



**Cumulus clouds form over the Transverse Range near Palm Springs, Ca (Kevin Marty, 2017, panorama image).**

## **Geology 110: Earth and Space Science**

### **Basic Course Information**

<b>Semester</b>	<b>Spring 2018</b>	<b>Instructor Name</b>	<b>Kevin Marty</b>
<b>Course Title &amp; #</b>	<b>Geology 110</b>	<b>Email</b>	<b>kevin.marty@imperial.edu</b>
<b>CRN #</b>	<b>CRN: 20059</b>	<b>Webpage (optional)</b>	
<b>Room</b>	<b>Face to Face/Hybrid</b>	<b>Office</b>	<b>2776</b>
<b>Class Dates</b>	<b>Feb 12-June 8</b>	<b>Office Hours</b>	<b>M-Th 1-2 pm</b>
<b>Class Days</b>	<b>M</b>	<b>Office Phone #</b>	<b>760-355-5761</b>
<b>Class Times</b>	<b>9:35-12:45</b>	<b>Office contact if instructor will be out or emergency</b>	<b>Ofelia Duarte (Science Dept) at 760-355-6155</b>
<b>Units</b>	<b>3</b>		

### **Course Description**

This introductory earth and space science course covers basic principles from the fields of geology, astronomy, oceanography, and meteorology. Minerals and rocks, natural processes acting at the earth's surface and within the Earth, plate tectonics, geologic time and dating, composition and motions of the Earth, solar system, phases of the moon, origin and life cycles of stars, galaxies, water movements, ocean floor, weather and climate, along with other related topics will be studied. (C-ID GEOL 120) (CSU, UC)

(more)

The Earth System is diverse and dynamic, featuring volcanoes, earthquakes, tsunamis, landslides, floods, hurricanes, tornadoes, 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 System (it's components being the Atmosphere, Hydrosphere-including ice, Biosphere, Geosphere and influences from Space or the Exosphere), we examine past events and current natural processes to understand how this past and these processes affect humans. We will examine Space, the evolution of the Solar System and how space affects Earth's systems.

Accordingly, this course looks at the processes and materials composing Earth's physical environment, for example, its landscapes, interior, air and water, and explores topics such as natural hazards and disasters, fossils, energy resources, and much more. This course also explores topics related to space, such as the evolution of stars and our solar system, and examines evidence of past impacts and the threat of impacts with space objects today. 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, whether driven by the Sun or Earth's internal heat, and as mentioned above can culminate in earthquakes, volcanoes, landslides, ocean currents and hurricanes, all of which obviously affect humans.

### 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 critical thinking skills while working on and completing weekly homework assignments which include applying methods such as Venn diagrams, rubrics, and concept maps. (ILO2)
2. Gain awareness of geological events, weather and climate patterns and oceanic circulation on a global scale and understand/evaluate why events/features occur where they do. Assessment done through various homework assignments. (ILO5)
3. Gain knowledge of geological, meteorological, astronomical and oceanic features and processes through lectures, research papers, exams and presentations. Ties to all objectives. (ILO4)

## Course Objective

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

1. Demonstrate a basic understanding of the nature of matter, and describe the movement of matter and energy through the natural processes on Earth.
2. Explain the character of the sediments, rocks, and minerals of which they are composed, and relate this to the rock cycle.
3. Identify and explain the major subdivisions of Earth and processes acting deep inside Earth that effect the environment at the Earth's surface.
4. Describe the time frame within which natural processes function, and learn ways geologists use to decipher Earth's history.
5. Demonstrate an understanding of the theory of plate tectonics and relate this to earthquakes, volcanoes, mountain building and the evolution of the physical world over million of years.
6. Identify the cause and effect of earthquakes and how they are measured, and the effect on people.
7. Characterize volcanic activity and identify its natural causes and impact on the environment.
8. Identify landscapes and source of sediments on the sea floor, and show the relationship between geology and ecology of the oceans.
9. Demonstrate knowledge of the dynamics of the sea by understanding near surface and deep sea circulation patterns and interaction with the atmosphere, and the composition and properties of sea water.
10. Identify the processes that effect sea level and shape the shoreline, and understand coastal environments.
11. Describe the composition and structure of the atmosphere, and examine atmospheric circulation, weather systems and storms, along with modern and past climates.
12. Describe the connection among ecology, climate and geology, and understand the character of the land surface and the agents that shape the landscape.
13. Explain the weathering process and the products of weathering.
14. Explain mass wasting and ways to avoid and prevent it.
15. Demonstrate a knowledge and understating of the role of water and wind in earth systems. Processes such as runoff, erosion, deflation and features such as stream, groundwater, and

dune systems will be examined.

16. Explain the formation of glacier ice, the ways ice and ice deposits shape the landscape, and the connection between glaciers and other parts of Earth's systems.

17. Demonstrate a knowledge and understanding of the sun, the moon, the planets and other characteristics of the solar system and beyond.

### **Textbooks & Other Resources or Links**

1) McConnell, D., and others. The Good Earth (Third/e). New York McGraw-Hill. (Available from the IVC Bookstore or online); also need to purchase the class handbook from the IVC Bookstore.

Three scientific themes are emphasized throughout the text: 1) scientific literacy; 2) Earth Science and the human experience; and, 3) the science of global change. This book will help you learn earth science concepts and processes on your own and complement what we do in class.

The Key Concepts and Terms List is your guide to what is important (found at the back of your class handbook). Required reading is listed in the right column of the Lecture Schedule later on in this document.

Checkpoints are found on nearly every page in each chapter. These checkpoints consist of a wide variety of learning methods from construction of Venn Diagrams to filling in rubrics and constructing concept maps. Some of these checkpoints along with sketches are linked to your lessons and are a key component to doing well on Exams.

### **Course Requirements and Instructional Methods**

Course Philosophy and Teaching Method: The subject of Earth Science 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 earth science processes in our natural world impact our environment and society.

It is your responsibility and obligation to complete the required readings each week and prior to any online quizzes.

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 preparation and reading.

### Course Grading Based on Course Objectives

#### Grades:

In this course, your grade will be based on points that you earn. There are approximately 540 possible points, which are written out below:

Point Distribution Summary*	Points
<b>Three Test @ ~80 points each (~240 points total)</b>	<b>~240</b>
<b>Quizzes (10 @ 7.5 pts each; 2 @ 15 pts each)</b>	<b>~105</b>
<b>Homework (checkpoints, sketches) turned in during each test</b>	<b>~50</b>
<b>Take Home Assignments (6 @ 10 pts ea) OR Volcano/Earthquake/Hurricane Assignments (TBD)</b>	<b>~60</b>
<b>Miscellaneous discussion boards/in-class work</b>	<b>~25</b>
<b>Total Points Possible</b>	<b>~480</b>

**Tests:** There are 3 total tests over four chapters each. Each of the 3 tests is worth ~80 points, for a semester total of 240 points. The tests are in class and consist of 40 multiple choice/answer, true/false types questions (40 pts; some taken from your quiz questions) and several problems from your "Class Handbook" or class notes. Your testing hours will be scheduled during our class meetings ...this will be discussed more after the semester begins.

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.

**Quizzes:** there are a total of 12 quizzes scheduled (one for each chapter covered) that consist of 15 questions worth  $\frac{1}{2}$  point each (so the total points possible for each quiz is  $\sim 8$ ). See syllabus for quiz due dates (we will discuss further in class). Some of these questions will be found on your three tests described above so are a good study guide (along with reading the chapters and attending lectures) for your tests. These cannot be made up once each due date passes.

**Take Home Assignments OR Volcano/Earthquake/Hurricane Assignments:** generally each week we meet I will check out a take home assignment that is worth 10 pts to be completed and turned in the following week we meet (hardcopy). These generally require you to research a topic online using given websites to investigate and respond to scientific questions, problems or scenarios...these will add up to a significant portion of your grade, so it is important that you show up to class, receive the assigned question and turn in your work in a timely manner....OR....you will complete two of three assignments over Earthquakes/Volcanoes and/or Hurricanes (TBD).

**Possible Hurricane, Volcano or Earthquake Assignment** (TBD)

**Checkpoint/Sketch Assignments:** Throughout each chapter are "Checkpoints," which consist of a wide variety of learning methods. Some of these checkpoints along with lecture sketches have been assimilated in your class handbook and are a study guide for each test; this is also required homework that I will collect at the beginning of each test (the homework that applies to each specific test; for example, I will collect homework for chapter's 1-4 at the beginning of the test over chapter's 1-4).

**Discussion Boards:** Discussions are ways to present your viewpoint or what you have learned about a topic to the class; and to respond to your classmate's posts to further discussion on a topic. Discussions are completed through Canvas and are generally worth 10 points. Sometimes an initial as well as a response post (to classmate's posts) are required. Discussion boards are primarily used for a totally online class, so will not be used often in this class; you do, however, have a post due over the Mystery of the Megaflood due during the first week of the semester.

**Field Trip:** Optional, extra credit hike, to be discussed during class.

**Due Dates:** The above assignments have specifically defined due dates as noted in the Course Schedule (see Table below). It is your responsibility to keep up on 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 Canvas. 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. 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 college 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 show up for the first class meeting can be dropped by the instructor. 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 the [IVC General Catalog](#) for details.
- Furthermore, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.

### **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):

- **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**

Schedule for Geology 110: Earth and Space Science, Spring 2018

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

\*\*NOTE: for purposes of this class, the week begins on Mondays at 12:01 am and ends on Sundays at 11:59 pm. Day 1 is Monday and Day 7 is Sunday (and, for example, Day 4 is Thursday) each week.



Week of	Topic/Lecture/Test	Readings
Feb 12-18 (holiday Feb 16-19)	Lesson 1: Introduction to course and Scientific Method  See Mystery of the Megaflood; Assign Due this Sunday (Day 7) through Blackboard  <b>Quiz Chapter 1 Due Day 7 next week</b>  Weekly Assignment Due in two weeks  Complete Checkpoints/Sketches for Lesson 1	Chapter 1
Feb 19-25	Lesson 2: Earth in Space  <b>Quiz Chapter's 1 and 2 Due Day 7</b>  Weekly Assignment Due next Monday  Complete Checkpoints/Sketches for Lesson 2	Chapter 2
Feb 26-Mar 4	Lesson 3: Near Earth Objects  <b>Quiz Chapter 3 Due Day 7</b>  Weekly Assignment Due next Monday  Complete Checkpoints/Sketches for Lesson 3	Chapter 3
Mar 5-11	Lesson 4: Plate Tectonics  <b>Quiz Chapter 4 Due Day 7 next week</b>  Weekly Assignment Due next Monday  Complete Checkpoints/Sketches for Lesson 4	Chapter 4 (two week period covering Plate Tectonics)
Mar 12-18	Lesson 4: Plate Tectonics (continued)  <b>Quiz Chapter 4 Due Day 7</b>  Weekly Assignment Due next Monday  Complete Checkpoints/Sketches for Lesson 4	Chapter 4

Mar 19-25	<p>Test 1 over Chapter's 1-4</p> <p>Turn in Checkpoints/Sketches from class handbook for Chapter's 1-4</p>	
Mar 26-Apr 1	<p>Lesson 5: Earthquakes</p> <p><b>Quiz Chapter 5 Due Day 7</b></p> <p>Weekly Assignment Due next Monday</p> <p>Complete Checkpoints/Sketches for Lesson 5</p>	Chapter 5
Apr 2-8	Spring Break	Spring Break
Apr 9-15	<p>Lesson 6: Volcanoes</p> <p><b>Quiz Chapter 6 Due Day 7</b></p> <p>Weekly Assignment Due next Monday</p> <p>Complete Checkpoints/Sketches for Lesson 6</p>	Chapter 6
Apr 16-22	<p>Lesson 7: Rocks and Minerals</p> <p><b>Quiz Chapter 7 Due Day 7</b></p> <p>Weekly Assignment Due Monday after Spring Break</p> <p>Complete Checkpoints/Sketches for Lesson 7</p>	Chapter 7
Apr 23-29	<p>Lesson 8: Geologic Time</p> <p><b>Quiz Chapter 8 Due Day 7</b></p> <p>Weekly Assignment Due next Monday</p> <p>Complete Checkpoints/Sketches for Lesson 8</p>	Chapter 8

Apr 30-May 6	<p>Test 2 over Chapter's 5-8</p> <p>Turn in Checkpoints/Sketches from class handbook for Chapter's 5-8</p>	
May 7-13	<p>Lesson 9: Oceans and Coastlines</p> <p><b>Quiz Chapter 13 Due Day 7</b></p> <p>Weekly Assignment Due next Monday</p> <p>Complete Checkpoints/Sketches for Lesson 9</p>	Chapter 13
May 14-20	<p>Lesson 10: The Atmosphere</p> <p><b>Quiz Chapter 14 Due Day 7</b></p> <p>Weekly Assignment Due next Monday</p> <p>Complete Checkpoints/Sketches for Lesson 10</p>	Chapter 14
May 21-27	<p>Lesson 11: Weather Systems</p> <p><b>Quiz Chapter 15 Due Day 7</b></p> <p>Weekly Assignment Due next Monday</p> <p>Complete Checkpoints/Sketches for Lesson 11</p>	Chapter 15
May 28-June 1	<p>Lesson 12: Climate and Climate Change</p> <p><b>Quiz Chapter 16 Due Day 7</b></p> <p>Weekly Assignment Due next Monday</p> <p>Complete Checkpoints/Sketches for Lesson 12</p>	Chapter 16
June 4-8	Test 3 over Chapter's 13-16	Test 3

Turn in Checkpoints/Sketches from class handbook  
for Chapter's 13-16