

Geology 1002 (Section 1): Honors Physical Geology
E131 Howe-Russell
Louisiana State University
TTH 9:10 - 10:30

Instructor:	Prof. Jeffrey A. Nunn
Office:	Room E339 Howe-Russell
Telephone:	578-3353
e-mail:	gljeff@lsu.edu
Office hours:	3:00 to 5:00 M or by appointment

Class web page: <http://www.geol.lsu.edu/jnunn/1002.1/>

Text: Understanding Earth (Sixth Edition) (2010), Grotzinger and Jordan

Publisher web page: <http://www.whfreeman.com/understandingearth/>

Course goal: To develop an awareness of the Big Ideas and Supporting Concepts of Earth Science published in the Earth Science Literacy Initiative (ESLI) funded by the National Science Foundation (<http://www.earthscienceliteracy.org/>). This document codifies information that all Americans should know about Earth sciences. “An Earth-science-literate public, informed by current and accurate scientific understanding of Earth, is critical to the promotion of good stewardship, sound policy, and international cooperation” (ESLI).

This is a service-learning class that will use middle school instruction as well as reflection on those activities to reinforce understanding of selected ESLI Big Ideas and instill a sense of the responsibility that every individual has to his/her community.

Course objectives: Students will be able to comprehend, critically evaluate, and communicate to a wider audience the following ESLI Big Ideas (<http://www.earthscienceliteracy.org/>):

1. Earth science investigations take many different forms. Earth scientists do reproducible experiments and collect multiple lines of evidence. Our understanding of Earth is continuously refined.
2. Earth’s rocks and other materials provide a record of its history. Earth scientists use the structure, sequence, and properties of rocks, sediments, and fossils to reconstruct events in Earth’s history. Understanding geologic processes active in the modern world is crucial to interpreting Earth’s past.
3. Over Earth’s vast history, both gradual and catastrophic processes have produced enormous changes. Super-continent formed and broke apart, sea level rose and fell, living species evolved and went extinct, meteorites slammed into Earth, and mountains formed and eroded away.

4. Earth's systems are dynamic; they continually react to changing influences from geological, hydrological, physical, chemical, and biological processes. These changes can be small or large, continuous or sporadic, and gradual or catastrophic. Components of Earth's systems may appear stable, change slowly over long periods of time, or change abruptly with significant consequences for living organisms.
5. Water's unique physical and chemical properties are essential to the dynamics of all of Earth's systems. Water is essential for life on Earth. Fresh water is less than 3% of the water at Earth's surface.
6. Fossils are the preserved evidence of ancient life. Fossils document the presence of life early in Earth's history and the subsequent evolution of life over billions of years. As an outcome of dynamic Earth processes, life has adapted through evolution to new, diverse, and ever-changing niches.
7. Soil, rocks, and minerals provide essential metals and other materials for agriculture, manufacturing, and building. Oil and natural gas are central to modern life in many different ways. They are the precursors to chemicals used to make numerous products, such as plastics, textiles, medications, and fertilizers. Renewable energy sources, such as solar, wind, and geothermal will replace fossil fuels as those become scarcer, more expensive to retrieve from Earth, and undesirable due to environmental damage.
8. Humans cannot eliminate natural hazards, such as volcanic eruptions, earthquakes or hurricanes, but can engage in activities that reduce their impacts by identifying high-risk locations, improving construction methods, and developing warning systems. An Earth-science-literate public is essential for reducing risks from natural hazards.
9. Humans cause global climate change through fossil fuel combustion, land-use changes, agricultural practices, and industrial processes. Humans affect the quality, availability, and distribution of Earth's water through the modification of streams, lakes, and groundwater. An Earth-science-literate public, informed by current and accurate scientific understanding of Earth, is critical to the promotion of good stewardship, sound policy, and international cooperation.

Service-Learning: Students will be paired into teams to participate in instruction in 8th grade Earth Science classes in an East Baton Rouge Parish School to help meet community needs. Students will also create instructional materials and reflect on the service activity to gain deeper understanding of course objectives, an appreciation of Earth science as it relates to the global community, and an enhanced sense of civic responsibility. The service-learning project consists of four parts distributed throughout the semester:

1. Each team will arrange with their assigned teacher to visit their school at a mutually convenient time in the first few weeks of the semester. Each individual student will write a brief summary of what he/she saw and learned about their school and the teaching assignment, and how he/she will use this information in preparing for classroom instruction.

2. Each individual student will research and write a short paper on a historical volcanic eruption. The report will focus on ESLI Big Idea number 8 above but may also include aspects of Big Ideas 1-4 and 7.
3. Each team will combine their research papers and create a poster, guided notes, and a 10 minute PowerPoint presentation to be used in a 8th grade Earth Science class. The posters, guided notes, and presentations will be peer reviewed and revised prior to use in classrooms.
4. Each team will then use the materials developed above to teach 20-30 minute sessions in two Earth Science classes including questions and answers. Each individual will then write a short report on the team's activities, discussion of what you learned about Earth science, your community, and yourself.

Detailed prompts will be provided for each portion of the Service-Learning Project.

Communication across the Curriculum: *This course is certified as a "Communication-Intensive Course" and meets all of the requirements explained on the CxC Web site: <http://cxc.lsu.edu>, including the following: Emphases on formal and informal assignments in written communication and visual communication, class time spent on communication, 40% of the final grade based on communication projects, revisions after faculty feedback on 2 formal projects (one for each emphasis), and a student/faculty ratio of 35:1. Because it meets these requirements, students may count it toward "Distinguished Communicator" certification on LSU transcripts.*

Evaluation: There are eight quizzes/blog questions, three exams, 3 short projects, a service-learning project and a final exam. Exam questions may be short answer, multiple choice, matching or true/false. No make-up quizzes. **Make-up exams are discouraged but those that are necessary will be essay exams. Final exam is comprehensive.**

Grades: Hour exams are worth 100 points each. Final exam is worth 150 points. Short Projects are 30 points each. Service-Learning Project is worth 150 points. Quizzes/Blog Questions are worth 10 points each. Your lowest two quiz/blog scores do not count towards your final grade. Letter grades are assigned from the final numerical score based on your performance relative to the rest of the class (i.e., a curve).

Lecture and Exam Schedule

		Topic	Reading	Projects Due
August	24	Earth Systems/Photo Op		
	26	Plate Tectonics		Practice Quiz
	31	Minerals/Rocks		
September	1	Igneous Rocks		Quiz
	7	Igneous Rocks		Project 1 (Plate Movement)
	9	Sedimentation		Quiz
	14	Exam 1		
	16	Metamorphism		
	21	Volcanoes		Project 2 (Minerals and You)
	23	Volcanoes		Quiz
	28	<i>CxC/CCELL Info Session</i>		SL Project (School Visit/Reflection)
	31	Geologic Time		Quiz
October	5	Rock Deformation		SL Project (Volcano Paper)
	7	Rock Deformation		Quiz
GCAGS	12	Exam 2		
	14	Earthquakes		
	19	Earth's Interior		
	21	Fall Holiday		
	26	Climate		
	28	Group Presentations		SL Project (Peer Presentation)
November	2	Weathering		
GSA 11/2	4	Mass Wasting		Quiz
	9	Groundwater		
	11	Exam 3		
	16	Stream Transport		
	18	Stream Transport		Quiz
	20	Field Trip (Saturday)		Ole Miss Game – Home
	23	Coastlines and Oceans		SL Project (Class Presentations/Reflection)
	25	Thanksgiving		
December	1	Earth's Resources		Project 3 (Water Resources)
	3	Earth's Environment		Quiz
	8	Final Exam (3:00-5:00)		

An optional field trip to the Tunica Hills is planned for Saturday November 20th. We will leave mid-morning and return mid-afternoon. You will be back in time for the football game. More details later.