

AHS 220

Physical Geology

Spring 2017

Syllabus & Schedule

Physical Geology includes: **Mineralogy**, the study of the chemical composition and structure of minerals; **Petrology**, the study of the composition and origin of rocks; **Geomorphology**, the study of the origin of landforms and their modification by dynamic processes; **Geochemistry**, the study of the chemical composition of earth materials and the chemical changes that occur within the earth and on its surface; **Geophysics**, the study of the behavior of rock materials in response to stresses and according to the principles of physics; **Sedimentology**, the science of the erosion and deposition of rock particles by wind, water, or ice; **Structural Geology and Tectonics**, the study of the forces that deform the earth's rocks and the description and mapping of deformed rock bodies; **Economic Geology**, the study of the exploration and recovery of natural resources, such as ores and petroleum; and **Engineering Geology**, the study of the interactions of the earth's crust with human-made structures such as tunnels, mines, dams, bridges, and building foundations.

Class meetings: Lectures: MWF 10:00 am – 10:50 am WSB-107
Lab (Section 01): Thursday 2:00 pm – 3:50 pm, WSB-22

Instructor: Dr. Kate Pound, Professor (Geology)
Office: WSB- 155
Email: kspound@stcloudstate.edu
Office Hours: TBA

Tutor / Tutoring Hours: The tutor for this class will be announced. Tutoring hours will be announced on D2L.

Textbook: Essentials of Geology, Lutgens, Tarbuck, and Tasa, 2015. Pearson Education Inc., 12th Ed., 574p.
ISBN-10 (with Mastering Geology Code): 0-321-94980-3
ISBN-13 (with Mastering Geology Code): 978-0-321-94980-6

Equipment: Purchase a **hand lens** from the AHS Office Manager (Ms. Christy Berndt, WSB-129) - \$7-10
Always bring your hand lens, a ruler, an ordinary pencil, colored pencils, and a calculator to lab and class.

Grade Calculation:

Class/Lecture Questions (= 'participation')	15%
Lab Assignments	25%
Lecture Exams (12.5%, 12.5%, 15%)	40%
Lab Exams (2)	20%
Total	100%

Grades will be assigned as follows:

	A = 92.5 – 100 %	A- = 90 – 92.5%
B+ = 87.5 – 90%	B = 82.5 – 87.5%	B- = 82.5 – 80%
C+ = 77.5% - 80%	C = 72.5 – 77.5%	C- = 70 – 72.5%
D + = 67.5 – 70%	D = 62.5 – 67.5%	D- = 60 – 62.5%

Lectures: Attendance at all lectures is expected. If you do miss a lecture it is your responsibility to find out exactly what was covered from your classmates. *Please, do not ever ask me 'Did I miss anything important?'* ☺ Think about this, would I spend time on it if it wasn't important? There will usually be a question at the start and/or end of each lecture; these **Class Questions** constitute 15% of your total grade. There may also be short random quizzes. Make sure you take good notes in class. I do NOT hand out class notes. I do post lecture slides in D2L after class, although I typically use the whiteboard and overhead projector much of the time.

Assigned Reading: See the schedule for assigned readings. The reading should be done prior to, during, or immediately after the topic is covered – this will help you better understand the topic being covered. I will be giving you links to some online readings THAT I EXPECT YOU TO DO when the coverage is 'thin' in the textbook.

'Mastering Geology': The textbook includes an access code for Mastering Geology slides and videos. I requested that you purchase this for a reason – the visualizations really help you understand some of the abstract concepts we are talking about. Watch these, they will really help you.

Labs: All the labs are mandatory. I will hand out a paper copy of your Lab Assignment; complete the Lab Assignment, and hand it in at the end of lab or at the start of class on the Friday following the Lab. On very rare occasions I will give you some extra time to complete the lab. **NO CREDIT WILL BE GIVEN FOR LATE LABS.**

Lecture Exams: There will be three 'lecture' exams, two during the semester, and one during Finals. These will be a mixture of short written answer, matching, fill-in-the blank, and multiple choice questions. Most of the questions will be short-written answer. These exams total 40% of your grade. The Final Exam is somewhat comprehensive, and is scheduled for **9:55 am – 12:10 pm on Weds May 3rd in WSB 107.**

Lab Exams: There will be two Lab Exams; they will be held during Lab time. These will involve working with rock samples and maps or models broadly similar to those we have examined in Lab class. You will need to be able to use and apply the skills and knowledge we have worked on in Labs.

Plagiarism & Cheating: Neither will be tolerated, and will be dealt with according to the student code of conduct (<http://www.stcloudstate.edu/studenthandbook/code/prohibited.asp>).

Doing Geology: Doing geology is slightly like learning a new language. I will not stress the rote memorization of terms, but instead expect you to be able to use them and apply them. I also expect you to engage yourself in the class. This means asking questions, stopping me in lecture when you don't understand something and letting me know. I also expect you to take good notes. Note-taking is a valuable skill; I draw sketches and maps on the board or on the document camera so that you can copy them as I draw them; this is deliberate. Sometimes I will give you handouts, so you can mark them up as I discuss them; make sure you do this.

Timeliness, Waking up, Napping: I expect you to get to class in time for the start of lecture (which is typically when I do the class questions), so make sure you are on time. This class meets at a time when some people are still 'waking up' - I will do everything in my power to help you wake up/stop you from napping; I don't mind if you eat in class BUT the food can't be 'noisy', and it can't smell too good (or bad). So just make sure you are in class, on time, and ready to engage!

Date	Topic	Lab Manual Text	Assignments
Mon Jan 9 th	Introduction, Earth's Context Earth Processes, Rock Cycle	EoG Ch.1, p.2-31	Reading
Weds Jan 11 th		EoG Mastering Geology	Mastering Geology
Fri Jan 13 th		Handouts	Lab
Lab	Lab 1: Earth's Context, Earth Processes, Rock Cycle		
Mon Jan 16 th	Martin Luther King Day – No Classes		
Weds Jan 18 th	Plate Tectonics & Origin of Magma	EoG Ch.2, p.32-65	Reading
Fri Jan 20 th		EoG Ch.10, p.268-289 EoG Mastering Geology Handouts	Mastering Geology Lab
Lab	Lab 2: Plate Tectonics		
Mon Jan 23 rd	Minerals	EoG Ch.3, p.66-93	Reading
Weds Jan 25 th		EoG Mastering Geology	Mastering Geology
Fri Jan 27 th		Handouts	Lab
Lab	Lab 3: Minerals		
Mon Jan 30 th	Igneous Rocks Volcanic Activity	EoG Ch.4, p.94-125	Reading
Weds Feb 1 st		EoG Ch.5, p.126-159	Mastering Geology
Fri Feb 3 rd		Mastering Geology Handouts	Lab
Lab	Lab 4: Igneous Rocks & Volcanic Hazards		
Mon Feb 6 th	Weathering & Soils Deserts and Wind	EoG Ch.6 p.160-183	Reading
Weds Feb 8 th		EoG Ch.16 p.422-439	Mastering Geology
Fri Feb 10 th	LECTURE EXAM # 1		Lab
Lab	Lab 5: Soils, Sediments		
Mon Feb 13 th	Sedimentary Rocks Depositional Environments Beaches / Coastlines	EoG Ch.7 p.184-215	Reading
Weds Feb 15 th		EoG Ch.17 p.440-469	Mastering Geology
Fri Feb 17 th		Mastering Geology Handouts	Lab
Lab	Lab 6: Sedimentary Rocks		
Mon Feb 20 th	Presidents Day – No Classes		
Weds Feb 22 nd	Metamorphic Rocks	EoG Ch.8 p.216-237	Reading
Fri Feb 24 th		Mastering Geology Handouts	Mastering Geology Lab
Lab	Lab 7: Metamorphic Rocks		
Mon Feb 27 th	Geologic Time Topographic Maps Contour Lines	EoG Ch.18 p.470-493	Reading
Weds Mar 1 st		Mastering Geology	Mastering Geology
Fri Mar 3 rd		Handouts	Lab
Lab	LAB EXAM # 1		

Mon Mar 6 th	SPRING BREAK		
Weds Mar 8 th			
Fri Mar 10 th			

Mon Mar 13 th	Mountain Building Structural Geology	EoG Ch.11 p.290-317 Mastering Geology Handouts	Reading Mastering Geology Lab
Weds Mar 15 th			
Fri Mar 17 th			
Lab	Lab 8: Structural Geology – Geologic Cross-sections		

Mon Mar 20 th	Earthquakes	EoG Ch.9 p.238-267 Mastering Geology Handouts	Reading Mastering Geology Lab
Weds Mar 22 nd			
Fri Mar 24 th			
Lab	Lab 9: Earthquakes		

Mon Mar 27 th	Streams Flooding Mass Wasting	EoG Ch.13 p.338-365 EoG Ch.12 p.318-337 Mastering Geology Handouts	Reading Mastering Geology Lab
Weds Mar 29 th			
Fri Mar 31 st			
Lab	Lab 10: Streams, Flooding, Mass Wasting		

Mon Apr 3 rd	The Cryosphere Glaciers and Ice Sheets	EoG Ch.15 p.394-421 Mastering Geology Handouts	Reading Mastering Geology Lab
Weds Apr 5 th			
Fri Apr 7 th			
Lab	Lab 11: Glaciers, Glacial Sediments & Landforms		

Mon Apr 10 th	Geologic Maps; Minnesota Geologic History	Handouts	Reading Lab
Weds Apr 12 th			
Fri Apr 14 th			
Lab	Lab 12: Quarry Park Field Trip		

Mon Apr 17 th	Groundwater	EoG Ch.14 p.366-382 Mastering Geology Handouts	Reading Mastering Geology Lab
Weds Apr 19 th			
Fri Apr 21 st			
Lab	Lab 13: Groundwater		

Mon Apr 24 th	Catch-up Upper Midwest Geology	Handouts	Reading
Weds Apr 26 th			
Fri Apr 28 th			
Lab	LAB EXAM # 2		

FINAL Exam: Wednesday May 3rd, 9:55 am – 12:10 pm, WSB-107