

Earth and Space Systems

Geol 250, sections 001 and 002, Fall 2014

Professor: Dr. Gwen M. Daley
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Credit Hours: 3

Meets: MW 9:30-10:45
Room: Sims 201
Office Hours: T 9:30-11:30 and by appointment
Rec. Text: Lutgens and Tarbuck 2011. Foundations of Earth Science, 6th ed.
Co-Requisite: Geol 251 (*Earth and Space Systems Laboratory*)

Course Goals: To understand the range of processes responsible for the composition and morphology of planet Earth and how the scientific method is used to study the interactions within and between the lithosphere, atmosphere, biosphere, and hydrosphere.

Date	Subject	Notes
8-27	Introduction	
9-1	No class	Labor Day
9-3	Scientific methodologies	
9-8	The Universe	
9-10	Stars build elements	
9-15	Earth's Solar System	
9-17	Seasonality	Solar Observation Window #1 starts
9-22	Exam One	
9-24	Earth's atmosphere	
9-29	Weather I	
10-1	Weather II	Solar Observation Window #2 starts (Obs. #1 due)
10-6	Climate	
10-8	The hydrologic cycle	
10-13	Exam Two	
10-15	Minerals I	Solar Observation Window #3 starts (Obs. #2 due)
10-20	No class	Fall Break
10-22	No class	GSA meeting
10-27	Minerals II	
10-29	Igneous rocks and processes	(Observation #3 due)
11-3	Weathering and clast production	
11-5	Sedimentary rocks and processes	
11-10	Metamorphic rocks and processes	
11-12	Exam #3	
11-17	Seismology and the Earth's interior	
11-19	Plate Tectonics I	
11-24	Plate Tectonics II	
11-26	No class	Thanksgiving Break
12-1	Geologic Time I	
12-3	Geologic Time II	
12-8	Open Lecture	Solar Observation Final Report Due (9:30 AM)
12-16	Final Exam	11:30 AM (Tuesday)

Subjects and schedule subject to change

Office Hours: Please drop by any time during my scheduled office hours if you would like to discuss anything about the class. Because of privacy issues, I will only discuss your grade (including possible grading errors on exams, etc.) with you in my office, so if you cannot come to my scheduled office hours, please drop me and e-mail to make an appointment. Tuesday, Thursday and Friday mornings are the best times to make an appointment with me.

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Attendance: Class attendance is both mandatory and necessary. Please be in your seat and ready to begin class when class is scheduled to begin. If you arrive at 9:30 for a course scheduled to begin at 9:30, you are late for that class meeting, and may not be allowed to participate in that class meeting. Please note that if you do not attend the Geol 250 meeting, you may not be allowed to participate in the Geol 251 activity for that same day.

The professor reserves the right to close the doors to the classroom at any time after the scheduled start time and to not allow late students to enter the classroom after the scheduled start time. Students who fail to come to class on time may not be allowed to participate in in-class activities. If you choose to leave the room during the scheduled class meeting time, please take all of your personal belongings with you, as you may not be allowed back into the room.

If you will not be able to attend a class meeting for any reason, please send an e-mail before the class meeting time containing your complete first and last name, the name of the class (Geol 250) and the reason you will be missing the class. As long as the e-mail is sent before the class meeting, you will either be allowed to make up missed work, or be excused from the missed work. If no e-mail is received before the class meeting, missed work can only be made up with a doctor's excuse or a Student Absence Notice from the Dean of Students office.

The final exam may not be made rescheduled unless there is a legitimate scheduling conflict as defined by the registrar's office. Specifically, "*Personal conflicts such as travel plans and work schedules do not warrant a change in examination times.*" Even if you do have a legitimate conflict, you will probably wish to move the other exam if at all possible so that you can take advantage of the pyramid testing in this course (see below). The final exam will be given at 11:30 AM on Tuesday, December 16th so please mark your calendars now.

Student Learning Activities Performance Measures: Grades in this class will be assigned based on the results of the following:

Exams (3)	15% each	45%
Final Exam		25%
Astronomical Observation Project		10%
In class participation		20%
Total:		100%

Grades will be calculated on a straight scale:

A	90-100	C	70-76.99
B+	87-89.99	D	60-69
B	80-86.99	F	<60
C+	77-79.99		

This scale may be adjusted downward as determined by the instructor, but the points needed for each grade will never be higher than indicated above (e.g., a student with more than 90 points will always receive a grade of A).

Exams: We will be using a pyramid testing technique¹ for all four exams. Each student will answer a set of questions individually, like a standard exam format. After the individual answer sheets are collected, students will be given new question and answer sheets which they will answer in consultation with the other students at their table (up to four other students). The new question sheet will contain a subset of the individual question set (i.e., there will be no new questions). You may choose to opt out of the pyramid testing, and have your grade determined only by your answers on the individual answer sheet, but you must inform me that you are opting out before the exam begins. Missed exams cannot be made up without either prior arrangement or a Student Absence Notice from the Dean of Students office.

BlackBoard: The online component for this class is on the BlackBoard service. I will post your grades to their secure service as soon as I have them. All of the Powerpoint files we use in class as well as the videos from the internet will also be on the course's Blackboard site. I will use BlackBoard's e-mail function to contact the class, so please check the e-mail that is listed on BlackBoard regularly. If there are any other features that you would like me to activate on BlackBoard (e.g., the message board), please let me know.

Astronomical Observation Project: We will engage in a semester-long effort to test a hypothesis about the predicted position of the midday Sun in the sky over Rock Hill. It will consist of two parts:

1) Data collection (which may be done individually or in groups of up to four students)

¹ For more information about pyramid testing pedagogy, see: Yuretich, R.F., S.A. Khan, R.M. Leckie and J.J. Clement. 2001. Active-learning methods to improve student performance and scientific interest in a large introductory oceanography course. *Journal of Geoscience Education* 49: 111-119.

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2) A final report (which must be done individually).

The due dates for both data collection and the final report are absolutely non-negotiable. Plenty of time will be allotted to collect the data and produce the report. It is each student's responsibility to ensure that he or she finishes the work on time. **No credit will be given for late work.** In addition to turning in a hard copy of the final report, an electronic copy must be submitted to BlackBoard.

In-class participation: Your in-class participation grade will be determined based on a combination of attendance, participation in in-class activities and your contribution to class discussion (Do you ask questions? Do you answer questions put to the class? Do you participate in class discussions?). You cannot get credit for in-class participation if you are not present either because you did not attend class that day or you were late for class. There will be no make-ups given for missed in-class activities.

General Education Requirements: Geol 250 and the co-requisite Geol 251 together fulfill four hours of general education requirement for natural sciences. Listed below are the seven fundamental student learning outcomes for natural science courses as well as examples of how they will be fulfilled in Geol 250 and 251.

After completing Geol 250/251 should be:

1. Conversant with a few fundamental concepts from among the three main areas of natural science, including earth, life, and physical sciences (e.g., cosmology, meteorology, hydrology, plate tectonics, physical and historical geology, assessed through exams, homework assignments, the astronomical observation project, Geol 251 laboratory exercises and quizzes)
2. Able to apply the scientific methodologies of inquiry (e.g., the astronomical observation project, Geol 251 laboratory exercises)
3. Able to discuss the strengths and limitations of science (e.g., discussion of scientific methodology, definition of the natural world, some Geol 251 lab exercises, also assessed with exam questions)
4. Able to demonstrate an understanding of the history of scientific discovery (e.g., the development of plate tectonics, discovery of geologic time, assessed through exams and laboratory exercises)
5. Able to discuss the social and ethical contexts within which science operates (e.g., plate tectonics paradigm shift, ethical dilemmas in the international diamond trade, assessed through exam questions).
6. Able to communicate about scientific subjects including (lab courses only) the defense of conclusions based on one's own observations (e.g., the astronomical observation project, Geol 251 laboratory exercises, Geol 251 laboratory write-ups)
7. Able to discuss the application of scientific knowledge to the social sciences and to non-scientific disciplines (e.g., determining how knowledge gained in Geol 251 laboratory exercise can be applied to fulfill South Carolina Department of Education K-8 science standards, assessed through Geol 251 laboratory write-ups)

University Level Competencies: Students in Geol 250/251 will fulfill Winthrop ULC #1: Winthrop graduates think critically and solve problems. Geol 250/251 students will have ample opportunities to reason logically, evaluate and use evidence, and solve problems related to the Earth and space sciences. They will be assessed on their ability to reach well-reasoned conclusions based on scientific evidence.

Classroom Decorum: As a courtesy to other students, please be aware of how your behavior (e.g., holding conversations during lecture) affects the learning environment. No food of any kind is allowed in Sims 201 at any time. Also, please turn off all cell phones and other electronic devices. If your cell phone goes off during lecture, you will be asked to leave. If it goes off during an exam, your exam will be collected and you will be asked to leave.

Student Code of Conduct: Your grade will be based on work you have done. Any attempt to submit anyone else's work as your own is plagiarism, and thus cheating. All substantially identical work submitted by more than one student will be assigned a grade of zero and further action may be taken. Attempting to use any unauthorized material during exams (including calculators or other electronic devices) is strictly forbidden, and is cheating. Falsifying data is a serious ethical violation in science, in addition to being antithetical to the very purpose of science, and it will be treated as such in this course. Unethical behavior such as cheating or falsifying data will result in a grade of "F" for the course and other unpleasant action may also be taken at the discretion of the Winthrop Student Conduct Committee. Please see your student handbook for more details.

Students with Disabilities: Winthrop University is dedicated to providing access to education. If you have a disability and need classroom accommodations, please contact the staff of Services for Students with Disabilities, at 323-3290, as soon as possible. Once you have your professor notification, please tell me so that I am aware of your accommodations well before the first exam.