GEL 109 – Earth Science

Instructor: Jennifer Kettle
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Text: **The Changing Earth: Exploring Geology and Evolution**, 7th Ed. Monroe and Wicander (Electronic copy is acceptable)

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**.

Tentative Schedule:

Week beginning:	Topic	Ch	Lab
May 23	Introduction	1	Graphing Lab due Sunday May 27th @11:55pm
May 28	Plate Tectonics	2	Scientific Measurements Lab due Sunday June 3rd @11:55pm
	Rocks and Minerals	3	
June 4	**Exam 1 (Ch. 1, 2, 3) due Saturday June 9th 5pm**		Density Lab due Sunday June 10th @11:55pm
	Igneous Rocks	4	
June 11	Sedimentary Rocks	7	Mineral ID Lab due Sunday June 17th @11:55pm
	Metamorphic Rocks	8	
June 18	**Exam 2 (Ch. 4, 7, 8) due Saturday June 23rd 5pm**		Igneous Rocks Lab due Sunday June 24th @11:55pm
	Weathering, Erosion, & Soils	6	
June 25	Volcanoes and Volcanism	5	Sedimentary AND Metamorphic Rocks Lab due Sunday July 1st @11:55pm
July 2	Deformation and Mountain Bldg.	10	**Lab Practical due Sunday July 8th @11:55pm**
July 9	**Exam 3 (Ch. 6, 5, 10) due Saturday July 14th 5pm**		Basketball Earth Lab due Sunday July 15th @11:55pm
	Earthquakes and Earth's Interior	9	
July 16	Running Water	12	Isostasy Lab due Sunday July 22nd @11:55pm
	Groundwater	13	
July 23	**Exam 4 (Ch. 9, 12, 13) due Saturday July 28th 5pm**		Climate Change Lab due Sunday July 29th @11:55pm
	Glaciers and Glaciation	14	
July 30	Geologic Time	17	Geologic Time Lab due Sunday Aug 5th @11:55pm
	Evolution	18	
Aug 6	**Final Exam due Wednesday Aug 15th 5pm**		Evolution Lab due Sunday Aug 12th @11:55pm
Aug 13			**Lab Practical due Wednesday Aug 15th @11:55pm**

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

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, as defined by the Board of Trustees. The General Education Outcomes addressed in this class are:

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

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.

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 full JC Academic Honesty Policy at http://www.jccmi.edu/policies/Academics/Policies/1004.pdf

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 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 through this system. Simply type in the URL http://jetnet.jccmi.edu/.

Grading:

Your grade will be based on the number of points you accumulate throughout the semester. Lecture, exams, and assignments will account for 70% of your overall grade and laboratory will account for 30%. 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. **Except for final, all exams will open on Friday at 8am and will close the following Saturday at 5pm. They are timed and are limited to one attempt. **All exams must be taken at an approved testing center. If you are not utilizing the Jackson College testing lab on main campus, it is <u>your</u> responsibility to find an approved testing lab and notify the instructor of your preferred location at least one week prior to the exam opening dates.**** The website for the Jackson College (main campus) testing lab is https://www.jccmi.edu/testing-lab/

Assignments and Forum Posts: Science is an interactive process. Throughout the semester there will be opportunities for you to earn participation points by answering questions posed in the lecture portion of the class. You will submit your responses to questions via JetNet by either responding to the forum posts or by uploading a PDF file, which must include your name, by the due date assigned.

Labs: (120 Points) There are twelve (12) lab assignments in this course, each worth 10 points. With the exception of Lab 1 (graphing) labs are open for one week and are due as stated in the schedule. Labs assignments must be handwritten, scanned, and submitted in PDF format – a video is posted on the course page should you need further instructions on converting to a PDF. Files names should include your last name and the name of the lab; for example, "KettleGraphingLab.PDF". You will receive a zero if any of the following occurs; the lab is not

legible, it is not handwritten, it is not submitted as a PDF, it has an improper file name, your name is not written on the lab, or there is ANY form of plagiarism or cheating. **Should a student miss three lab assignments, or receive three "zeros" on lab assignments (or a combination of missing/zero grade assignments) 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. **CAUTION:** except in the case of an extreme emergency that can be documented (like hospitalization), a missed lab practical cannot be made up. Lab practicals do not have to be taking at a testing center. Due dates are listed on the syllabus.

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, assignment and forum post points may be awarded for class discussions related to these readings.

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

Percent, Grade

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

Student Responsibilities:

Attendance and Participation: The school has a vested interested 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 complete the syllabus quiz by the due date

- Failure to complete three (3) assignments and/or forum posts
- Failure to take two (2) Unit Exams
- Failure to complete three (3) Laboratory Exercises

These conditions will result in an automatic Q during the 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.**

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 written 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 electronic resources, review notes and do study questions to prep for exams. I expect you all to study at least 8 hours outside of class interactions using a variety of methods.

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.