |
| Feb 26 | Geologic Dating (relative) / Unconformities | p. 312-316 |
| Feb 28 | Geologic Dating (applications / use of fossils) | p. 316-322 |
| Mar 2 | Geologic Time Scale & History | p. 327-330; 337 |
| Mar 5 | Extinction of the Dinosaurs | p. 352-353 (Box 12.2) |
| Mar 7 | Exam 2 | |
| Mar 9 | The Hydrologic Cycle + Streams | p. 116-118; 119-133 |
| Mar 12-16 | Spring Break | |
| Mar 19 | Stream Processes | p. 119-133 |
| Mar 21 | Stream Processes | p. 119-133 |
| Mar 23 | Groundwater Flow | p. 133-147 |
| Mar 26 | Water Wells & Ground Contamination | p. 133-147 |
| Mar 28 | Shoreline Processes & Landforms | p. 410-421 |
| Mar 30 | Shorelines & Human Structures | p. 421-425 |
| Apr 2 | Glacial Processes & Landforms | p. 154-163 |
| Apr 4 | More Glacial Landforms | p. 163-170 |
| Apr 6 | Intro to Atmospheric Science / Properties of Air | p. 436-443 |
| Apr 9 | Air Pressure & Wind | p. 502-508 |
| Apr 11 | Exam 3 | |
| Apr 13 | High / Low Pressure Systems; Atm. Circulation | p. 508-514 |
| Apr 16 | Frontal Systems | p. 531-536 |
| Apr 18 | Scholar's Day (WA-2 assigned ; 3/4 page typed summary of an oral presentation) | |
| Apr 20 | States of Water in the Atmosphere (WA-2 due) | p. 466-481 |
| Apr 23 | Precipitation from Clouds | p. 466-481 |
| Apr 25 | Seismology & Earthquakes | p. 189-196 |
| Apr 27 | Earthquake Magnitude, Intensity & Damage | p. 196-200 |
| Apr 30 | Earthquakes & Tsunamis | p. 200-203 |
| May 2 | Rock Deformation & Geologic Structures | p. 284-294 |
| May 4 | Characteristics of Mountain Ranges | p. 294-302 |
| May 7 | Orogenic Processes: Isostasy | p. 302-304 |
| May 11 | Exam 4 (Friday; 1:00 am – 3:00 pm) | |

Course Objectives:

To examine the materials from which the Earth is made and to learn techniques of identifying and interpreting these materials.

To gain an understanding of the physical processes that operate in the Earth' interior; i.e., igneous and metamorphic processes and processes leading to earthquakes.

To gain an understanding of the physical processes that operate on and near the Earth' surface; i.e., weathering and erosion, deposition, and groundwater.

To gain an appreciation of the time scale over which these processes operate.

To develop an understanding of the Theory of Plate Tectonics and the evidence supporting it. We will be looking at the history of the Theory of Plate Tectonics as an example of how the scientific method is employed.

To learn how to use geologic maps and air photos to decipher the geologic features and history of an area.

Classroom Code of Etiquette:

- 1) Please keep your cell phone off while in class.
- 2) Please do not talk to your neighbor while I'm lecturing.
- 3) Please come to class a few minutes early.
- 4) Please do not close your notebooks five minutes before 11:10 am. I will tell you when class is over.