

Imperial Valley College Course Syllabus - Geology 100: Physical Geology

**Basic Course Information**

Semester	<b>Fall 2015</b>	Instructor Name	<b>Kevin Marty</b>
Course Title & #	<b>Geology 100</b>	Email	<b><a href="mailto:kevin.marty@imperial.edu">kevin.marty@imperial.edu</a></b>
CRN #	<b>10057 and 10058</b>	Webpage (optional)	
Room	<b>2733</b>	Office	<b>2776</b>
Class Dates	<b>August 17-December 11</b>	Office Hours	<b>5-6 pm, M,W 12:50-1:50 pm; T 5:15-6:15 pm Room 2776</b>
Class Days	<b>CRN:10057 T,Th CRN:10058 M, W</b>	Office Phone #	<b>760-355-5761</b>
Class Times	<b>CRN:10057 6:30-9:40 pm CRN:10058 2:00-5:10 pm</b>	Office contact if student will be out or emergency	<b>Ofelia Duarte (Science Dept) at 760-355-6155</b>
Units	<b>3</b>		

**Course Description**

This course is designed as an introduction to Earth's physical processes, structures, and composition, and includes coverage of Earth's internal processes, such as those that cause earthquakes, volcanoes and mountain building; surface processes, such as rivers and waves, wind, glaciers and the landforms that result from these processes; the nature and origin of rocks and minerals that form the Earth's crust; and structures related to folding and faulting, will be studied. (C-ID GEOL 101) (CSU, UC)

(More)

The Earth is diverse and dynamic, featuring volcanoes, earthquakes, tsunamis, landslides, floods, and so on. As citizens, we want to understand what is going on in our natural world and which aspects directly affect us or are most interesting. Understanding past events helps us comprehend what has happened and begin to predict future events. With the Earth, we examine past events and current natural processes to understand how this past and these processes affect humans. Accordingly, this course examines the processes and materials composing Earth's physical environment, for example, its landscapes and interior. We will explore topics such as natural hazards and disasters, fossils, energy resources, and much more. To do so, we will learn some underlying principles of the natural world, from small things like the very building blocks of matter (atoms), to large things, like the cause and effect of regional forces that build mountains (e.g., the Himalayas) and make new oceans (e.g., the Red Sea). These processes are active today on Earth, and give rise to earthquakes, volcanoes, and landslides, all of which obviously affect humans. The class will meet generally twice per week (once for lecture; once for lab) over a 16 week-long semester. This course is taught using a hybrid approach, partly as a normal lecture in the classroom during our normal meeting time, and partly as an online course, which you do on your own outside of class. During this time outside of class, you are required to complete online quizzes and investigations assigned for that week.

### Student Learning Outcomes

Upon course completion, the successful student will have acquired new skills, knowledge, and or attitudes as demonstrated by being able to:

- 1 Gain awareness of geological events on a global scale and understand/evaluate why events/features occur where they do. Assessment done through tracking earthquake and volcanic eruptions events and building on knowledge of plate tectonics. (ILO5)
- 2 Gain critical thinking ability/skills through observations and applying scientific inquiry to understand geologic features and processes. Understand and use principles of the scientific method. (ILO2)
- 3 Develop oral and written skills through various labs, research papers and presentations. (ILO1)
- 4 Gain knowledge of geologic history, features and processes through lectures, research papers, exams and labs. (ILO4)

### Course Objectives

Upon satisfactory completion of the course, students will be able to:

1. Explain the basic divisions of the earth, their compositions, and their role in plate tectonics
2. Discuss physical properties used to identify common minerals.
3. Demonstrate an understanding of Bowen's Reaction Series and the mineralogy of magma.
4. Describe the relationship between cooling rates and mineral crystal sizes in igneous rocks.
5. Describe the processes and pathways of the Rock Cycle.
6. Describe types of volcanoes, lava viscosity and compositions and their relation to plate tectonics and volcanic activity.
7. Give a basic explanation of the effects of physical and chemical weathering.
8. Explain how sedimentary rock composition, textures, sedimentary structures and fossils indicate specific environments of deposition.
9. Discuss the process and grades of metamorphism.
10. Demonstrate an understanding of the earth's history as related to the fossil record and to geologic time.
11. Construct models illustrating how basic geologic principles relate to the juxtaposition of rock structures.
12. Relate the concepts of plate tectonics to seismology, the Rock Cycle, and structural geology.
13. Explain the relationship between sea-floor physiographic features, sea floor core data, sediments, and paleomagnetism as supportive evidence for plate behavior.
14. Recognize the types of plate boundaries and explain their relationship to crustal movement and mountain building.
15. Demonstrate an understanding of stream dynamics with regard to the transport and deposition of sediments.
16. Identify major surface landform features and relate them to the geologic agents that formed them, including stream, ground water, glacial, and marine processes.
17. Demonstrate a knowledge of crustal deformation and recognition of geologic faults and structures.
18. Discuss Earth's natural resources.
19. Describe the possible causes of an Ice Age.
20. Explain groundwater pollution problems.

### Textbooks & Other Resources or Links

1) *Exploring Geology*, Reynolds, S., J, and others, 2<sup>nd</sup> Edition. New York, McGraw Hill.  
ISBN: 9780073135151

This is a unique textbook designed to help you learn geologic concepts and processes on your own and to complement what we do in class. Nearly all the information in the book is built around illustrations and photographs, rather than being in long blocks of text. The entire book consists of a series of two-page spreads organized into chapters. Each two-page spread is a self-contained block of information about a specific topic, and has a short list indicating what you should be able to do before you leave these pages. The items from these lists for which you will be held responsible for knowing are compiled into a *What-To-Know List* that is downloadable from this course's Blackboard website. The What-To-Know List is your guide to what is important, and all online quizzes and in-class exams are derived from this list. If, when studying from the book, you construct your own answer to each item on the *What-To-Know List*, then I predict you will do well in the class. Required reading is listed in the right column of the *Lecture Schedule* later on in this document. If you revisit the chapter corresponding to the most recently finished lecture *after* we cover that topic, the material will be best retained. Each two-page spread in the book has a unique number (e.g., 11.4), and these numbers are referenced for online quizzes and other course assignments. Each chapter ends with an *investigation* concerning a problem associated with a "virtual place". These *investigations* are assigned as online homework (during some semesters) and are automatically graded by Blackboard.

### Course Requirements and Instructional Methods

#### Course Philosophy and Teaching Method:

The greater subject of Physical Geology is as vast and diverse as the natural world around us. Together, we will explore and visualize this dynamic world in a number of ways; in no way will it be a static collection of facts. Accordingly, we will concentrate on understanding natural processes and how we explore and learn things about our planet, rather than terms and factual trivia. We will concentrate on active, inquiry-based learning and will learn how to observe, think about, and understand our place in the natural environment. The critical inquiry and observational skills that we cultivate this semester should be useful in any profession, since they give you an appreciation of how geologic processes in our natural world impact our environment and society. *Class time will not simply consist of me repeating via lecture everything that is in the book!* It is your responsibility and obligation to complete the required readings prior to quizzes. Class time may be used for clarifying written materials, introducing new material, small-group activities, discussions, independent work

## Imperial Valley College Course Syllabus - Geology 100: Physical Geology

projects, and/or identifying and applying principles and concepts, including in-class demonstrations and working on lecture assignments including sketches.

### Course Expectations:

My role in this class is to provide a framework that includes theory, best practices, activities, and assignments for you to utilize in the development of your knowledge, understanding, and skills. I care very much how and what you learn in this class, but I believe that you are responsible for participating in learning from the activities provided. This class requires significant outside preparation and reading. It will be impossible to cover all issues in the textbook during class time. This is partly why I use a hybrid approach in this course.

### Lab:

In order to receive a laboratory science credit, you must also take the laboratory. The lecture and lab complement each other by covering different aspects of the same material.

### Field Trips:

Geology is best seen, learned, and taught outdoors. During the semester, the lab course offers a field trip, which gives you the opportunity to experience geology first hand. You will receive points for going on any required field trips, but no points for optional field trips. Each trip is fun and interesting, and you'll get some exercise and a chance to be outside.

### Course Grading Based on Course Objectives

#### Grades:

Point Distribution Summary	Points
In-Class Exams (3 @ 70 points each)	210
Online Quizzes (12 @ 7.5 points each)	~90
Semester Assignment: Earthquakes	~30
In-Class Participation (~5 @ ~5 points each)	~25
In-Class Labs software/manual (12 @ 10-15 points each)	~120-180
Lab Practicum (1 @ 100 points)	100
Total Points Possible	~575-635

In this course, your grade will be based on points that you earn. There are approximately 575-635 possible points, which are written out below:

## Imperial Valley College Course Syllabus - Geology 100: Physical Geology

- (a) **Lecture, In-Class Exams (concept sketches):** Every four chapters there will be an in-class exam consisting of three to four concept-sketch style questions and 30-40 multiple choice questions. There are 3 total exams. **Each of the 3 in-class exams is worth 70 points, for a semester total of 210 points.** In advance of each in-class exam, you will be given a list of 6 to 10 possible concept-sketch questions, and three to four of these will be on the exam. These possible questions will be developed from the What-To-Know List, along with the multiple choice questions, some of which will come from your weekly (or daily) quizzes and investigations (see below). You can make up exams only if you have a note from a doctor, a letter from the university regarding some university-sponsored activity, a copy of a jury summons, a police report, or some other document that can be verified. This legitimate proof for why you cannot attend class that day must be provided to the instructor as far in advance of the exam as possible.
- (b) **Online Quizzes:** Every week on your own time outside of lecture (some may be done during classtime), you will complete an online quiz that covers information from the textbook and from online materials. **Each of the 12 online quizzes is worth 7.5 points, for a total of ~90 points.** See the *Lecture Schedule* at the end of this syllabus for due dates. You can use your textbook or your notes to answer these quizzes, but not another person. Each quiz has a time limit of 45 minutes, which will not be enough to look up every answer from scratch during a quiz. In other words, you will need to read the textbook, view online materials, and study your notes *before* beginning the time-limited online quiz. Use the *What-to-Know List* as your guide of what to study in preparation for the online quizzes. Some of the quiz questions might relate to assigned readings that are not discussed in lecture; you are thus expected to read all of the assigned reading. **Quizzes cannot be reopened after the due date has passed. Many quiz questions will be found on your lecture tests (hint)!**
- (c) **Semester Assignment:** the semester assignment is over Earthquakes and due at the beginning of lecture class during the week of October 12-16. This assignment is worth 30 pts total.
- (d) **In-Class Participation:** During the semester, we will do a small number of in-class activities centered on the material covered during the lecture. In most cases, you will be able to discuss these activities with your classmates before answering, but in other cases you might be asked to work out the exercise on your own. You may or may not be allowed to use your textbook and notes. Irrespective of the number of questions or problems on the activity, there will be approximately 5 of these activities worth approximately 5 points possible for each in-class activity, for a total of approximately **25 points.**
- (e) **Labs and Lab Practicum:** Our labs will compliment the lectures, and are generally tied to the material we cover in lecture each week; for example, the week we cover minerals in lecture will be followed by a minerals lab that week. Our labs will be a combination of computerized investigations (using software called “The Layered Earth”) and software titled “Plate Tectonics”; and hands-on traditional labs involving such activities as topographic map interpretation and rock and mineral identification. There will be

## Imperial Valley College Course Syllabus - Geology 100: Physical Geology

approximately 12 labs at 10-15 points each for a total of **120-180** points; and there will be one lab practicum (or lab test) worth **100 points**.

**Due Dates:** The above assignments have specifically defined due dates as noted in the Course Schedule and Assignment Schedule later on in this syllabus. It is your responsibility to consult the Lecture Schedule and Assignment Schedule for all due dates. The instructor will not assume the responsibility of reminding you that an assignment is due or that an exam will be given.

**Score/Grade Posting:** All scores will be posted on Blackboard. *You have 7 days after a score has been posted to dispute an entry.* After the 7-day period, the score stands as entered. Do not wait until the end of the semester to check your scores (e.g., for quizzes, test, labs, etc). Grades are not assigned by a “curve”, where a certain percent is assigned “A”, “B”, etc. Instead, you are competing against my expectations, not your classmates, and there is no predetermined percentage of “A”, “B”, and “C”. The exact division between letter grades will not be determined until the final points are totaled, but the grade breaks will not be raised above typical values (e.g., the A-B grade break will be 90% or lower, etc.). No items are weighted—your grade is based solely on total points received.

**Dates for Withdrawals:** There is a course withdrawal deadline—check the university calendar to find the course withdrawal deadline for this semester. The course withdrawal deadline is a no-tolerance policy. When the withdrawal period ends, students only have one option – a grade of F for the course.

**Incomplete Grade:** A mark of “I” is given only when a student who is otherwise doing acceptable work is unable to complete a course because of an illness or other situation beyond the student’s control. The student is required to arrange for the completion of the course requirements with the instructor. The university does not allow instructors to assign a grade of “I” simply because a student has quit attending classes and/or completing assignments.

### Attendance

- A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class. Should readmission be desired, the student’s status will be the same as that of any other student who desires to add a class. It is the student’s responsibility to drop or officially withdraw from the class. See General Catalog for details.
- Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped. For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.

## Imperial Valley College Course Syllabus - Geology 100: Physical Geology

Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as 'excused' absences.

### **Classroom Etiquette**

#### **Class Disruptions:**

These disruptions are defined as activities that distract the instructor or other students from the course content. Such activities include talking or whispering, cell phones ringing, tardiness or whispering about another tardy student, noisily preparing to leave the class prior to the end of the period, etc. Disruptive students will be asked to leave the class. Students who disrupt or interfere with a class repeatedly may be sent out of the room and told to meet with the Campus Disciplinary Officer before returning to continue with coursework. Disciplinary procedures will be followed as outlined in the General Catalog.

#### **Audio/Visual Recording:**

Neither audio nor video recording will be permitted except under special circumstances prescribed by the DSPS. You are also not allowed to use the camera in your phone to record pictures or video, without expressed consent of the instructor.

#### **Cellular Telephones/Text Messaging/Pagers:**

Please turn off all cellular telephones and pagers during class time – this includes text messaging. If your work situation requires that you be on call, please notify the instructor prior to class. Text messaging is not permitted in this class.

#### **Use of Laptops In the Classroom:**

You are not permitted to use laptops in class during lectures or during work on lecture assignments/checkpoints/exercises from your class handbook (one exception is if you are using an electronic book for class, then you are permitted to use your laptop only during work out of the class handbook). You may use your laptop during breaks only as long as you are not disturbing your neighbors. If you use your laptop during lecture you will lose all in-class points for the day; and if you continue to use your laptop during unauthorized times or are disrupting other students you will be asked to leave the classroom. If it is essential that you use your laptop to take notes during lectures please see me about this and we can possibly work something out.

#### **Food and Drink:**

Food and drink are prohibited in all classrooms. Water bottles with lids/caps are the only exception. Additional restrictions will apply in labs. Please comply as directed.

#### **Children in the Classroom:**

Due to college rules and state laws, no one who is not enrolled in the class may attend, including children.

### Academic Honesty

- Plagiarism is taking and presenting as one's own the writings or ideas of others, without citing the source. You should understand the concept of plagiarism and keep it in mind when taking exams and preparing written materials. If you do not understand how to 'cite a source' correctly, you must ask for help.
- Cheating is defined as fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question.
- 
- Anyone caught cheating or will receive a zero (0) on the exam or assignment, and the instructor may report the incident to the Campus Disciplinary Officer, who may place related documentation in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the General School Catalog for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to, the following: (a) plagiarism; (b) copying or attempting to copy from others during an examination or on an assignment; (c) communicating test information with another person during an examination; (d) allowing others to do an assignment or portion of an assignment; (e) using a commercial term paper service.

### Additional Help – Discretionary Section and Language

**Help Along The Way:** Many students enter this class with a bit of anxiety. Other students may have various disabilities, including test anxiety, which may make traditional classroom environments very difficult. Don't worry, almost all such students before you have passed this course – many with very high grades! The success of many of these students, though, was in part because they attended class regularly, took advantage of my office hours, or obtained help from their peers. If you are having difficulty understanding the course work, please contact me immediately. Also, the college has learning centers, disability resource centers, and counseling centers to address the various needs of students. (see examples next):

- Blackboard support center:  
<http://bbcrm.edusupportcenter.com/ics/support/default.asp?deptID=8543>
- Learning Labs: There are several 'labs' on campus to assist you through the use of computers, tutors, or a combination. Please consult your college map for the Math Lab, Reading & Writing Lab, and Study Skills Center (library). Please speak to the instructor about labs unique to your specific program.
- Library Services: There is more to our library than just books. You have access to tutors in the Study Skills Center, study rooms for small groups, and online access to a wealth of resources.

### Disabled Student Programs and Services (DSPS)

Any student with a documented disability who may need educational accommodations should notify the instructor or the Disabled Student Programs and Services (DSP&S) office as soon as possible. The DSP&S office is located in Building 2100, telephone 760-355-6313, if you feel you need to be evaluated for educational accommodations.

### Student Counseling and Health Services

Students have counseling and health services available, provided by the pre-paid Student Health Fee. We now also have a fulltime mental health counselor. For information see <http://www.imperial.edu/students/student-health-center/>. The IVC Student Health Center is located in the Health Science building in Room 2109, telephone 760-355-6310.

### Student Rights and Responsibilities

Students have the right to experience a positive learning environment and due process. For further information regarding student rights and responsibilities, please refer to the IVC General Catalog available online at [http://www.imperial.edu/index.php?option=com\\_docman&task=doc\\_download&gid=4516&Itemid=762](http://www.imperial.edu/index.php?option=com_docman&task=doc_download&gid=4516&Itemid=762)

### Information Literacy

Imperial Valley College is dedicated to helping students skillfully discover, evaluate, and use information from all sources. Students can access tutorials at <http://www.imperial.edu/courses-and-programs/divisions/arts-and-letters/library-department/info-lit-tutorials/>

### Anticipated Class Schedule / Calendar

#### Lecture/Test/Quiz Schedule for Geol 100: Physical Geology, Fall 2015

Week of	Topic/Lecture/Test/Quiz	Readings
August 17-21	Introduction; short lecture-Nature of Geology <b>Post introduction on Blackboard by Aug 23</b>	Chapter 1
August 24-28	Investigating Geologic Questions <b>LEarth-A1 (Earth as a system)</b> <b>*Quiz 1&amp;2; due Sunday</b>	Chapter 2
Aug 31-Sept 4	Plate Tectonics <b>LEarth-B1 (continental drift)</b> <b>*Quiz 3; due Sunday</b>	Chapter 3
Sept 7-11 (holiday on 7 <sup>th</sup> )	Earthquakes and Earth's Interior <b>*Quiz 12; due Sunday</b>	Chapter 12
Sept 14-18	Minerals <b>LEarth-C1 (minerals)</b> <b>*Quiz 4; due Sunday</b>	Chapter 4

Imperial Valley College Course Syllabus - Geology 100: Physical Geology

Sept 21-25	<b>Test 1: Chapter's 2-4 and 12</b> ; begin Igneous Rx OR finish LE-E (earthquakes)	Chapter 5
Sept 28-Oct 2	Igneous Rocks <b>LE-F (volcanoes)</b> <b>*Quiz 5; due Sunday</b>	Chapter 5
Oct 5-9	Volcanoes <b>LE-F (volcanoes)</b> <b>*Quiz 6; due Sunday</b>	Chapter 6
Oct 12-16	Sedimentary Rocks <b>LE-F (volcanoes)</b> <b>*Quiz 7; due Sunday</b> <b>ASSIGNMENT DUE:</b> <b>EARTHQUAKES (BEGINNING OF LECTURE THIS WEEK)</b>	Chapter 7
Oct 19-23	Metamorphic Rocks <b>LE-E (earthquakes-tie into deformation)</b> <b>*Quiz 8 due Sunday</b>	Chapter 8
Oct 26-30	<b>Test 2: Chapter's 5-8; begin Geo Time</b>	Chapter 9
Nov 2-6	Geologic Time <b>LE-G (geologic time)</b> <b>*Quiz 9; due Sunday</b>	Chapter 9
Nov 9-13 (holiday on 11 <sup>th</sup> )	Seafloor and Continental Margins <b>*Quiz 10; due Sunday</b>	Chapter 10
Nov 16-20	Shoreline, Glaciers and Changing Sea Levels <b>*Quiz 14 due Sunday</b>	Chapter 14
Nov 23-27 (break)	Thanksgiving Break	Thanksgiving Break
Nov 30-Dec 4	Energy and Mineral Resources-Student Lectures <b>*Quiz 18; due Sunday</b>	Chapter 18
Dec 7-11 (final's week)	Test 3: Chapter's 9,10 and 14, 18	

\*All due dates and distribution of grade points is subject to change according to class needs.

## Imperial Valley College Course Syllabus - Geology 100: Physical Geology

**Lab Schedule Geol 100 Fall 2015**-no traditional manual required; you will need to purchase a copy of the lab manual from reprographics prior to our first lab during the second week of classes.

Week of	Topic/Lecture/Test	Readings
Aug 17-21	Finish Lecture Chapter 1 Nature of Geology Video: Mystery of the Megaflood	Post Megaflood on Blackboard
Aug 24-28	Earth's Interior (LE-A2, A3)	software
Aug 31-Sept 4	Plate Tectonics (LE-B2, B3)	software
Sept 7-11	Earthquakes (LE-E)	software
Sept 14-18	Minerals (samples+manual)	software/manual
Sept 21-25	Rock Cycle (LE-C2 and C3) and Shaping Earth (LE-C4 and D1)	software
Sept 28-Oct 2	Igneous Rocks	manual
Oct 5-9	Volcanoes (LE-F)	software
Oct 12-16	Sedimentary Rocks	manual
Oct 19-23	Metamorphic Rocks	manual+LE-E?
Oct 26-30	Geologic Structures	manual
Nov 2-6	Geologic Time (LE-G)	software
Nov 9-13 (holiday on 11 <sup>th</sup> )	Topographic Maps	manual
Nov 16-20	Field Trip - Salton Sea	
Nov 23-27	Thanksgiving Break	
Nov 30-Dec 4	Review for Lab Practicum	
Dec 7-11	Lab Practicum	

\*All due dates and distribution of grade points is subject to change according to class needs.