ESC 101 (Introduction to Physical Geology)

Spring, 2010

COURSE OUTLINE

Course Title: Introduction to Physical Geology
Catalog #: ESC 101
Instructor: Prof. Ken Ettlinger
Office: Shinnecock 102
Secretary Phone: (631) 548-2628
E-Mail: ettlink@sunysuffolk.edu
Web Site: www.ventifact.com
Office Hours: M (10-11), T(9-9:30), W(12:30-1:30), TR(9-9:30), F(11-1:30)
Classroom Meeting: Tuesday/ Thursday: 9:30-10:45
Laboratory: Thursday: 11:00-12:50

Course Objectives:
Upon successful completion of this course, students should be able to:

• Understand the origin and composition of the earth
• Identify common minerals and rocks
• Distinguish between igneous, metamorphic and sedimentary rocks
• Interpret the rock cycle
• Interpret geologic maps and cross-sections, and identify geologic structures
• Understand volcanism, mountain building, earthquakes and glaciology
• Understand plate tectonics and its relationship to earth features
• Understand basic hydrogeologic principles and the importance of groundwater

Attendance Policy:

All students are required to attend every class session for which they are registered. Students are responsible for all that transpires in class whether or not they are in attendance, even if absences are the result of late registration or add/drop activity at the beginning of the term as permitted by college policy. The college defines excessive absence or lateness as more than the equivalent of one week of class meetings during the semester. Excessive absence or lateness may lead to failure in, or removal from, the course.

Student Requirements for Completion of the Course:

You will have to complete all in-class assignments, lab exercises, quizzes and tests on time and in a way that demonstrates an acceptable level of understanding of the course material in order to pass this course.

During most classes, a video will introduce the topic of discussion. Discussion and lecture will be
directed by a handout of questions on the video as well as student interest. Video clips and questions are available through the course website. Before each lab (on Thursday) there will be a short weekly quiz on the video, readings and lecture covered during the prior Thurs-Tues time period. Students must be on time to lab class in order to take the weekly quiz.

**Course Description/ Philosophy:**

Introduction to Physical Geology is suitable for science as well as non-science majors since it is a "first course" in Geology. This is a lab science course about planet Earth; its origin, structure, composition and the forces which shape its surface. Plate tectonics provides the framework for understanding the processes of volcanism, mountain building and earthquakes. External forces such as glaciers, streams and ocean waves are examined in order to interpret the landscape.

Laboratories include studies of minerals, rocks, maps, photographs and other materials used by geologists to study the earth. This course fulfills the 4 credit laboratory science requirement.

**Procedures for Accomplishing Objectives:**

1. This semester, a major component of the course will be viewing the videos from the award winning PBS series, “Earth Revealed”. These videos will introduce concepts, allow students to visualize geologic phenomena and show how complex geological puzzles have been solved by using the scientific method.

2. Classroom lectures and discussion will supplement and clarify concepts presented in the text and video segments and give the student an opportunity to ask questions in order to gain additional insight to geological processes.

3. Labs will provide "hands on" opportunities to use some of the methods and materials that geologists use in the field and in the lab.

**Grading Policy:**
Your final grade in this course will be determined by the following:

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<th>Component</th>
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<tr>
<td>Lecture</td>
<td>30%</td>
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<td>Exams (3)</td>
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<td>Final Lecture Exam</td>
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Lab: Lab Practical Exams (Midterm and Final)  
30%

Review Sheet Quizzes  
20%

100%

Each exam and the final is cumulative. There will be no make up exams or quizzes except by arrangement with the instructor prior to the exam date. The review sheet quizzes and the exams may contain material covered in the laboratory portion of the course since the lab activity will often clarify and expand on classroom lectures.

The video review sheets will be passed out early in the class and will consist of questions that review material from the video, lecture and text. You will be quizzed on that material weekly- so expect 14 quizzes. Your 10 highest grades will count. If you are late for a quiz or absent you will be assigned a “0” for that quiz grade.

Lab practical exams will cover maps, cross sections, aerial photo interpretation, rock and mineral identification and other topics covered during the laboratory.

Text:

Older editions are acceptable

Lab sheets to be used or completed during the laboratory will be handed out each week and the objectives and techniques of the lab will be explained at the beginning of the lab session.

ADDITIONAL RESOURCES: In case you miss any part of the video from class, all 26 episodes of the PBS series, “The Earth Revealed” are available as streaming video at the following url but requires an up to date windows media player, up to date browser and a fast connection to the internet:

http://www.learner.org/resources/series78.html

ADDITIONAL RESOURCE: By purchasing your textbook, an online site is available to you that will help in your quest to learn Geology. The url follows:

www.mhhe.com/mcgeary6e/

COURSE CALENDAR AND ASSIGNMENT SCHEDULE:

Week 1 1/26
Intro. to Physical Geology, Important Concepts, Chapter 1
Video: Down to Earth
Week 1 1/28
The Earth’s Interior, Chapter 2
Video: Restless Planet
Lab: Mineral Characteristics

Week 2 2/2
The Earth’s Interior, Chapter 17
Video: Earth’s Interior

Week 2 2/4
The Sea Floor, Chapter 18
Video: Sea Floor
Minerals
Lab: The Rock Forming Minerals, Video: Minerals

Week 3 2/9
Plate Tectonics, Chapter 19
Video: Plate Dynamics

Week 3 2/11
Plate Tectonics (continued)
Video: Birth of a Theory
Lab: Identification of Intrusive Igneous Rocks ch. 3

Week 4 2/16
no class

Week 4 2/18
Mountain Belts and Continental Crust, Chapter 20
Lab: Map of the Sea Floor, Video: Mountain Building

Week 5 2/23 First Lecture Exam

Week 5 2/25
Geologic Structures, Chapter 15, Video: Earth’s Structure
Lab: A Local Topographic Map

Week 6 3/2
Earthquakes, Chapter 16, Video: Earthquakes

Week 6 3/4
Volcanism and Extrusive Rocks, Chapter 4
Video: Volcanism
Lab: Extrusive Igneous Rock Identification,

Week 7 3/9
Weathering and Soil Development, Chapter 5,
Video: Weathering and Soils
Week 7  3/11
Geologic Time, Chapter 8, Video: Geologic Time
Lab: **Practical Exam I**

Week 8  3/16
Mass Wasting, Chapter 9, Video: Mass Wasting

Week 8  3/18
Sediments and Sedimentary Rocks, Chapter 6, Video: Sedimentary Rocks
A brief look at fossils
Lab: Identification of Sedimentary Rocks

Week 9  3/23  **Second Lecture Exam**

Week 9  3/25
Metamorphism and Metamorphic Rocks, Chapter 7, Video: Metamorphic
Lab: Metamorphism and Metamorphic Rock Identification

Week 10  No Classes- Spring Recess

Week 11  4/6  Streams and Floods, Chapter 10, Video: Running Water 1
Streams Continued
Lab: Contour Lines and Stereo Images

Week 11  4/8
Ground Water, Chapter 11,
Video: Groundwater

Week 12  4/13
Hydrologic Features on Topographic Maps and Aerial Photos
Lab: Making a Profile and Topographic Map Exercise

Week 12  4/15
Groundwater Continued (Long Island as a case study),

Week 13  4/20
Glaciers and Glaciation,
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<tr>
<td>Week 13</td>
<td>4/22</td>
<td><strong>Third Lecture Exam</strong></td>
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<td>Week 14</td>
<td>4/27</td>
<td>Waves, Beaches and Coasts, Chapter 14, Video: Waves, Beaches and Coasts</td>
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<td>Week 14</td>
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<td>Shoreline Features in Aerial and Topographic View</td>
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<td>Lab: Ore Minerals and other Economically Important Minerals</td>
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<td>Week 15</td>
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<td>Video: Evolution through Time Chapter 21, Preview of Earth and Life</td>
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<td>Lab: Geologic Maps and Cross Sections</td>
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<td>Week 16</td>
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<td>Review of Rocks and Minerals and</td>
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<td>Week 16</td>
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