

SIO10SP16: “The Earth”
Instructor: John Sclater SIO Preliminary version

Description:

This course is an introduction to the science of how the Earth works. It is split into six sections: Our island in space, Earth materials, Tectonic activity of a Dynamic Planet, The history of the Earth, Earth Resources and Processes and Problems at the surface of the Earth. It will finish with a lecture on a topic of high current interest: Global Change. The course emphasizes material that everyone should know for appreciation and enjoyment of the world around us, for understanding geological events as reported in the news, and for participating in making intelligent decisions regarding the future of our environment.

Class Website:

Can be found at ted.ucsd.edu under John Sclater SIO10SP16
Lectures and homework can be found at this web site

Grading: Grades will be based on weekly homework (30%), two midterms (20 and 15%), and the final (35%). There will be 6 homeworks. They are mandatory. The lowest homework score will not be included in the overall grade. No late homework will be accepted. A sheet(s) of handwritten paper with anything handwritten on it will be allowed in the exams (1 page for the midterms, 2 pages for the final).

Field trips: We will offer a beach walk (on 3 to 4 Saturdays) starting at the SIO pier and going North to examine aspects of local coastal geology. The field trip is not mandatory. You will split into groups of ~ four to answer the questions from the field trip guide. Correct answers to the questions on the field guide will result in up to 5% points being added to your grade.

Lectures and Problem sessions: I recommend that you attend the lectures but they are not mandatory. However there will be 5 extra credit points offered for regular attendance that will involve one random question during the lectures every two weeks. In the problem sessions in the 3rd week minerals and rocks will be reviewed. In the following session in the 4th week you will be asked to identify five rocks. You will get up to 5% points for successful answers and they will be part of your grade. I strongly recommend that you attend the other problem sessions as well.

Course Review: The lecture 'Global Change in the Earth System' will serve as a summary of the course. If you want to be informed about problems that will dominate your lives for at least the next 50 years and a good grade it is worth attending this lecture. The last lecture will be on Global Warming time permitting.

Grading: We will use a linear grade scale for the letter grades:

A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
>97%	93-96	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	<59%

The final point score will be out of 105. It will be scaled down to 100 for grading. The extra credit points will be added after this. I do not recommend taking this Pass/Fail. It requires a C- average to Pass.

Text Book: EARTH: Portrait of a Planet (fourth edition) by Stephen Marshak.

Location and Times: Center Hall 105, MWF 11:00-11:50pm
Weekly problem sessions with TA (all sessions held in York 3030)
The times will be sorted out at the first lecture.

Contact information: Teaching

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Date	Lec #	Lecture Title	Reading Assignment
Part 1: Our Island in Space			
Mo	3/28	1 Introduction, What is Geology	Prelude
We	3/30	2 Earth Systems, Cosmology	Chapter 1
Fri	4/1	3 Journey to the Center of the Earth	Chapter 2
1 st homework assigned: lectures 1-3. Due Friday, 4/10/15			
Mo	4/4	4 Drifting Continents and Spreading Seas	Chapter 3
We	4/6	5 Plate Tectonics I	Chapter 4
Fri	4/8	6 Plate Tectonics II	Chapter 4
2 nd homework assigned: lectures 4-6. Due Friday 4/17			
Part 2: Earth Materials			
Mo	4/11	7 Magma and Igneous Rocks	Chapter 6 & Interlude B
We	4/13	8 Sediments, soils and Sedimentary Rocks	Chapter 7
Fri	4/15	9 Metamorphism: a Process of change	Chapter 8 & Interlude C
3 rd homework assigned: lectures 7-9, Due Friday 5/1			Sat April 16 th 12:30 pm Field Trip
Part 3: Tectonic Activity of a Dynamic Planet			
Mo	4/18	10 Volcanic Eruptions	Chapter 9
We	4/20	11 Earthquakes I: Causes, Seismic Waves, Where occur	Chapter 11
Fri	4/22	Midterm 1	Lecures 1-10
No new homework			
Mo	4/25	12 Earthquakes II: Damage, Tsunami and Prediction	Chapter 10
We	4/27	13 Earthquakes III: Tsunami and Prediction	Chapter 10 & Interlude D
Fri	5/29	14 Crustal Deformation and Mountain Building I	Chapter 11
4 th homework assigned: lectures 10-14, Due Friday 5/8			Sat April 30 th 10:30 am Field Trip
Mo	5/2	15 Crustal Deformation and Mountain Building II	Chapter 11
Part 4: History before History			
We	5/4	16 Deep Time: How Old is Old	Chapter 12 & Interlude E
Fri	5/6	17 A Biography of Earth	Chapter 13
5 th homework assigned: lectures 15-17, Due Friday 5/15			
Part 5: Earth Resources			
Mo	5/9	18 Energy Resources	Chapter 14
We	5/11	19 Riches in Rock: Mineral Resources	Chapter 15
Part 6: Processes at the Earth's Surface			
Fri	5/13	20 Landslides and other Mass Movements	Chapter 16 & Interlude F
6 th homework assigned: lectures 18-22, Due Friday 5/29			Sat May 14 th 10:30 am Field Trip
Mo	5/16	21 Streams and Floods	Chapter 17
We	5/18	22 Oceans and Coasts	Chapter 18
Fri	5/20	Midterm 2	
No new homework			

Mo	5/23	23	Earth's Atmosphere and Climate; Storms	Chapter 20
We	5/25	24	Glaciers and Ice Ages	Chapter 22
Fri	5/27	25	Global Change in the Earth System	Chapter 23
Part 7: Coming problems				
Mo	5/30		Memorial Day	Holiday
We	6/1	26	Climate Change: Guest Lecturer	
Fri,	6/3	27	Review	

FINAL: TIME TO BE ANNOUNCED