

Physical Geology

Mount San Antonio College Course Syllabus & Outline – Fall 2018



Instructor: **Dr. Mark Boryta** Office: 60-1102

e-mail: mboryta@mtsac.edu Office Ext: 5266

Office Hours: 60-1102	<u>MW</u> : 8:30-9:30am <u>TR</u> 9:30-10:30am	<i>or by appointment</i>
--------------------------	---	------------------------------

Class Meets: Tue & Thu, 11:30 - 2:40 in 60-1512

Class Web Page:

<http://faculty.mtsac.edu/mboryta/classpages/geol1.html>

COURSE DESCRIPTION: Introduces students to geological thinking and to the workings of planet Earth. Basic minerals and rocks of Earth's crust, and essentials of earthquakes, volcanoes, and landscapes, framed by plate tectonics operating in concert with atmosphere and ocean processes. A required course for students entering the geoscience major. Overnight Field Trip **required**.

REQUIRED TEXTS: Marshak, Essentials of Geology, 5/e **AND** Ludman & Marshak, Lab Manual for Introductory Geology, 3/e (you need a NEW copy of the lab manual); these are available as a bundle from the MtSAC bookstore.

PREREQUISITE: Eligibility for MATH 51. **Suggested Preparation:** Students who have passed READ100 and ENGL1A have reported feeling more confident and comfortable with the concepts and material presented in this course.

FORMAT: Class will consist of group discussions, laboratory activities and lectures; multimedia presentations, videos and overheads will aid visualization. Study Guides and some assignments will be on the Internet. *Participation in field studies is an essential part of this course!*

COURSE MEASURABLE OBJECTIVES: After taking this course, students should be able to:

1. Apply scientific thinking and scientific method to analyze geologic problems, and the causes and effects of geologic processes.
2. Analyze deep time as it relates to the physical and chemical evolution of Earth over time.
3. Use simple tools and techniques for field and lab identification of common minerals and rocks.
4. Analyze how tectonics influences the formation and occurrence of minerals, rocks, earthquakes, volcanoes, oceans, continents, and landscapes.
5. Analyze patterns and trends in observable data from a natural system, and form conclusions based on those patterns and trends.

GENERAL INFORMATION: Geology is the study of the Earth and the processes that shape it. Sure, it's the study of "rocks," but more than that, it is the study of their formation and the relationships among them, as well as the history of the Earth that can be interpreted from their preservation, and the relationship between humans and the rocks at the surface. For example, fossil fuels, rocks and minerals are raw resources, and we dump trash in landfills. Because you live on this Earth, you make decisions that affect the world around you. In order to do this *responsibly*, you must have an understanding of the material presented in this class. At the very least, after you've studied a bit of geology, your vacation trips will be much more enjoyable! Questions pertaining to the subject matter are strongly encouraged – no, **requested!** – at any time, in class or by e-mail (lengthy discussions or questions about material beyond the scope of this class may need to be postponed/resumed at another time).

COURSE REQUIREMENTS: I assume that you have made the choice to sign up for this class because *you want to learn* about how the world around you works. In order to take full advantage of your educational opportunity, here are some things you can do and skills you should have or work on:

1. **First**, if this class seems difficult for you, seek help from me AS SOON AS YOU CAN. **I am here to help!**
2. **Come to each and every class, on time;**
3. **Read the assignments prior to coming to class.** ("College level rigor" is defined as a *minimum of three hours of work per week per unit of credit*, including class time);
4. **TAKE PART IN CLASS!** This class is for YOU, so try to answer and ask questions!
5. **Take good notes** on the important concepts as you read and as you pay attention in class; if you've read the text ahead of time, you'll know how to spell new words and you won't have to write everything down! It may help you to **rewrite your notes** after each class;
6. **STUDY the illustrations!** "A picture is worth a thousand words" applies to your textbook;
7. **Attempt the review questions** and be familiar with the Key Terms for each chapter; and
8. **start studying now** for the next exam! The best ways to do that are to
 - a) download the study guide from the Internet, and
 - b) involve yourself in a study group.
9. Finally, if this class seems difficult for you, seek help from me AS SOON AS YOU CAN. **I am here to help!**

ASSESSMENT: Grades are based on your **understanding** of course material as assessed by (nearly) weekly quizzes, laboratory and in-class activities, Lecture- and Lab-based exams, and an OVERNIGHT field trip. Extra credit exercises *may* be offered at various times throughout the semester, but these will NOT make up for otherwise poor performance!

QUIZZES: About every week there will be a short multiple-choice quiz during class. These will *not* be announced; **no makeup quizzes will be given**. You will need a #2 pencil and **SCANTRON Card** (Form #815-E) to complete each quiz. Each quiz will be worth 10 points, and will cover material since the last quiz.

LABORATORIES: Lab activities are integrated into the course, and the grade you earn for GEOL 1 is derived from both lecture and lab portions. Lab work will generally follow the lecture material as indicated in the Course Outline; **please come with your lab manual to each meeting, prepared for either Lecture or Lab activities!**

ACTIVITIES: There will be various in-class activities throughout the semester; these will be worth various points. Activities will include such things as presentations and reports. More information will come separately...

HOMEWORK: It is essential that you do work as assigned outside of the classroom. Quizzes and class discussions will rely on your having become familiar with the terminology and concepts!

FIELD TRIP: Participation in a field trip is required; dates are on the Outline, other details will be available later. You can earn up to 150 points for **actively participating** in a field trip and **turning in** the assignment that's given, but **if you do not fulfill the field trip requirement, you will get an "F" in the class!**

EXAMS: There will be 4 exams and a COMPREHENSIVE FINAL EXAM spread over both Final Exam days. These will involve some combination of multiple-choice, true/false, short answer/essay questions, rock and mineral identification, and questions similar to those in lab activities. On exam days you will need to bring a **calculator**, a **#2 pencil** and a **SCANTRON Card** (Form 882). Exams have various point values that are based on the amount of material covered. Exam dates are noted on the Outline; those dates will NOT change, but the exam content will reflect class progress. **Note: It is exceptionally difficult to set up make-up lab exams.** If you **must** miss *one* exam (**NOT INCLUDING THE FINAL – don't miss that!!**) for a verifiable medical emergency or death (CHECK WITH ME), you *may* be able to make it up for fewer points before it is handed back to the class. Legitimate excuses **MUST** be verified; "I had a cold," "I overslept" or "I couldn't get a ride" don't qualify.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES: If you have special needs, please let me know as soon as possible so that I may assist you to be successful in this class. MtSAC will make reasonable environmental and

academic adaptations that promote students' access and equitable participation. Students whose condition, either permanent or temporary, that may be impacted by environmental and/or academic barriers are strongly encouraged to approach their faculty and the disability office at the beginning of the term to discuss possible adaptations. DSP&S (Disabled Student Programs & Services) is located in the Student Services Building (9B), lower level closest to the west entrance. You may contact them at (909) 274-4290 (Voice) or 909-895-6634 (Video Phone for American Sign Language users).

ELECTRONIC DEVICE POLICY: Electronic devices (cell phones, laptops, translators, etc. – calculators okay!) **may not be used in class AT ANY TIME**, unless, of course, instructed to do so. If you text in class or your cell phone goes off in class, you will be **penalized 10 points** and your cell phone will be confiscated until the end of class! (Breaks too!)

ATTENDANCE: It is important to come to class. Reading the book does not affect your understanding of the material in the same way that interacting with others in class will; besides, some of the material we will cover is not found in your book. Since you chose this class over others, I will assume that you intend to be here, and if you miss a class then a real emergency has occurred. **As long as it is not an exam day, you need not bring an excuse, but you cannot make up a quiz** under any circumstances, as explained in class. If something is due, you must still turn it in on time; consider giving it to a classmate to turn it in, or **e-mail it to me**.

Attending class means doing more than filling a seat. This is YOUR class, and YOU can get out of it what YOU put into it. You should have enough respect for yourself (YOUR time is valuable!) that you take every advantage of this opportunity to learn as much of this interesting and very important material as you can. Furthermore, you should not be disruptive – **don't let your cell phone go off**, don't show up late or unprepared, don't snore, etc. You should always respect your peers.

Attendance Regulations: Roll is taken at the beginning of class each day. Starting with the SECOND week of class (____), you will be marked TARDY if you come in during roll but after your name is called, and you will be marked ABSENT if you are not present during roll. This means that even if you come in "only" 5 minutes late, you'll be marked *absent*! Furthermore, if you leave class early, you will be marked absent. **Excessive tardiness/absence will result in your grade being lowered - by one letter for every 2 absences!**

DROP POLICY: You should read the College Attendance, Drop and Withdrawal Policies (find them in the Schedule of Classes). In this class, if you missed the field trip, are not passing the class and/or are marked absent for **one exam or more than 2 classes** by the final drop date, I may drop you (unless you have cleared your circumstances with me). However, DO NOT *expect* me to drop you – if you are no longer attending class, you should take the initiative to drop or you may receive a grade of F! Remember, these rules are in place to help YOU succeed! Below are important drop deadlines for the current semester:

Last Day To: Is:	Add the Class Sep 7	Drop w/ Refund Sep 7	Drop w/ NO Refund and no "W": Sep 9	Withdraw Nov 2
---------------------	-------------------------------	--------------------------------	---	--------------------------

Cheating: Cheating is not tolerated. **A student who plagiarizes or cheats in any way shall fail the course, and** a letter will be written and placed in the student's file in Student Services. **Just don't do it!**

Your grade in this course will be determined from my assessment of your understanding of the material, based on the total number of points you earn as a percentage of the total expected:

Mastery: **A** = >90%
Solid: **B** = 80 - 89%
Basic: **C** = 70 - 79%
Partial: **D** = 60 - 69%
Insufficient: **F** = <60%

Reading Assignments: The following is a **TENTATIVE** schedule indicating the order of topics to be covered; more specific reading assignments will be discussed in class. You should come to class having read and understood the material well enough that you are prepared to discuss it! In the "Read" columns below, the letter "**T**" refers to the chapter in the text ("Int" refers to "Interlude") and "**L**" refers to the lab manual.

PHYSICAL GEOLOGY

Date	Tuesday Topic	Read	Date	Thursday Topic	Read
8/28	Introduction to Earth; Minerals and Their Properties	T-Intro, 3	8/30	Nebular Hypothesis; Minerals, Atoms and Properties	T3; L3
9/4	Minerals, Atoms and Properties	T3; L3	9/6	Plate Tectonics	T2; L2
9/11	Magma, Volcanism and Igneous Rocks	T4,5; L4,5	9/13	Magma, Volcanism and Igneous Rocks	T4,5; L4,5
9/18	Exam #1: Chapters T: Intro-5; L: 2-5		9/20	Landforms and Topographic Maps	L8, 9
9/25	Exam #2: Igneous (and Ore) Mineral & Rock ID, Tectonics, Topo Maps	T-Int F	9/27	FIELD TRIP Thu-Sun!	
10/2	Weathering, Soils and Sedimentary Rocks	T Int B, 6	10/4	Weathering, Soils and Sedimentary Rocks	T Int B, 6
10/9	Metamorphism and Metamorphic Rocks	T7; L4, 7	10/11	Metamorphism and Metamorphic Rocks	T7; L4, 7
10/16	Crustal Deformation and Geologic Maps	T9; L15	10/18	Crustal Deformation and Geologic Maps	T9; L15
10/23	Running Water; Work of Streams	T14; L10	10/25	Running Water; Work of Streams	T14; L10
10/30	Exam #3: Chapters T6, 7, 9, 14 then Geologic Time (Relative Dating)	T10; L17	11/1	Exam #4: Sed & Met Rock and Min ID; labs L4, 6, 7, 10, 15 then Geologic Time (Absolute Dating)	T10; L17
11/6	TBA (GSA Indianapolis); self-directed Earthquakes	T8; L16	11/8	Earthquakes and Seismology	T8; L16
11/13	Glaciers and Climate	T18, 19; L11	11/15	Glaciers and Climate	T18, 19; L11
11/20	Groundwater	T16; L12	11/22	THANKSGIVING – No Class!	
11/27	Groundwater	T16; L12	11/29	Oceans, Seafloors and Coastal Geology	T15; L14
12/4	Oceans, Seafloors and Coastal Geology	T15; L14	12/6	Catch Up / Review	

Comprehensive Final Exams (5 & 6): include ALL chapters, and will be worth 500 points; it will be on **BOTH Final Exam days (Tu ___ & Th ___ of December)** at _____ in Rm 60-1512 (Homework: Fill in the blanks using, e.g., the Schedule of Classes:

(dates)

(time)

www.mtsac.edu/schedule/schedules/2018_Fall_final_exam_sked.pdf