



Earth Science

GEL 109.01

Winter 2019

Number of Credits: 4

Days Class Meets: Tuesday and Thursday

Meeting Times: 9:00 – 10:23, Lab (R) 10:30 – 12:20

Instructor: J. Kettle

Email: kettlejennifem@jccmi.edu

Course Description

This course serves as a foundation for the Earth sciences. Emphasis is placed on laboratory experience and class discussions to reinforce scientific principles. 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. 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 time, 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. The four strands will improve the student's scientific literacy which will support the enduring understanding of the building blocks of the sciences in earth 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 in order to be successful. For this course, you should expect to study 8 hours a week, 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.**

Course Objectives

- 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 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.

The course goals and objectives incorporate specific General Education Outcomes (GEOs) established by the JC Board of Trustees, administration, and faculty. These goals are in concert with four-year colleges and universities and reflect input from the professional communities we serve. GEOs guarantee students achieve goals necessary for graduation credit, transferability, and professional skills needed in many certification programs. The GEOs and course objectives addressed in this class include the following:

GEO 4: Scientific Reasoning. Students will be able to design and carry out valid experiments to assess a given hypothesis, and to draw appropriate conclusions based on the results.

Textbook

Lecture Text: **The Changing Earth: Exploring Geology and Evolution**, 7th Ed. Monroe and Wicander (Electronic copy included)

Lab Manual: Available through JC Bookstore (required)

Grading Procedure

Your grade will be based on the number of points you accumulate throughout the semester. There are ~600 possible points in this course. The breakdown of points is as follows:

Exams (400 Points): There are five (5) exams throughout this course. Each exam is worth 100 points. The **lowest** exam score (Exams 1-4) will be dropped at the end of the semester. For this reason, exams **CANNOT** be made up. Any missed exam will automatically count as the dropped exam. There will be a cumulative final exam which cannot be dropped.

Labs (120 Points): There are twelve (12) lab assignments in this course, each worth 10 points. Lab assignments cannot be made up **therefore, laboratory should not be missed. If a student misses three laboratories, then that student will have to repeat the course and will receive a failing grade for the semester.**

Lab Practicals (50 Points): There are two (2) lab practicals scheduled, each worth 25 points. *You **MUST** complete both lab practicals to receive a passing grade in this course.

Participation (~40 Points): Science is an interactive process. Throughout the semester there will be opportunities for you to earn participation points by answering questions posed in lecture. You will submit your responses to questions via “hard copy”, that is, a question will be posed to the class and you will turn in your answers on a piece of paper. In an effort to conserve resources, please have scrap paper handy and available during this course. Because attendance is required in order for participation points to be awarded **NO** participation points will be dropped.

Extra Readings – There may be times when additional readings are selected in order to solidify your understanding of the week’s topic. Though you will receive no grade for reading them, participation points may be awarded for class discussions related to these readings.

Grading Scale

Percent	Grade	Percent	Grade	Percent	Grade
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		

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.

Academic Honesty Policy

Academic Honesty is defined as ethical behavior that includes student production of their own work and not representing others' work as their own, by cheating or by helping others to do so.

Plagiarism is defined as the failure to give credit for the use of material from outside sources. Plagiarism includes but is not limited to:

- Submitting other's work as your own
- Using data, illustrations, pictures, quotations, or paraphrases from other sources without adequate documentation
- Reusing significant, identical or nearly identical portions of one’s own prior work without acknowledging that one is doing so or without citing this original work (self-plagiarism)

Cheating is defined as obtaining answers/material from an outside source without authorization. Cheating includes, but is not limited to:

- Plagiarizing in any form
- Using notes/books/electronic material without authorization
- Copying
- Submitting others' work as your own or submitting your work for others
- Altering graded work
- Falsifying data
- Exhibiting other behaviors generally considered unethical
- Allowing your work to be submitted by others

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.**

Calendar

Week of	Topic	Ch	Lab
Jan 14	Introduction / Plate Tectonics	1,2	Graphing
Jan 21	Rocks and Minerals	3	Scientific Measurements
Jan 28	EXAM 1 / Igneous Rocks	4	Density
Feb 4	Sedimentary Rocks / Metamorphic Rocks	7,8	Mineral ID
Feb 11	EXAM 2		Igneous Rocks
Feb 18	Weathering, Erosion, and Soils	6	Sedimentary / Metamorphic Rocks
Feb 25	Volcanoes and Volcanism	5	Practical 1
Mar 4	Deformation and Mountain Building	10	Basketball Earth
Mar 18	EXAM 3 / Earthquakes and Earth's Interior	9	Isostasy
Mar 25	Running Water	12	Climate Change
Apr 1	Groundwater	13	Soils
Apr 8	EXAM 4 / Glaciers and Glaciation	14	Geologic Time
Apr 15	Geologic Time / Evolution	17,18	Evolution
Apr 22	Wrap - up		Practical 2
Apr 29	Cumulative Final Exam		NO LAB

*****Instructor reserves the right to alter this syllabus, including exam dates.**

Important Dates: Fall 2018

DATE	EVENT
JAN. 14, 2019	DAY AND EVENING CLASSES BEGIN
JAN. 19 – MAY 5, 2019	SEMESTER DATES
FEB. 1, 2019	IN-SERVICE DAY. NO CLASSES
MAR. 11-17, 2019	SPRING BREAK. NO CLASSES
MAY 5, 2019	END OF WINTER SEMESTER
MAY 7, 2019	GRADES DUE

Student Responsibilities

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

Study - This is a difficult course that will take significant study time. You will need to use the text and other given resources, such as review notes, and do study questions to prep for exams. I expect you all to study at least 3 hours outside of class interactions using a variety of methods.

Attendance Policy

I expect that you will do your best to attend every class. *Absence does not excuse you from work missed. Missing assignments or study time makes it very hard to do well. The school has a vested interest in making sure you are attending class. We, as instructors, must report your participation on three separate 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
- Failure to attend class for greater than two (2) sessions
- Failure to complete ANY combination of three (3) lab assignments and/or quizzes

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.**

