

ESC-104 PHYSICAL GEOLOGY

FALL SEMESTER 2012

COURSE INFORMATION

Lecture: ESC-104-01 Tuesday & Thursday 8:40 – 10:00 am
Laboratory: ESC-104-L01 Monday 1:15 – 4:00 pm
Room: Burroughs 101
Web page: <http://people.sunyulster.edu/schimmrs>

STEVEN SCHIMMRICH

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E-mail: schimmrs@sunyulster.edu
Office hours: Monday 11:00-12:00, Tuesday 10:30-11:30, Wednesday 11:00-12:00, and Thursday 10:30-11:30
I can always meet with students at other times by appointment

REQUIRED TEXTS

Fletcher, C. 2011. *Physical Geology: The Science of Earth*. John Wiley & Sons. ISBN: 9780471220374
Busch, R.M. 2009. *Laboratory Manual in Physical Geology* (8th edition). Prentice-Hall. ISBN: 0136007726

For lab, you will also need a bring a calculator capable of handling scientific notation

COURSE DESCRIPTION

Ever wonder where minerals come from? How oil forms? Why our local area was once covered by a tropical sea? What causes earthquakes in California and volcanic eruptions in Hawaii? When and how planet Earth formed? Why there are high mountains in Colorado but not Iowa?

Physical geology is the study of our home planet and encompasses these topics and more. You'll learn how the Earth formed, what it's composed of, and how it changes through time. Learning about geology will change the way you look at the Earth and provide you with a background to understand earth science and environmental issues in the news. The lab exercises, field trips, and course assignments will focus on introducing you to the scientific approach to geologic problem solving and applying concepts introduced in lecture.

GRADING

Your numerical grade for this course will be determined as follows:

60% – Lecture Portion of Course

| | |
|-----|-----------------------------------|
| 36% | Midterm (18%) & Final (18%) Exams |
| 18% | Ten Course Assignments (2% for 9) |
| 5% | Saturday Field Trip |
| 1% | Math Tutorial Pre-Test |

45% – Laboratory Portion of Course

| | |
|-----|------------------------------------|
| 30% | Twelve Lab Exercises (2.5% each) |
| 6% | Rock & Mineral Identification Quiz |
| 8% | Laboratory Final Exam |
| 1% | Math Tutorial Post-Test |

Note that the numerical grade adds up to 104% since the Saturday field trip is effectively extra credit.

Your letter grade for the course will be assigned according to your final numerical grade as per department guidelines.

SPECIAL NEEDS

Any students with special needs who require accommodations are asked to see us privately during my office hours as soon as possible so that I am aware of what you require to participate and succeed in this course.

ATTENDANCE

Attendance in lecture and lab is required and will be recorded as per college policy. Note will also be made of students who consistently arrive late or leave early. It's important to attend all classes and labs as we will often cover material in lecture that is not in your textbook and on which you will be tested. It's also in your best interest as a student. People who do poorly in my courses are almost always those who do not regularly attend classes and miss labs.

If you must miss a class, lab, or field trip, notify me prior to missing it if at all possible and see me immediately upon returning to campus to obtain any missed assignments. I do not provide copies of my lecture notes. Also keep in mind that it may not be possible to fully make up a missed lab and impossible to make up a field trip. Students who, in my judgment, are having attendance problems or consistently arrive late and disrupt the class will first be warned and may then be withdrawn from the class at my discretion.

LECTURE EXAMS

There will be two lecture exams covering the topics noted in the outline for this course. The Midterm Exam is worth 18% of your final grade and will be held on Tuesday, October 16. The Final Exam is worth 18% of your final grade and will be held on Tuesday, December 18 from 8:40-10:40 am. Each exam will be graded out of 100 points and will consist of a variety of true/false, matching, multiple choice, and short answer type questions as I deem appropriate. The course web page will have useful study information posted prior to each exam.

COURSE ASSIGNMENTS

Ten take-home course assignments, covering a variety of topics, will be handed out during the course of the semester as noted on the outline. Some of these assignments require you to have access to the Internet – either at home or on campus – and the lowest grade will be dropped. Each of the nine required assignments will be worth 2% of your final course grade (18% total). Course assignments will have firm due dates and late assignments will not be accepted for grading.

FIELD TRIPS

Geology is a science learned primarily in the field and there will be three important field trips for this course. The first will be during regularly-scheduled lab time on Monday, August 27 (the first day of lab). The second will be an all-day Saturday trip on November 10 from 8:30 am to 5:30 pm where we will examine geologic sites of interest in the greater Hudson Valley. The third will be during regularly-scheduled lab time on Monday, November 12. The Monday trips are a part of your lab grade for the day and the Saturday trip is worth 5% of extra credit toward your final grade (it's important!). You cannot make-up a missed field trip and you will lose points on your final grade if you can't make it for any reason. There are no fees associated with the field trips and we will be using College vans for transportation.

LAB EXERCISES & EXAMS

To introduce you to earth materials and the tools and techniques utilized by geologists, there will be twelve lab exercises as noted in the laboratory outline for the course. Each lab exercise will be worth 2.5% of your final course grade (30% total). Labs will have firm due dates and late labs will not be accepted for grading. It also may not be possible to fully make-up certain labs so it's very important that you attend all lab sessions. A rock and mineral laboratory midterm will be given on Monday, October 22 (6%) and a final laboratory exam will be given on Monday, December 10 (8%).

MATH TUTORIALS

To assist you in learning some of the math skills critical in geology lab, a number of online math tutorials will be assigned along with your labs during the course of the semester. A math skills Pre-Test and Post-Test (each worth 1% of your final course grade) will also be given at the beginning and end of the semester.

ACADEMIC HONESTY

Cheating and plagiarism of any kind is not tolerated and will be severely punished in accordance with UCCC policy as outlined in the current College catalog. All work on labs, assignments, and exams must be your own. While I encourage students to work together, it is considered plagiarism if two or more people write exact word-for-word answers to an assignment or lab question. If you're unsure of what constitutes cheating or plagiarism, or have knowledge of someone else's cheating or plagiarism, please see me privately.

IF YOU'RE HAVING DIFFICULTIES

If at any point during the semester you're having difficulty with any of the material, please come and see me as soon as possible! As an instructor, I've found that it's usually very easy to resolve a student's difficulties if they're taken care of right away and I'm always eager and willing to help but you have to take the initiative. Unfortunately, many people wait until it's impossible to catch up before coming for assistance. If you are having difficulties with the material, I will be happy to sit down with you on a one-to-one basis to help you understand it or can refer you to a tutor. If you're having difficulty with your math or English skills, the college has abundant resources to help you. If you're having personal or financial problems, I can refer you to people on campus for help. Please don't be afraid to stop by my office at any time.

ESC-104 LECTURE OUTLINE

FALL SEMESTER 2012

| <i>Lecture Date</i> | <i>Lecture Topics</i> | <i>Web Assignments</i> | <i>Chapters</i> |
|------------------------------|---|-------------------------|-------------------------|
| Tuesday, August 28 | Introduction – What is Geology? | | 1 |
| Thursday, August 30 | Origin of the Solar System & Earth | | 2 |
| Tuesday, September 4 | The Interior of the Earth | 1 – Plate Tectonics | 3 |
| Thursday, September 6 | Continental Drift to Plate Tectonics | | 3 |
| Tuesday, September 11 | Plate Tectonic Settings | 2 – Elements & Minerals | 3 |
| Thursday, September 13 | Atoms, Elements, and Bonding | | 4 |
| Tuesday, September 18 | Non-Silicate & Silicate Minerals | 3 – Volcanoes | 4 |
| Thursday, September 20 | The Igneous Rocks | | 5 |
| Tuesday, September 25 | Volcanoes | 4 – Weathering | 6 |
| Thursday, September 27 | Physical & Chemical Weathering | | 7 |
| Tuesday, October 2 | The Sedimentary Rocks | 5 – The Grand Canyon | 8 |
| Thursday, October 4 | The Metamorphic Rocks | | 9 |
| Tuesday, October 9 | Mineral Resources | | 10 |
| Thursday, October 11 | Energy Resources | | 10 |
| Tuesday, October 16 | Midterm Exam | | 1-10 |
| Thursday, October 18 | Crustal Deformation & Mountain Building | 6 – Earthquakes | 11 |
| Tuesday, October 23 | Earthquakes & Seismology | | 12 |
| Thursday, October 25 | Relative Age & the Geologic Time Scale | 7 – Radioactive Dating | 13 |
| Tuesday, October 30 | Radioactivity & the Age of the Earth | | 13 |
| Thursday, November 1 | A Short History of the Earth | 8 – GSA Abstracts | 14 |
| <i>Tuesday, November 6</i> | <i>Election Day – No Classes</i> | | – |
| Thursday, November 8 | Geology of the United States | 9 – Journal Papers | 15 |
| Tuesday, November 13 | Geomorphology & Mass Movements | | 18 |
| Thursday, November 15 | Streams & Floods | 10 – Flood Frequencies | 19 |
| Tuesday, November 20 | Groundwater & Karst | | 20 |
| <i>Thursday, November 22</i> | <i>Thanksgiving – No Classes</i> | | – |
| Tuesday, November 27 | Deserts & Arid Landforms | | 21 |
| Thursday, November 29 | Coastal & Marine Geology | | 22, 22 |
| Tuesday, November 4 | Glaciers & Ice Ages | | 17 |
| Thursday, December 6 | Global Climate Change | | 16 |
| <i>Tuesday, December 11</i> | <i>Makeup / Study Day</i> | | – |
| Tuesday December 18 | Final Exam (8:40 am – 10:40 am) | | 264-691; 730-832 |

Note: Chapter numbers for the lecture topics refer to the Fletcher textbook. You are expected to read each of the assigned chapters before coming to class.

ESC-104 LABORATORY OUTLINE

FALL SEMESTER 2012

| <i>Lab Date</i> | <i>Lab Exercises</i> | <i>Chapters</i> |
|------------------------------|---|------------------|
| Monday, August 27 | Local Field Trip – What is Geology? Lab 1: Measurements & Conversions (Take home lab) | 1 |
| Monday, September 3 | <i>Labor Day – No Lab Today</i> | – |
| Monday, September 10 | Lab 2: Plate Tectonics & Geologic Time | 2; 8 |
| Monday, September 17 | Lab 3: Nonsilicate Minerals | 3 |
| Monday, September 24 | Lab 4: Igneous Rocks & Minerals | 3; 4; 5 |
| Monday, October 1 | Lab 5: Sedimentary Rocks & Minerals | 3; 6 |
| Monday, October 8 | <i>Columbus Day – No Lab Today</i> | 3; 7 |
| Monday, October 15 | Lab 6: Metamorphic Rocks & Minerals | – |
| Monday, October 22 | Lab Midterm: Rock & Mineral Identification | 3-7 |
| Monday, October 29 | Lab 7: Topographic Maps, Remote Sensing, & GPS | 9 |
| Monday, November 5 | Lab 8: Geologic Maps & Structures | 10 |
| Saturday, November 10 | All Day Regional Field Trip (8:30 am – 5:30 pm) | – |
| Monday, November 12 | Lab 9: Local Field Trip – Rocks & Structures | – |
| Monday, November 19 | Lab 10: Earthquakes & Seismology | 16 |
| Monday, November 26 | Lab 11: Fluvial & Karst Processes | 11; 12 |
| Monday, December 3 | Lab 12: Glacial, Desert, & Coastal Processes | 13; 14; 15 |
| Monday, December 10 | Laboratory Final Exam | 1-2; 8-16 |

Note: Chapter numbers for the laboratory topics refer to the Busch & Tasa laboratory manual. Be sure to look over each of the chapters before coming to lab for that week!