

GEOL 111 – PHYSICAL GEOLOGY

Syllabus

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COURSE CREDIT:

Four Semester Hours

COURSE MATERIALS:

To order textbooks or obtain information about book titles you may go to www.exstudies.adams.edu and click on the “ASC Bookstore” icon.

Use **Section Number: 852** to order books from Bookstore site.

Required Textbook and Laboratory Materials:

Grotzinger, J., Jordan, T.H., Press, F., and Siever, R., (2007). *Understanding Earth*, (5th ed.). W.H. Freeman and Company.
ISBN-10: 0-7167-6682-5

This course includes a **required** laboratory component which you must complete by using a self-contained study kit, **LabPaq GK-1**. While this kit may seem a little expensive, note that the cost of the kit includes the lab manual and all of the materials you need to complete the labs, outside of some everyday household items. If you are a teacher, or teacher candidate, you will find the material contained in the lab package to be especially useful to you in your classroom. After you are certain you intend to complete the course, order your LabPaq directly online at <http://www.labpaq.com/product-overview/geology-overview-page>. Keep your sales order number and supply it to me as proof of purchase. LabPaqs are shipped from Denver usually within 24 hours. If you don't purchase the lab materials and complete the lab component, you will not be able to pass the class. The title of the manual included in the LabPaq is:

Riegel, T. R., 2006, Laboratory Manual of Experiments for the Independent Study of Physical Geology, accompanies Hands-On-Lab LabPaq GK-1

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COURSE DESCRIPTION:

Physical Geology is an introduction to the materials of the earth and the internal and surficial processes that have acted upon the earth through time. Laboratory work includes identification and classification of minerals and rocks and exercises involving topographic and geological maps.

The Physical Geology course consists of 17 lessons, 3 midterm exams, a final exam, and a self-guided field trip. Each lesson has paired and complementary text and laboratory exercises. Learning Objectives are provided for each lesson in order to assist students in identifying what information and concepts should be mastered.

COURSE OBJECTIVES/STUDENT LEARNING OUTCOMES:

Upon successful completion of this course, the student will be able to:

- define/articulate earth science concepts and definitions such as geologic time, uniformitarianism, superposition;
- describe the basic components and interrelations of the rock cycle;
- demonstrate/articulate a basic knowledge of how continents and mountains are formed and how they become deformed;
- interpret landscapes and describe to others what surficial processes are responsible for the landforms they see (i.e. how running water, wind, and ice transform the surface of the earth);
- describe important geologic structures; and
- be able to identify important rock-forming minerals.

COURSE REQUIREMENTS:

Each lesson involves some or all of the following activities:

1. assigned chapter readings from the textbook, Grotzinger, et al, 2007, *Understanding Earth*
2. completion of question sets
3. associated laboratory exercises, from Reigel, 2006, *Laboratory Manual of Experiments for the Independent Study of Physical Geology*
4. other materials as required.

In addition to the above, four proctored exams will be given. The first three exams will be mostly over material covered since the last exam, although some previous material will be covered. There will be a one-hour time limit on these exams. A two-hour comprehensive final exam will be proctored as well.

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This course is intended to provide students having little or no scientific background with a balanced and realistic perspective of geology. The course emphasizes the interdisciplinary nature of geological problem solving.

GRADE DISTRIBUTION AND SCALE:

In alignment with ASC academic policies, no D may apply to a major or minor field.

Grade Distribution:

| | | |
|------------------------------------|-----------------|--------------------|
| 17 text and lab units | variable points | 1725 points |
| 1 field trip report | 600 points | 600 points |
| 3 proctored midterm exams | 200 points each | 600 points |
| Proctored comprehensive final exam | 400 points | <u>400 points</u> |
| Total Points | | 3325 points |

Grade Scale (earned points to grade equivalent):

| | | |
|---------------|---|------------------------|
| 90-100% | A | >2992 total points |
| 80-89% | B | 2660-2992 total points |
| 70-79% | C | 2328-2659 total points |
| 60-69% | D | 1995-2327 total points |
| 59% and below | F | ≤ 1994 total points |

Grades will be determined on the basis of objective, performance-based criteria. That is, letter grades will be assigned on the basis of the percentage of total available points earned.

The following rubric will be used to establish your grades on assignments:

| CRITERIA | POINT VALUE | POINTS EARNED |
|--|-------------|---------------|
| Test and lab units | | |
| All questions answered in a clear organized style Supporting drawings clearly labeled | 10 | |
| Questions answered completely and thoroughly | 90 | |
| Additional written material | | |
| All questions answered in a clear organized style Supporting drawings clearly labeled | 10 | |
| Questions answered completely and thoroughly | 60 | |
| Original thought and insight demonstrated | 20 | |
| Reference list with citations properly formatted | 10 | |
| Direct inclusion of electronic internet resources | -10 | |

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COURSE INSTRUCTIONS

Learning On-Line:

Many Websites are listed in your text and lab book. Good internet research skills are a useful asset. Please contact your instructor if you do not have Internet access to discuss alternative arrangements.

Assignments:

Completed lessons must be submitted in the following format:

NAME (be sure to put this on each page)

Lesson number

Date (your choice of format)

1. (copied, typed, or written-out text of question)

Text of answer

2. next question

Answer, etc.

Lab materials must be submitted in the format specified in the laboratory assignment, and included with the text book exercise in a single PDF document.

Example of assignment style:

Rob Benson

Lesson 1 Exercises

1 JAN 06

1. What are the two basic subdisciplines of geology?

Historical and Physical Geology

Completed assignments for each lesson are to be sent to the instructor electronically via e-mail or conventional mail; refer to the contact information included in the syllabus. Completed assignments must be a single package of work. Do not send in multiple parts of lessons in different formats. I will grade the first part of the assignment received. Any subsequent material related to that assignment will not be counted. **In other words, don't submit assignments in mixed media, partly by e-mail, the rest by fax, etc.**

Students are **required** to complete work in a typed format using a standard word processing system such as Microsoft® Word or WordPerfect®. If it is not possible for you to type your assignments, please contact me prior to sending work. **If you are submitting work via email, you MUST send the work in PDF format. This reduces both file size and preserves formatting better. Note that this may require scanning lab worksheets or other**

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supporting material. Nearly all word-processing systems have the means to make PDF conversions. If you are sending work by conventional mail, the PDF conversion is not required. You may wish to experiment with copying some required lab materials from the laboratory manual CD (Riegel, 2006). For scanned work, please consider that scanned images are often very large, and can be difficult to submit via e-mail. Material should be scanned at the lowest possible resolution for e-mail submission. Remember that material sent by fax is often very grainy on the receiving end, so if you need to fax material, using fine details and lettering is not good for effective faxing.

All lessons and their associated assignments must be completed and received by the instructor **prior** to submitting an Exam Request Form to the instructor for the *corresponding* examination. **DO NOT** send all of the assignments, and then ask for the exams. **This is not negotiable.**

Examinations:

There will be three proctored midterm examinations and a proctored comprehensive final examination. Please refer to the Guidelines for Proctored Exams and submit your Exam Request Form to the instructor after completion and submission of the relevant lessons to the instructor and three weeks before you plan to take the exam. Generally the turnaround time on exam requests is less but do not count on anything faster.

Suggestions For Effective, Efficient Studying And Course Completion

Do not expect to sit down and do this course in less than 12 weeks. Note that this is a variation on the standard Extended Studies policies. Please follow the course sequence exactly. You are investing time and money in learning, get the most of it.

Read the introductory paragraph of each chapter when using the text or lab manual. Examine each of the figures and captions. Read the summary section at the end of each text chapter, and the *Key Terms and Concepts*. After doing this, re-read the chapter. This approach will allow you to see the overall structure of the textbook chapter, especially the important new concepts, and the repetition will reinforce your new knowledge. Always read the introductory material in the text or lab manual before doing the exercises. There are no trick questions in any of the lab or lecture materials, but all will require slightly different ways of thinking for discovering solutions. This is, after all, exactly what learning is about, and the satisfaction of gaining new skills and knowledge about the world is an important part of gaining knowledge.

If you have any particular problems with the assigned work, please contact me before you submit your work for grading. I cannot return work for correction and resubmittal. I will always assume you are doing your best to learn as much as you can the first time around.

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DEPARTMENTAL AND COLLEGE POLICIES:

- The instructor will strictly adhere to all policies established by the Office of Extended Studies.
- All coursework must be completed within the allotted time as established by the Office of Extended Studies.
- Examination requests should NOT be made until all lessons and associated assignments/laboratory exercises have been completed and received by the instructor. Once an examination has been requested, all lessons and associated exercises not previously completed will no longer be accepted and will be assigned a score of zero.
- Academic honesty (*i.e.*, individual efforts on all exercises) is mandatory. Plagiarism, cheating, fabrication, or falsification of laboratory data, etc., will not be tolerated. Any offense will result in a zero for the exam or exercise in question and may result in failure of the course. Please refer to *ASC Student Handbook*.
- All challenges or recalculations of examination or final course grades must be documented by the student with appropriate paperwork, and must be brought to the attention of the instructor within the first week following the course completion date (*i.e.*, one year after the course begins or a final grade is submitted). After these deadlines, grade changes will not be considered.

COURSE OUTLINE AND OVERVIEW:

| Lesson | Description | Text readings | Laboratory readings | Additional Comments | Lesson Points |
|----------|------------------|--------------------------------------|---|---|---------------|
| 1 | The Earth System | <i>Grotzinger, et al</i> , Chapter 1 | START: Riegel, <i>Laboratory 1 (will be started, now, but completed in Lesson 3)</i> ; START and COMPLETE: Riegel, <i>Laboratory 11</i> | <ol style="list-style-type: none"> 1. Self study of the course goals, assessment and schedule. 2. Review pages 5 through 26 in Riegel 3. Send the sales order number of the LabPaq purchase. 4. Local geology paragraph | 150 |
| 2 | Plate Tectonics | <i>Grotzinger, et al</i> , Chapter 2 | Riegel, <i>Laboratory 15</i> | | 100 |
| 3 | Earth Materials | <i>Grotzinger, et al</i> , Chapter 3 | Riegel, <i>complete and finish Laboratory 2 and finish 1</i> | | 125 |
| 4 | Igneous Rocks | <i>Grotzinger, et al</i> , Chapter 4 | Riegel, <i>Laboratory 3</i> | | 100 |
| 5 | Sedimentation | <i>Grotzinger, et al</i> , Chapter 5 | Riegel, <i>Laboratory 4</i> | | 100 |
| | MIDTERM I | | | | 200 |
| 6 | Metamorphism | <i>Grotzinger, et al</i> , Chapter 6 | Riegel, <i>Laboratory 5</i> | | 100 |
| 7 | Deformation | <i>Grotzinger, et al</i> , Chapter 7 | Riegel, <i>Laboratory 13</i> | | 100 |

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|-----------|---------------------------------------|--------------------------------------|--|--|------------|
| 8 | Geologic Time | <i>Grotzinger, et al, Chapter 8</i> | No lab assigned | | 75 |
| 9 | Volcanoes | <i>Grotzinger, et al, Chapter 12</i> | No lab assigned, see Lesson 10 | | 75 |
| 10 | Earthquakes | <i>Grotzinger, et al, Chapter 13</i> | Riegel, <i>Laboratory 14</i> | | 125 |
| | MIDTERM II | | | | 200 |
| 11 | Earth's Interior | <i>Grotzinger, et al, Chapter 14</i> | Riegel, <i>Laboratory 12</i> | Be sure to look at the field trip requirements | 100 |
| 12 | Groundwater | <i>Grotzinger, et al, Chapter 17</i> | Riegel, <i>Laboratory 7</i> | | 100 |
| 13 | Streams | <i>Grotzinger, et al, Chapter 18</i> | No lab assignment | | 75 |
| 14 | Deserts | <i>Grotzinger, et al, Chapter 19</i> | No lab assignment | | 75 |
| 15 | Coastlines and Oceans | <i>Grotzinger, et al, Chapter 20</i> | Riegel, <i>Laboratory 10</i> | | 100 |
| 16 | Glaciers | <i>Grotzinger, et al, Chapter 21</i> | Riegel, <i>Laboratory 8</i> | | 100 |
| 17 | Weathering, Erosion, and Mass Wasting | <i>Grotzinger, et al, Chapter 16</i> | Riegel, <i>Laboratory 6 and Laboratory 9</i> | | 125 |
| | MIDTERM III | | | | 200 |
| 18 | FIELD TRIP REPORT | | | | 600 |
| | FINAL EXAM | | | | 400 |

Text work submitted without associated lab assignments or vice-versa will result in a zero for the whole assignment.