

# Earth and Space Science (Geology 110)

Fall 2024/Imperial Valley College

Kevin Marty [[Contact Info](#)]

Earth and Space Science is an entry level course on principles and concepts of science relevant to geology, astronomy, oceanography and meteorology.

<---- See Sidebar for Modules, Assignments, Announcements, Quizzes and other links



near the Salton Sea under moonlight (2019)...interaction of the Earth's systems in landscape photography.

**Hello and welcome to Geology 110 (Earth and Space Science). Below is the syllabus that outlines what this course is about and how we will cover the course material during this semester (along with other important information). Once you have reviewed the syllabus, please go to the modules section of Canvas and read through other important information regarding this course, and get started on your assignments when you are ready.**

**PLEASE NOTE: ONCE YOU HAVE READ THROUGH THE SYLLABUS HERE, ALL YOU HAVE TO DO IS GO BACK TO THE 'HOME' PAGE - EVERYTHING IS LINKED TO THE BUTTONS ON THE HOME PAGE (SO YOU DON'T HAVE TO GO TO ASSIGNMENTS OR QUIZZES, FOR EXAMPLE, BECAUSE THEY ARE ALREADY LINKED TO BUTTONS WHICH OPEN UP THE WEEKLY**

'MODULES' THAT CONTAIN ALL OF YOUR TASKS FOR EACH WEEK)...THE ONLY OTHER LINK YOU WILL USE FREQUENTLY IS 'ANNOUNCEMENTS'.

YOU CAN GET TO THE 'HOME' PAGE HERE: [HOME PAGE](#) OR AT THE TOP OF THE COLUMN TO THE LEFT.

### Basic Course Information

<b>Semester</b>	Spring 2024	<b>Instructor Name</b>	Kevin Marty
<b>Course Title &amp; #</b>	Geology 110	<b>Email</b>	<a href="mailto:kevin.marty@imperial.edu">kevin.marty@imperial.edu</a>
<b>CRN #</b>	CRNs: 10036 and 10037		
<b>Room</b>	Science Dept, 2700 bldg	<b>Office</b>	2776
<b>Class Dates</b>	Aug 12-Dec 6	<b>Office Hours</b>	M,W-8:30-9:30 am and T-2:30-3:30 pm
<b>Class Days</b>	Online: Zoom Optional and Face-to-Face on M,W	<b>Office Phone #</b>	760-355-5761
<b>Class Times</b>	Online (CRN 10037) Face-to-Face (CRN 10036)...M,W from 9:40-11:05 am	<b>Office contact if instructor will be out or emergency</b>	Science Dept at 760-355-6155
<b>Units</b>	3		

### **OPTIONAL (office hr) ZOOM MEETINGS (PLEASE READ)**

these classes are offered this semester as a traditional online class (CRN 10037) and Face-to-Face (CRN 10036); therefore Zoom meetings are not required (for either course). I will generally hold an (optional) weekly office-hour Zoom meeting that you can attend at your discretion to discuss anything related to the classwork (the time/day TBD).

### **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. ***(Provided online through Canvas; you do not need to purchase a textbook- see opening announcement)***.

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.

### **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 535-660 possible points, depending , which are written out below:

Point Distribution Summary*	Points
<b>Two-Three Tests @ ~100 points each (200-300 points total); non-comprehensive and given generally after every 4 chapters of coverage</b>  <b>UPDATE: an alternative assignment is required in place of Test 3</b>	225-300
<b>Quizzes (~12 @ 10 pts each; 2 @ 10 pts each)</b>	140
<b>Discussion boards ~5 @ 15-20 pts each; also two quizzes based on outside investigations (shown above)...AND...</b>  <b>~6 Journal Posts (see under "Modules" for information/requirements for the Journal Entries and a grading rubric) @ 15-20 Pts each</b>	~170-220
<b>Total Points Possible</b>	<b>~535-660</b>

**Tests:** There are 2-3 total tests over four chapters each. Each of these tests is worth 100 points, for a semester total of 200-300 points. The tests consist of 50 multiple choice/answer, reading comprehension, fill-in-the-blank type questions (each question worth 2 pts for 100 pts total). Your online textbook is your best study guide for the tests along with the chapter quizzes.

The '**UPDATE**' in the table above shows that a paper/investigation over National Parks will be substituted for Test 3.

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 chapter quizzes scheduled (one for each chapter covered) that generally consist of 20 questions worth ½ point each (so the total points possible for each quiz is 10 pts). You generally have two-three attempts over a 50-minute time period to complete each quiz (you highest score will be recorded). See syllabus for quiz due dates. Some of these questions will be found on your three tests described above so are a partial study guide (along with reading the

chapters) for your tests. These cannot be made up once each due date (and the one-day grace period) passes.

**Discussion Boards/Journal Entries:** 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 10-20 points. Sometimes an initial as well as a response post (to classmate's posts) are required. Not all lessons require a post (click on "Discussions" above to see the schedule); a couple discussion boards require quizzes instead of written posts...ALSO, there are 6-7 Journal Entries required for this course (read about this through the "Journal Rubric" found under the "Modules" link to the left- scroll to Lesson 4 over Plate Tectonics to find the Rubric and where your first journal post is due). Journals are a way of connecting topics from the course (and the natural world) to your life. These add up to a significant portion of your grade so please take the time to really experience and think about how you make these connections (the Journal Rubric describes the purpose of the journals in detail).

**optional: GOING FOR 5% points (added to your grade):**

**you will have the opportunity in this class to earn 5% points (added directly to your grade) by completing an assignment of your choice at an alternative website (THE CONCORD CONSORTIUM WEBSITE). Here you can choose from modules covering Plate Tectonics OR Life in Space OR Climate OR Will There be Enough Fresh Water. Time is set aside for this assignment in the schedule from Oct 21-27 (but can work on it anytime as long as it is completed by Oct 27). Showing a good effort/completeness/accuracy on the topic of your choice (described above) can earn you a 5% increase on your grade total (and possibly put you at the next letter grade...that is for you to monitor and decide).**

**Field Trip:** One (extra credit) hike is planned for this semester (details later).

**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. Please note also that I use Canvas only to 'show' you your scores, but not to grade you. Any grade you see in Canvas is probably inaccurate, so only check to make sure your scores are recorded correctly...to figure out your approximate grade at any given point, add up to total points possible to the date you are figuring out your score, and divide that into the total points you have earned (which you will find through Canvas)...then multiply that number by 100 to get your percentage.

**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. For an online class, this means not completing (or attempting to complete) and submitting required assignments during the first week. 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.

## Online Classroom "Netiquette"

- What is netiquette? Netiquette is internet manners, online etiquette, and digital etiquette all rolled into one word (this applies to strictly online and hybrid classes).
- Netiquette rules to remember: (1) identify yourself, (2) include a subject line, (3) avoid sarcasm, (4) respect others' opinions and privacy, (5) acknowledge and return messages promptly, (6) copy with caution, (7) do not spam or junk mail, (8) be concise, (9) use appropriate language, (10) use appropriate emoticons (emotional icons) to help convey meaning, and (11) use appropriate intensifiers to help convey meaning [do not use ALL CAPS or multiple exclamation marks (!!!!)].

## 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/> ↗

### **Academic Honesty (Artificial Intelligence-AI)**

IVC values critical thinking and communication skills and considers academic integrity essential to learning. Using AI tools as a replacement for your own thinking, writing, or quantitative reasoning goes against both our mission and academic honesty policy and will be considered academic dishonesty, or plagiarism unless you have been instructed to do so by your instructor. In case of any uncertainty regarding the ethical use of AI tools, students are encouraged to reach out to their instructors for clarification.

### **Anticipated Class Schedule / Calendar**

Schedule for Geology 110: Earth and Space Science, Fall 2024

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

\*\*NOTE: for purposes of this online 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
Aug 12-18	Lesson 1: Introduction to course and Scientific Method <b>Intro Post Due Day 5, Response Post Due Day 7</b> Horoscope AND Lewis and Clarke Expedition OR Mystery of the Megaflood (Video) Post Due Day 7 Quiz Chapter 1 Due Day 7 of NEXT WEEK	Chapter 1



Aug 19-25	<p>Lesson 2: Earth in Space</p> <p><b>Season's Assignment/Quiz, Due Day 7</b></p> <p>Quiz Chapter 1 Due Day 7 this week; Quiz Chapter 2 Also Due Day 7 this week</p>	Chapter 2
Aug 26-Sept 1	<p>Lesson 3: Near Earth Objects</p> <p><b>Space Exploration Post, Due Day 7</b></p> <p>Quiz Chapter 3 Due Day 7</p>	Chapter 3
Sept 2-8	<p>Lesson 4: Plate Tectonics</p> <p><b>Journal Post 1 Due Day 7</b></p> <p>Quiz Chapter 4 Due Day 7</p>	Chapter 4
Sept 9-15	<p><b>Test 1: Opens Day 4 at 6 am and closes Day 7 at 11:59 pm. Taken online and found under Modules (and "Quizzes" link).</b></p> <p><b>Journal Post 2 Due Day 7</b></p> <p><b>No Quiz</b></p>	Test 1
Sept 16-22	<p>Lesson 5: Earthquakes</p> <p><b>Earthquake Post Due Day 7</b></p> <p>Quiz Chapter 5 Due Day 7</p>	Chapter 5
Sept 23-29	<p>Lesson 6: Volcanoes</p> <p><b>Journal Post 3 Due Day 7</b></p> <p>Quiz Chapter 6 Due Day 7</p>	Chapter 6

Sept 30-Oct 6	<p>Lesson 7: Rocks and Minerals</p> <p><b>Journal Post 4 Due Day 7 OR Mineral Investigation Due Day 7 (your choice)</b></p> <p>Quiz Chapter 7 Due Day 7</p>	Chapter 7
Oct 7-13	<p>Lesson 8: Geologic Time</p> <p><b>Geologic Time Investigation and Quiz Due Day 7</b></p> <p>Quiz Chapter 8 Due Day 7</p>	Chapter 8
Oct 14-20	<p><b>Test 2: Opens Day 4 at 6 am and closes Day 7 at 11:59 pm. Taken online and found under the "Quizzes" link</b></p> <p><b>Journal Post 5 Due Day 7</b></p> <p><b>No Quiz</b></p>	Test 2
Oct 21-27	<p><b>Journal Post 6 Due Day 7</b></p> <p><b>Optional Going For An Additional 5% on your grade-</b> by completing a topic at the Concord website described below.</p> <p>Concord Consortium: Plate Tectonics (STEM assignment); OR INSTEAD OF PLATE TECTONICS YOU CAN CHOOSE 'CLIMATE' OR 'LIFE IN SPACE' OR 'WILL THERE BE ENOUGH WATER' MODULES AT THE CONCORD SITE. Please keep in mind each topic above consists of modules (where you do most of your work) AND a pre and post-test (which are not graded but required).</p>	Concord Consortium Optional Assignment
Oct 28-Nov 3	<p>Lesson 9: Oceans and Coastlines</p> <p>COMET assignment- World's Oceans due day 7</p> <p><b>Oceanic Post due day 5 and 7 (extra credit)</b></p> <p>Quiz Chapter 13 Due Day 7</p>	Chapter 13
Nov 4-10	<p>Lesson 10: The Atmosphere</p> <p><b>Journal Post 7 Due Day 7</b></p> <p>Quiz Chapter 14 Due Day 7</p>	Chapter 14
Nov 11-17	<p>Lesson 11: Weather Systems</p> <p>COMET: Basic Weather Processes due day 7</p>	Chapter 15

	Quiz Chapter 15 Due Day 7	
Nov 18-24	Lesson 12: Climate and Climate Change Assignment Climate and Climate Change Assignment Due Day 7 Quiz Chapter 16 Due Day 7	Chapter 16
Nov 25-Dec 1	Thanksgiving Break	Thanksgiving Break
Dec 2-6	<b>Geology of National Parks Assignment</b>	Short Paper