

EARTH SCIENCE/GEOSCIENCE GEL-109-01 W17

Lecture Instructor: Professor Steven Albee-Scott, Ph.D.

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Required:

Text: **The Changing Earth: Exploring Geology and Evolution**, 7th Ed. Monroe and Wicander; ISBN10: 1-285-73341-X; ISBN13: 978-1-285-73341-8

Lab Manual: **Handouts**: In the Bookstore and Online.

Course Description:

This course serves as a foundation for the Earth sciences and Earth science majors. Emphasis is placed on laboratory experience and class discussions to reinforce scientific principles. Earth science case studies are covered in detail. In laboratory, the students will learn how to apply basic scientific principles through active learning and application.

Students will develop an earth science skill-set to understand the four strands of scientific investigation: content, process, communication, and the nature of science. Students will use the critical thinking to evaluate scientific information, data, and current earth science issues. The foundation for earth science will be constructed using the four strands as they pertain to the atmosphere, biosphere, lithosphere, and hydrosphere. The fundamental concepts in earth science, like cycles, geological timeline, geology, geochemistry, geophysics, and biosphere interactions, are presented in context with current issues. The students will compare and contrast the content and process through communications with their peers and the instructor ultimately understanding the nature of science. This course is designed for people interested in earth issues using their computational skills, and includes a strong laboratory component.

Upon completing this course students will retain a skill-set derived from critical thinking and environmental scientific methodology. This skill-set can be used in science classes following earth science, and in problem solving needs throughout their lives. Although this course is an introductory class, introductory does not translate into easy. This course does not require background knowledge in earth science. It will require effort to build the scientific foundation and the philosophical underpinnings of critical thinking and scientific thought. Students will have to spend time studying the material to succeed. To receive a 4.0 in this course, you should expect to study 16 hours a week (4 credit hours x 4.0 grade = 16 hours of study), and depending on your study skill-set, this time commitment may increase or decrease. You are responsible for the resulting grade that you shall receive.

Tentative Schedule:

Section Title	Session	Day	Topic	Ch.	Lab Schedule
Introduction to Geology and Minerals	1-17	T	Introduction	1	
	1-19	H	Plate Tectonics	2	Lab: Graphing
	1-24	T	Rocks and Minerals	3	
	1-26	H	Rocks and Minerals	3	Lab: Scientific Measurement
	1-31	T	Exam 1		
Rock Formation	2-2	H	Igneous Rocks	4	Lab: Density
	2-7	T	Igneous Rocks	4	
	2-9	H	Volcanoes and Mountains	5	Lab: Mineral ID
	2-14	T	Sedimentary Rock	7	
	2-16	H	Sedimentary Rock	7	Lab: Igneous Rocks ID
	2-21	T	Metamorphic Rock	8	
	2-23	H	Exam 2		Lab: Sedimentary/Metamorphic ID
	2-28	T			Lab: Practical 1
	3-2	H	Spring Break		
Mountains and Sea	3-7	T	Weathering, Erosion, and Soil	6	
	3-9	H	Weathering, Erosion, and Soil	6	Lab: Return to Mineral/Rock ID
	3-14	T	Mountain Building	10	
	3-16	H	Earth's Interior	9	Lab: Basketball Earth
	3-21	T	Earth's Interior	9	
	3-23	H	Exam 3		Lab: Isostasy
Action of Water	3-28	T	Running Water	12	
	3-30	H	Running Water (Fluvial)	12	Lab: Soil Texture Column
	4-4	T	Groundwater (Pluvial)	13	
	4-6	H	Glaciers and Glaciation	14	Lab: Climate change
	4-11	T	Soils	14	
	4-13	H	Exam 4		Lab: Geological Time
Geologic Time and Evolution	4-18	T	Geologic Time	17	
	4-20	H	Geologic Time	17	Lab: Evolution
	4-25	T	Evolution	18	
	4-27	H	Evolution	18	
	5-2	T			Lab: Practical 2
	5-4	H	Exam 5		

** Scientific papers and additional chapter sections may be required for each topic

Important Dates***: Refer to the Deans' web page

Course Objectives:

Upon completing this course I will be able to:

- ◆ Understand how the nature of science is a result of the content, process, and communication; and, how this process is self correcting.
- ◆ Identify the big ideas in scientific discourse including how levels of scientific hierarchy pertain to biotic and abiotic properties of earth science.
- ◆ Integrate information of natural processes that govern the natural world into laboratory and field practice.
- ◆ Critically evaluate data drawn from natural phenomena to establish a scientific baseline.
- ◆ Understand the connection between physical and chemical cycles as they relate to the different earth's domains.
- ◆ Measure environmental variables and interpret results of scientific studies of earth science problems.
- ◆ Understand how the mechanisms of geology, physics, chemistry, and biology interact to create emergent processes of systems.
- ◆ Understand sustainability as it relates to the earth sciences and evolution.
- ◆ Understand factors affecting global climate change and human impact on the environment.

General Education Outcomes:

All JC graduates should develop or enhance certain essential skills while enrolled in college.

Essential Competencies

1. Think critically and act responsibly
2. Work productively with others, recognizing individual contributions to group success
3. Exhibit technological literacy

The General Education Outcomes addressed in this class are:

GEO 4: Demonstrate scientific reasoning

Incompletes - Consistent with JC policy, incompletes are granted with instructor permission only in situations where a student is **passing** the course with 90% of the curriculum covered and encounters an unusual emergency that prevents them from completing coursework.

Instructor Absence/School Closing: If I am unable to attend class, the building secretary will be notified, and a notice will be posted outside our room. If the college is closed due to inclement weather, announcements are made on local radio stations. With the exception of these two situations, **ASSUME WE WILL HAVE CLASS.**

Plagiarism and Cheating - Be sure that **homework and any assignments are your own work.** Copying anyone else's work is **plagiarism**, and plagiarized work will **not be accepted.** Evidence of plagiarism or cheating on any exam, lab, lab quiz or assignment will result in a "0" score for that assignment and notification of the Academic Dean - please see the JC Academic Honesty Policy.

Consequences/Procedures

A faculty member who suspects a student of academic dishonesty may penalize the student by taking appropriate action up to and including assigning a failing grade for the paper, project, report, exam or the course itself. Instructors should document instances of academic dishonesty in writing to the Dean of Faculty.

Student Appeal Process

In the event of a dispute, both students and faculty should follow the Conflict Resolution Policy. The policy is presented in the Student Rights and Responsibilities section of the student handbook. **The first step of this process is to set up a scheduled conference with the instructor to discuss the issues of concern.**

Extra Credit - is not given in the course. Focus your time and energy on completing course assignments and studying for lab quizzes and lecture exams.

Course Help and Special Needs - if you have special needs that I should be aware of in order to help you to best learn course material, please let me know as soon as possible. Students requiring special assistance (including those affected by the Americans with Disabilities Act) should contact the **Center for Student Success** in **Bert Walker Hall, 796-8415**. Tutoring services are free at JC - if at any point in the course you feel that you would benefit from a tutor, contact me and/or the CSS.

Computer Resources – reliable computer access is necessary for this course, as some course materials can be accessed only through the course webpage. I will post announcements and grades, as well as many other course materials like discussion papers through this system. Simply type in the URL <http://jetnet.jccmi.edu/>.

Grading Scale - Grades will be rounded to the nearest percent. Grades may be curved at the instructor's discretion.

<u>Percent Grade</u>		<u>Percent Grade</u>		<u>Percent Grade</u>	
90 - 100%	4.0	75 – 79 %	2.5	60 – 64 %	1.0
85 – 89 %	3.5	70 – 74 %	2.0	55 – 59 %	0.5
80 – 84 %	3.0	65 – 69 %	1.5		

Student Responsibilities:

Attendance - I expect that you will attend every class and considering the scientific nature of this class attendance means to be present and engage with your colleagues. Because testing is primarily from lectures, and laboratories are only accepted on specific deadlines, setting a schedule is recommended. Missing those assignments or study time makes it very difficult to do well.

Keep Up With Homework - Class assignments and tests **cannot** be made up so setup a scheduled regimen and stick to it.

Contribute to a courteous learning environment – Our class interactions are valuable because science is a social exercise. Please be polite, especially on discussion topics, and to avoid confusion, be positive in written communications. Disrespectful behavior will be dealt with summarily with a focus on clarity and understanding.

Study - This is a difficult course that will take significant study time. You will need to use the text and electronic resources. I recommend you review reading notes (that means you should take reading notes) and do study questions to prep for exams and lab quizzes. I expect you all to study at least 8 hours outside of class interactions using a variety of methods to earn a passing grade. Some of you will take less time and some will take more time. Know your abilities and accommodate them in your schedule.

Grading:

Lecture, exams and discussion account for 70% of the overall grade, and laboratory accounts for 30% of the overall grade, and is described here. The class has a total of 1000 points of assessment which is a weighted average of the overall point distribution.

Exams – There will be approximately five exams in the course, which may include multiple choice, fill-in, short answer, problem solving, and essay. The lowest exam score is dropped to account for eventualities. A missed exam will be considered the dropped exam. The final cannot be dropped.

Laboratory and Attendance – Laboratory should not be missed due to the integrated active learning exercises using inquiry based methods. The labs take a significant amount of time to understand and master, therefore, please recognize the required time and review for mastery of the skillset. If a student misses three laboratories, then that student will have to repeat the course and receive a failing grade for the current semester.

Attendance and Participation

The school has a vested interest in making sure you are attending the classes in order to help you be successful. In light of this we, as instructors, must report your participation on a number of occasions throughout the semester. You will be reported as a V for Verified (meaning you are attending, participating and in addition passing), as an H for Help (meaning you are attending and participating, but not passing), or as Q for Quit (meaning you are no longer attending and/or participating in class). There are several reasons you may be listed as a Q, which I will address in a moment, but it is important to note that once you have been dropped from a class by an instructor you cannot be put back into the class without the instructor's signature.

Possible Reasons for Being Assigned a Q

- Failure to attend class within the first week without contacting the instructor.

- Failure to attend class for greater than three (3) sessions without contacting the instructor.
- Failure to take two (2) Unit Exams
- Failure to take five (5) Daily Quizzes
- Failure to complete three (3) Laboratory Exercises

These conditions will result in an automatic Q during the next HQV reporting period and your dismissal from the course. If you fail to participate after the final HQV reporting period (1 week after midterm) you will not be automatically dropped from the course but will receive a grade of 0.0 (E) for failing to participate in the course.

Collaboration

While JC encourages students to collaborate in study groups, work teams, and with lab groups, each student should take responsibility for accurately representing their own contribution.

Communication with Instructors

Your student email will be the official communication format for any grade requests or participation questions. Please take the time to familiarize yourself with your JC email.

First Assignment

Please post your understanding of the following statement to the syllabus recognition discussion in JetNet:

I have read the GEL 109 course information packet (course information, course calendar and academic honesty policy). I understand the information they contain.