

Fall 2010 –Geology 001 (Planet Earth) Lecture Syllabus

[A] Fundamentals – A Geological Primer (~ 1/3 of course; 8 Class Sessions)

How the Earth Works – Plate Tectonics, Isostasy, Rock Cycle (2 Sessions)

What Makes Earth – Internal Structure, Minerals, Rocks and Igneous Processes (3 Sessions)

Geological Time, Earth Structure, and Evolution of the Solar System and Planets (3 Sessions)

(EXAMINATION I on Fundamentals of Geology [A])

[B] Individual Modules – FIVE TOPICS SELECTED (2/3rds of Course; 18 Class Sessions)

I. DRIFTING CONTINENTS (3 Class Sessions)

History and Evidence of Concept

Plate Tectonics

Structural Geology and Mountain Building

II. EARTH MATERIALS (3 Class Sessions)

Minerals and Mineral Uses

Rocks, Crystals, and Gems

The Rock Cycle and Economic Geology

III. FAMOUS ERUPTIONS (3 Class Sessions)

Igneous Geology Primer

Volcanoes and Famous Volcanic Eruptions

Hot Spots, Subduction, Rifts

Volcanic Mineralization

IV. EARTHQUAKES (3 Class Sessions)

Seismicity

San Andreas Fault

Earthquakes and NYC

V. GLACIATION (3 Class Sessions)

Glacial Geology Fundamentals

Glacial Landforms

Glacial Geology of Long Island

VI. WATER EVERYWHERE (3 Class Sessions)

Hydrologic Principles

Drinking Water - Long Island vs. NYC

Groundwater Contamination

VII. THE GEOLOGIC EVOLUTION OF NYC (3 Class Sessions)

Passive Margin Sedimentation

Active Margin Tectonics

Manhattan Prong, Newark Basin, Coastal Plain

VIII. COASTING ALONG (3 Class Sessions)

Coastal Geology

Long Island Beaches

Hurricanes

IX. CLIMATE CHANGE (3 Class Sessions)

Hurricanes

Carbon Cycle

Global Warming

X. GEMOLOGY

Types of Gemstones

Geological Environments

What makes a Precious Stone?

(EXAMINATION II on Three Topics of Modules from [B])

(EXAMINATION III on Two Topics of Modules from [B])

COURSE GRADES:

The three lecture-based exams are averaged and compose 50% of the semester grade. The other 50% is based on evaluations in the laboratory. We encourage you to monitor your course grade during the semester.

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Textbook: Essentials of Geology - 3rd Edition by S. Marshak (W.W. Norton Co.) has been assigned in electronic format (eBook).

Fall 2010 – Geology 001 (Planet Earth) Lab Syllabus

Lab 01 – Introduction to Topographic Maps

Lab 02 – Topographic Contour Maps, Profiles, and Gradients

Map Practicum (P1)

Lab 03 – Physical Properties of Minerals

Lab 04 – Mineral Identification

Mineral Practicum (P2)

Lab 05 – Rock Groups and Rock Properties

Lab 06 – Rock Identification

Rock Practicum (P3)

Student Oral Presentations (Mandatory Attendance)

Each student will research a geological topic of their choosing and present a ten minute PowerPoint presentation to the class. Possible topics include a famous volcano or volcanic eruption, hurricane, earthquake, or other natural disaster, famous geologic site such as the Grand Canyon, or the geology of a particular place or country of interest to the student. See our webpage for suggested topics and for instructions on the PowerPoint and an allied five-page research paper. All topics must be approved by the instructor in advance. Grading for the PowerPoint component is 60% from instructor evaluation, 20% for attendance, and 20% from peer evaluations. Also due at the last meeting of lab is a minimum five page report (12 pt font, double spaced, one-inch margins, not including figures) summarizing the information from your oral presentation.

Laboratory Grade: The lab grade is the average of five assignments, each worth 20%: map practicum, mineral practicum, rock practicum, research presentation, and research report. The final laboratory grade composes 50% of the total course grade.

Optional Extra Credit Field Trip: An optional extra credit field trip will be announced during the semester that will either provide a tour of several geologic highlights of the NY metro region or assign a trip to a local museum. The grade on this extra credit assignment may be used to replace the lowest of the three earned test scores in lab. Detailed information about the trip and an opportunity to register for it will be provided in lab.

Lab Manual: Physical Geology Laboratory Manual by Professors Merguerian and Bennington (2010), 11th Edition, 99 p. [**Note:** The Physical Geology Laboratory Manual is available free of charge from your lab instructor and also on the Blackboard site for the course].

Hofstra University Learning Goals and Objectives
GEOL 001 (NS) – Planet Earth

Geology Department:

- 1. Students will develop the basic observational skills they need to function as geoscientists.**
 - 1a. Students will make measurements and use various quantitative units to describe phenomena and will practice converting quantities from one unit to another.
 - 1b. Students will use maps (topographic and geologic) to estimate distances, visualize landforms, and locate / identify geographic and geologic features.
 - 1c. Students will identify at least 20 common minerals in hand samples and in field exposures of rock.
 - 1d. Students will identify the common forms of igneous, metamorphic, and sedimentary rock in hand samples and in field exposures.

- 3. Students will apply critical thinking skills such as inductive and deductive reasoning to solve geological problems using the scientific method.**
 - 3e. Students will demonstrate the ability to integrate new data with their current understanding of geologic systems to formulate or evaluate a hypothesis.

HCLAS General Education Distribution:

- 2. Students will apply analytical reasoning across academic disciplines.**
 - 2c. Apply quantitative, inductive, and deductive reasoning.
 - 2d. Apply abstract thinking and conceptual modeling.
 - 2e. Apply scientific methods to investigate and analyze the natural world.

- 3. Students will demonstrate proficiency in written communication.**
 - 3a. Compose grammatical sentences.
 - 3c. Compose a sequence of paragraphs that develop a point.
 - 3e. Write an effective argumentative essay.

- 4. Students will demonstrate proficiency in oral communication.**
 - 4a. Demonstrate skill in oral communication for purposes such as informing, persuading, and/or defending.
 - 4b. Compose and deliver effective, audience-appropriate oral presentations that develop and support a point; or participate in formal debates; or lead or participate in collaborative discussion of a question or a text.
 - 4c. When appropriate, use visual, auditory, and/or technological aids.

- 6. Students will demonstrate information literacy.**
 - 6a. Conduct research using the variety of information sources available to them.
 - 6c. Integrate sources effectively and ethically through proper citation.

- 7. Students will demonstrate technological competency.**
 - 7a. Demonstrate the ability to use general or discipline-specific technologies to identify, retrieve, analyze, and communicate ideas and information.

Hofstra University Disabilities Policy

If you believe you need accommodations for a disability, please contact Services for Students with Disabilities (SSD). In accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, qualified individuals with disabilities will not be discriminated against in any programs, or services available at Hofstra University. Individuals with disabilities are entitled to accommodations designed to facilitate full access to all programs and services. SSD is responsible for coordinating disability-related accommodations and will provide students with documented disabilities accommodation letters, as appropriate. Since accommodations may require early planning and are not retroactive, please contact SSD as soon as possible. All students are responsible for providing accommodation letters to each instructor and for discussing with students the specific accommodations needed and how they can be best implemented in each course.

For more information on services provided by the university and for submission of documentation, please contact the Services for Students with Disabilities, 212 Memorial Hall, (516) 463-7075.

Hofstra University Policy on Academic Honesty

Plagiarism is a serious ethical and professional infraction. Hofstra's policy on academic honesty reads: "The academic community assumes that work of any kind [...] is done, entirely, and without assistance, by and only for the individual(s) whose name(s) it bears." Please refer to the "Procedure for Handling Violations of Academic Honesty by Undergraduate Students at Hofstra University" to be found at http://www.hofstra.edu/PDF/Senate_FPS_11.pdf, for details about what constitutes plagiarism, and Hofstra's procedures for handling violations.