

## 4195 - **GEOL 1, Introduction to PHYSICAL GEOLOGY**, fall 2020

Professor: Dr. **Alessandro Grippo**, Ph.D.

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Webpage:

<http://grippo.pazsaz.com>

Class Hours:

**LECTURE: Monday and Wednesday 5:45 – 7:05 pm** *online*

**FINAL EXAM: Monday, December 21, 2020, @ 3:30 pm** *online*

Office Hours: Monday and Wednesday 7:10-8:05 *online*

### **Course description**

This course illustrates geologic processes that have shaped and continue to shape Earth. Topics include plate tectonics, minerals, rocks, hazards associated with volcanoes, earthquakes, and other geologic processes, geologic time, mountain building, fossil fuels and other geologic resources, processes that change landscapes, and climate change. Upon completion of this course, the student will have a greater awareness and understanding of their constantly changing environment

### **Course objectives**

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

- Explain the scientific method especially as it applies to major geologic theories like plate tectonics
- Demonstrate an understanding of the plate tectonics theory by recognizing geologic features associated with plate tectonic boundaries and explaining the geologic processes involved in their formation
- Apply basic geologic principles to make observations and find resources needed to make informed decisions to avoid hazards associated with earthquakes, volcanoes, landslides, etc.
- Demonstrate an understanding of the limitations of geologic resources and hazards associated with the acquisition and use of renewable and non-renewable resources, thus enabling students to make informed decisions

### **Student Learning Outcomes**

- Demonstrate an understanding of the fundamentals of the plate tectonic theory by identifying tectonic setting based on major features (including, but not limited to mid-ocean ridges, mountain ranges, volcanic arcs, ocean trenches).
- Recognize regions that are prone to specific geologic hazards and/or hazards associated with use of geologic resources. Examples include, but are not limited to, soil liquefaction, slope failure, pyroclastic flows, lahars, flooding, groundwater contamination, subsidence, acid mine drainage, climate change

### **Textbook**

Class Textbook: Plummer and Carlson, Physical Geology, 15<sup>th</sup> edition (or older), McGraw-Hill.

The textbook is recommended. Most of the concepts explained in class will be found on the textbook (others will be posted on my web page). I would strongly recommend that you get your own copy of the book, either new or used. Different editions do not always present materials in the same order or with the same emphasis. In case, it will be your responsibility to locate materials within the textbook. You can get more information about the textbook on my web page.

### **Required Materials**

Lecture: all lectures will be conducted online via Canvas chat. Students should always have access to Canvas. I will post relevant information, quizzes, exams on Canvas

Exams: exams will be online only (on Canvas), at the time of class and for the duration of the class only. Absolutely no calculators, tablets, computers, electronic translators, mp3 readers, earphones or any electronic device are allowed.

### **Recommended Computer Skills and Technology Requirement**

This class will be taught online using Canvas, but you will still need access to a computer to work with some of the resources I made available on my website (<http://grippo.pazsaz.com>). The web page is fully

accessible from both Pc- and Mac-based operative systems, and optimized for Firefox. Please be aware that SMC has taken down momentarily all of their faculty web pages, and I had to transfer all of my files on a private server using a commercial domain. If you find any broken link, or anything essential that does not work properly, please let me know as soon as possible.

### Methods of Presentation

Lecture and Discussion. I will be going over information that is in the textbook by using PowerPoint slides that are available on my website. I will be using Canvas of course and will be providing you with the relative links my webpage. Course material is supplemented with discussions of current geological news, which includes geologic hazards and recent discoveries

### Grading System

The total grade will be assigned based on exams, class assignments, participation, quizzes and homework. In order to be able to pass the class you will have to work on all of the assignments and take ALL exams.

**Exams** - You will be tested on the materials covered during lectures, and in assigned readings (and videos if and when pertinent). The exams will include a mix of multiple choice, short essay, true-false, figure and map interpretation, yes/no, and short-answer questions. Sample questions taken from actual exams can be found on my web page. The first three exams will be non-cumulative but the final exam, while still preserving the same format, will also include some materials from the chapters covered in earlier tests (in the form of different questions). Extra-credit points will be built in the exams. This will be the **ONLY** source of extra-credit for the class.

There will be four (4) exams, each of which will count for **15% of the grade**, for a total of **60% of the grade**. Individual exams will be graded on a 0-100 scale for simplicity. Please note that the final exam will include a cumulative section. You cannot miss exams: if you miss any single exam, its maximum score will be subtracted from your grade, and you will likely not be able to pass the class. Exams are closed-books; no texts, notes, calculators or dictionaries of any sort will be allowed; absolutely no cell phones, iPods, iPads, blackberries, headphones, Bluetooth or any other kind of electronic device are allowed during a test;

**Homework Assignments and Quizzes** – There will be a few homework assignments (**20% of the grade**) and quizzes (**10% of the grade**) mostly in order to strengthen certain skills or reinforce a few concepts. The relative score will be integrated in the total score. Homework must be **typewritten** and should be **turned in at due time**, no exceptions. Late homework will be accepted only for three days after the due date with a 50% off score. E-mailed assignments will NOT be accepted. Pop **quizzes** may be given to the class during lecture hours. In case, they can be on any material covered during the previous lectures and/or labs. There will be no make-ups for pop-up quizzes.

**Class Work and Participation** – Class work and participation constitutes **10% of the final grade**. Participation does not mean simply attending class regularly and on time but rather constitutes a general assessment of your effort and activities in the classroom.

**Method of Evaluation** – While exams will be graded out of 100 points and quizzes and homework out of 20 points, all these values will be adjusted as indicated below, and the final score is calculated out of 1000 points (from assignments, exams, quizzes, labs, work and participation)

Four exams will count for 60% of the final grade	600 points
Homework will count for 20% of the grade	200 points
Quizzes will count for 10% of the grade	100 points
W&P is worth 10% of the grade (100 points)	<u>100 points</u>
	1000 points

### Grading scale:

FINAL GRADE: A: 901 - 1000 points  
B: 801 - 900 points  
C: 701 - 799 points  
D: 601 - 699 points  
F: 600 points or less

SINGLE EXAMS: A: 90 - 100 points  
B: 80 - 90 points  
C: 70 - 79 points  
D: 60 - 69 points  
F: 60 or less

### **Academic integrity and policies**

The academic honesty policy of Santa Monica College will be strictly enforced at all times.

### **Students with disabilities**

I encourage students requesting disability-related accommodations to contact Disabled Student Services as soon as possible. I will work with you and the Center for Students with Disabilities to provide appropriate and reasonable accommodations. An early notification of your request for test-taking and/or other accommodations is necessary to ensure that your disability related needs are addressed appropriately; testing accommodations cannot be applied retroactively. The DSPS office is located in the Admissions/Student Services Complex, Room 101, and the phone numbers are (310) 434-4265 and (310) 434-4273 (TDD).

### **Campus Emotional Support for Students**

Over the course of the semester you may face difficult circumstances beyond your control, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down or depressed, or having difficulty concentrating. These challenges may create barriers to learning or may make it difficult for you to meet some of the course requirements. If you or someone you know is suffering these or other similarly difficult circumstances, please reach out for support. The staff and faculty of Santa Monica College want you to succeed academically and care about your wellbeing. You may contact the College's Center for Wellness and Wellbeing (LA 110, 310-434-4503), which provides short-term mental health services, community referrals, and a 24/7 emotional support line for students, 800-691-6003. Or, if the situation is an emergency, you may contact the SMC Police Department (310-434-4000 or the SMC LiveSafe app). Please contact me if you want to discuss which SMC service or support might be best for you.

### **International Students**

As an international students, you are subject to a variety of rules and obligations. One of them is that you must maintain a certain number of units. In the past, a few students chose to be enrolled in the class but not to participate in it, even accepting a failing grade, as long as they could stay enrolled. Please, do not abuse the system, and be aware that you will be treated as any other student: you can be dropped from the class for lack of attendance like any other students, and you would have to face the consequences of your choices. Be responsible.

### **Emergency Preparedness**

The safety of students at SMC is a priority. Please note that emergency procedures are posted in this classroom and every classroom. Also, procedures for various emergencies are delineated on the SMC website:

<http://www.smc.edu/StudentServices/EmergencyPreparedness/Pages/Emergency-Preparedness.aspx> Take time to familiarize yourself with these procedures now, when knowledge of what to do is the most effective

### **Make up exams**

As a policy, there will not be make-up exams unless there is a medical or legal reason; in all cases, a note from a doctor, a hospital, a court, or the police is required. If you know you will be missing a class for a religious holiday, it is YOUR responsibility to let me know as soon as possible, and in any case at least two weeks before the day you will be absent. In case you need to take a make-up test, the test will be in a different format, and will consist in a series of short essay questions.

### **Some basic tips on how to succeed in this class**

1. The first and most important point is: if you do not understand something, ask questions, ask me to repeat. You are here to learn and the professor is there to help you in this process.
2. Time spent in class is used to learn about the subject, so do not waste it. Education is always worth investing in, even if your ideal major is different. The more you know the more you will be able to defend your ideas in society
3. Give yourself adequate study time per week for each one unit of a course. Review notes as soon as possible after lecture in order to finish incomplete diagrams and sentences while you still remember what they mean.
4. If you are having difficulties with the course, ask me for help or advice early in the semester. Do not coast through most of the course and then, with a week or two remaining in the term, ask me what you can do to improve your grade. I strongly urge you to seek help if your first exam grade indicates you are doing poorly.
5. An ethical note: looking at a fellow student's paper during an exam is cheating; using crib notes is cheating. Consequences of cheating will be an automatic "F" and a report filed with the Office of the Vice President for Student Affairs and Dean of Students.
6. Do not be late to class.
7. Coming to class and taking notes is essential for passing the class. Historically, those who cut class, fail the class.

### **Biographical Sketch of Alessandro Grippo, Ph. D.**

Dr. Grippo is an Associate Professor of Geology in the Department of Earth Sciences at Santa Monica College, where he has been teaching since 2001, when he was still a graduate student at the University of Southern California.

He has taught all general education courses offered at SMC, Physical Geology, Oceanography, Earth History/Historical Geology and Field Geology; in addition, he taught the same or similar classes, and Environmental Geology, at other colleges in the greater Los Angeles area; senior level and graduate classes in Sedimentology, Stratigraphy, Field Geology, and Natural Disasters; and also an advanced, 500-level seminar in Stratigraphy, his specialty.

He keeps on working on different scientific projects and he presented his work at international meetings in the US, the UK, Italy, France and Canada. His research interests as a scientist include stratigraphy and sedimentology, oceanography, geomorphology, regional geology and global and climate change. In particular he is doing research on how to extract and process information about environmental change and ancient climates from the sedimentary rock record.

Dr. Grippo obtained his Philosophy Doctor degree from the University of Southern California (USC) in Los Angeles by discussing astronomically-related climate change through a geological and mathematical analysis of a sedimentary rock record from the Cretaceous Period. Between his M.S and his Ph.D. he has been working in the oil industry as an exploration and well-site geologist. During his years at SMC he was also a NASA-JPL faculty fellow. He is also currently an external field instructor for the Desert Institute of Joshua Tree National Park, where he leads different field explorations of the Mojave desert, from Death Valley to Joshua Tree itself.

**Tentative schedule of lessons**  
 (if necessary, variations will be detailed in class)

Week	Day	Topic	Book Chapter	Exams
1	August 31	Intro and Plate Tectonics concepts	1	
	September 2	Intro and Plate Tectonics concepts	1	
2	September 7	<i>Labor Day (campus closed) – no class</i>		
	September 9	Atoms, Elements and Minerals	2	
3	September 14	Atoms, Elements and Minerals	2	
	September 16	Atoms, Elements and Minerals	2	
4	September 21	Igneous Rocks: intrusive	3	
	September 23	<b>exam 1</b>		<b>EXAM 1</b>
5	September 28	Igneous Rocks: intrusive	3	
	September 30	Igneous Rocks: extrusive	4	
6	October 5	Igneous Rocks: extrusive	4	
	October 7	Weathering and soil	5	
7	October 12	Weathering and soil	5	
	October 14	Sediments and Sedimentary Rocks	6	
8	October 19	Sediments and Sedimentary Rocks	6	
	October 21	Sediments and Sedimentary Rocks	6	
9	October 26	Metamorphism	7	
	October 28	Metamorphism	7	
10	November 2	Time and Geology	8	
	November 4	<b>exam 2</b>		<b>EXAM 2</b>
11	November 9	Time and Geology	8	
	November 11	<i>Veteran's Day (campus closed) – no class</i>		
12	November 16	Time and Geology	8	
	November 18	Mass Wasting, Streams and Floods	9 & 10	
13	November 23	Streams and Floods	10	
	November 25	Ground Water	11	
14	November 30	Ground Water	11	
	December 2	Glaciers and Glaciations	12	
15	December 7	Deserts and Wind Action	13	
	December 9	<b>exam 3</b>		<b>EXAM 3</b>
16	December 14	Waves, Beaches, and Coasts	14	
	December 16	<i>finals week, no class</i>		
17	December 21	<b>exam 4 (cumulative final exam)</b>		<b>EXAM 4</b>