

PLANET EARTH

Learning Goals: This is an introductory course in Geology that covers solid Earth Physical Geology and basic Historical Geology. The course is designed for Earth and Environmental Science majors and minors as well as non-science majors, and it covers a variety of topics in introductory format as bases for advanced courses in Earth Sciences or as a terminal level for non-science majors. The basic learning goal for the course is for students to understand the general processes of how the Earth operates today and how it has operated in the past. Students should be able to understand the present day events that involve geological processes such as natural disasters and natural resources and to appreciate the local geology of New Jersey and how it impacts their lives.

*****Note: Twenty percent of the grade in this class is based on quizzes and attendance that are taken with an electronic response pad every class. If you are not happy with the idea that you are expected to come to class regularly, on time and stay for the duration of the class then this is NOT the class for you. You cannot get a good grade in this class without committing to regular and continuous attendance. Furthermore, if you are technophobic then this class is also not for you. The response pads we will use are much simpler to use than your cell phone and other personal devices and nothing to be scared of. That said, every year a small minority complains about the use of technology in the classroom. If you think that you are likely to be one of those few, then this class is also NOT for you.*****

Specific learning goals:

1. Understand the basic architecture of the Earth
2. Be able to classify basic mineral types
3. Be able to classify basic rock types including igneous, metamorphic and sedimentary
4. Understand how rocks melt and crystallize or harden
5. Be able to classify faults and folded strata
6. Understand basic geophysics including seismology, gravity and magnetic
7. Be able to identify the hazards of earthquakes and volcanoes
8. Understand how plate tectonics operate
9. Be able to identify the plate margins and geology of each
10. Understand and apply the methods for timing of geologic events
11. Understand the basic controls on the evolution of life
12. Appreciate the history of the Earth and life since the formation of the planet

Text: Textbook and clicker for this class available from the New Jersey Bookstore and Barnes & Noble Bookstore in Bradley Hall

- Textbook: "Earth Portrait of a Planet" by Stephen Marshak 5th Ed. _Ebook ISBN 978-0-393-93816-6, Looseleaf ISBN 978-0-393-28149-1, Paperback ISBN 978-0-393-28145-3
- ResponseCard NXT clicker: 978-1-934931-52-3 or 978-0-9988191-3-6 (mandatory). You will need to register your ResponseCard clicker Device ID by the second week of classes through our class in Blackboard.
BRING IT TO EVERY CLASS!

WEEK	TOPICS	READING
	From Physical Geology by Carlson et al.	
1	Introduction: Planet Earth (course, origin, plate tectonics)	Ch. 1-4
	PART I: EARTH MATERIALS	
1-2	Minerals: Chemistry and Form (classification, properties)	Ch. 5
2-4	Rock: Classification and occurrence	In.A&C
2-3	Igneous Rocks (classification, plutonic, volcanic)	Ch. 6&9
3	Sedimentary Rocks (classification, occurrence)	Ch. 7&In B
3-4	Sedimentary Structures (types, processes, environments)	Ch. 7
4	Metamorphic Rocks (classification, occurrence)	Ch. 8
	PART II: PHYSICAL PROCESSES OF THE EARTH	
4	Review	
5-6	Deformation of the Earth (structural geology)	Ch. 11
5-6	EXAM # 1	
6	Earthquakes and Deformation (faults, waves)	Ch. 10
7	Geophysics and Earth's Interior (gravity, magnetism, seismic)	Ch. In D
7-9	Plate Tectonics	Ch. 3&4
7	Introduction, Divergent Margins (processes, examples)	Ch. 4
8	Convergent Margins (types, processes, examples)	Ch. 4
8-9	Strike-Slip Margins (types, processes, examples)	Ch. 4
9	Review	
10-11	EXAM # 2	
	PART III: HISTORY OF THE EARTH AND LIFE	
10	Geologic Time (relative, absolute, time scale)	Ch. 12
11	Fossils and Evolution (Darwin, genetics)	Ch. In.E
11-12	Precambrian (solar system, life, earth)	Ch. 13
12-13	Paleozoic (life, earth)	Ch. 13
13	Mesozoic (life, earth)	Ch. 13
14	Cenozoic (life, earth)	Ch. 13
14	Review	
	FINAL EXAM	