

Course: SIO 10 (The Earth)

Instructor: Dr. Adrian Borsa (aborsa@ucsd.edu)

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Textbook: "Earth: Portrait of a Planet" (5th or 6th editions) by Stephen Marshak

Lectures: MWF 3:00~3:50, Catalyst 125

Instructor Office Hours: MWF after class and upon request.

Grading: 40% homework assignments; 15% end-term project; 25% final exam; 20% midterm

Date	Day	Lecture #	Textbook Chapter Covered	Required Reading (Marshak, 6th edition)	Required Reading (Marshak, 5th edition)
March 28	M	Lecture 1	Introduction	none	none
March 30	W	Lecture 2	Chapter 1 Cosmology and the Birth of Earth	1.2: pp.17-19, 21-22; 1.4: All; 2.2: pp.41-43	1.2: pp.13-15,17-18.5; 1.4: All; 2.2: pp.37-38, 40
April 1	F	Lecture 3	Chapter 2 Journey to the Center of the Earth I	2.3: All; 2.4: All (but see below for details)	2.3: All; 2.4: All (but see below for details)
April 4	M	Lecture 4	Chapter 2 Journey to the Center of the Earth II	2.5: All; 2.6: All; Box 2.2	2.5: All; 2.6: All; Box 2.2
April 6	W	Lecture 5	Chapter 3 Drifting Continents and Spreading Seas	3.1: All; 3.2: All; 3.3: All; 3.4: pp.81-87	3.1: All; 3.2: All; 3.3: All; 3.5: All
April 8	F	Lecture 6	Chapter 4 The Way the Earth Works: Plate Tectonics I	4.1: All; 4.2: All; 4.3: All	4.1: All; 4.2: All; 4.3: All
April 11	M	Lecture 7	Chapter 4 The Way the Earth Works: Plate Tectonics II	4.4: All; 4.5: All; 4.6: All	4.4: All; 4.5: All; 4.6: All
April 13	W	Lecture 8	Chapter 4 The Way the Earth Works: Plate Tectonics III	4.7: All; 4.8: All	4.7: All; 4.8: All
April 15	F	Lecture 9	Interlude A Introducing Rocks Chapter 6 Up from the Inferno: Magma and Igneous Rocks	A.2: All pages, Figs A.1, A.2; A.3: pp.153-154, Box 5.3 6.1: All; 6.2: All pages, Figs 6.2, 6.3, 6.5; 6.4: pp.167-168, Fig 6.8; 6.5: pp.171-173, Figs 6.11, 6.12a, 6.13a, 6.15, 6.17a; 6.7: pp.182-184, Figs 6.22, 6.25	A.2: All pages, Figs A.1, A.2; A.3: pp.144 [last paragraph]-147, Box 5.3 6.1: All; 6.2: All pages, Figs 6.2, 6.3, 6.5; 6.4: pp.159-160, Fig 6.8; 6.5: pp.162-163, Figs 6.11, 6.12a, 6.13a, 6.15, 6.17a; 6.7: pp.174-177, Figs 6.22, 6.25
April 18	M	Lecture 10	Interlude B A Surface Veneer: Sediments and Soils Chapter 7 Pages of Earth's Past: Sedimentary Rocks	B.2: pp.193-195, Figs B.4, B.5, Table B.1 7.2: pp.211-213, 216-217 [Origins], 218 [Limestone], 220 [Evaporites], Figs 7.6, 7.9; 7.4: pp.229-236, Figs 7.18, 7.22, Geology at a Glance	B.2: pp.185-187, Figs B.4, B.5, Table B.1 7.2: pp.203-206 [Lithification], 208-209 [Origin], 210 [Limestone], 212 [Evaporites], Figs 7.6, 7.9; 7.4: pp.220-227, Figs 7.18, 7.22, Geology at a Glance
April 20	W	Lecture 11	Chapter 8 Metamorphism: A Process of Change Interlude C The Rock Cycle in the Earth System	8.2: pp. 243, 245 [Heating], 246 [Pressure], Figs 8.2, 8.5, 8.17 C.1; C.2: Page 271, Fig C.1	8.2: pp. 235 (left column), 236-7 [Heating, Pressure], Figs 8.2, 8.5, 8.17 C.1; C.2: Page 262, Fig C.1
April 22	F	Lecture 12	Chapter 9 The Wrath of Vulcan: Volcanic Eruptions I	9.1; 9.2: pp.283-287, Figs. 9.3-9.8; 9.3: pp.290-299, Figs 9.11,9.13-9.16; 9.4: All pages, Figs. 9.17a, 9.19b, 9.20a/b, 9.21.	9.1; 9.2: pp.275-280, Figs. 9.3-9.8; 9.3: pp.282-292, Figs 9.11,9.13-9.16; 9.4: All pages, Figs. 9.17a, 9.19b, 9.20a/b, 9.21.
April 25	M	Lecture 13	Chapter 9 The Wrath of Vulcan: Volcanic Eruptions II	Box 9.1: Mt. St. Helens only. 9.5: All pages, Fig. 9.22; 9.7: All pages, Fig 9.30.	Box 9.1: Mt. St. Helens only. 9.5: All pages, Fig. 9.22; 9.7: All pages, Fig 9.30.
April 27	W	Lecture 14	Chapter 10 A Violent Pulse: Earthquakes I	10.1: p.323, Fig 10.1; 10.2: pp.325-332, Figs 10.4-10.6,10.7b, 10.8; 10.3: pp.333-334, Figs 10.10,10.13; 10.4: pp.338-342, Figs 10.15,10.17, Tbls 10.2,10.3	10.1: p.313, Fig 10.1; 10.2: pp.313-319, Figs 10.4-10.6,10.7b, 10.8; 10.3: pp.323-324, Figs 10.10,10.13; 10.4: pp.328-332, Figs 10.15,10.17, Tbls 10.2,10.3
April 29	F	Lecture 15	Chapter 10 A Violent Pulse: Earthquakes II	10.5: All pages, Figs 10.18,10.20,10.21,10.23; 10.6: pp.348-352, Figs. 10.26-10.29; 10.7: p.359; Fig 10.41a; Box 10.1	10.5: All pages, Figs 10.18,10.20,10.21,10.23; 10.6: pp.338-342, Figs. 10.26-10.29; 10.7: p.350-351 (just intro); Fig 10.39a; Box 10.1
May 2	M	Lecture 16	Chapter 11 Crustal Deformation and Mountain Building	11.1; 11.2: pp.391-395, Figs.11.1-11.4, 11.6; 11.3: pp.397-399, Figs.11.8, 11.9b/c/d, 11.10a/c, 11.13a/b/c; 11.5: All pages, Figs.11.20-11.23	11.1; 11.2: pp.382-385, Figs.11.1-11.4, 11.6; 11.3: pp.387-391, Figs.11.8, 11.9b/c, 11.10a/c, 11.13a/b/c; 11.5: All pages, Figs.11.20-11.22
May 4	W	Mid-term	Mid-term (in-person exam during class, covers Lectures 2-13)		
May 6	F	Lecture 17	Chapter 12 Deep Time	12.2: All pages; 12.5: pp.459-462, Figs. 12.11-12.13; 12.6: pp.464-466, Figs. 12.15b, 12.16, 12.17, 12.18b; 12.8: pp.476 (Age of Earth)-479, Figs. 12.25, 12.27	12.2: All pages; 12.5: pp.445-446, Figs. 12.11-12.13; 12.6: pp.449-453, Figs. 12.15b, 12.16, 12.17, 12.18b; 12.8: pp.461 (Age of Earth)-463, Figs. 12.25
May 9	M	Lecture 18	Chapter 13 A Biography of Earth Chapter 14 Squeezing Power from a Stone: Energy Resources I	Box 13.2, Geology at a Glance (pp. 514-515) 14.1: Fig 14.2; 14.2: All pages, Fig. 14.3; 14.3: All pages, Figs 14.4,14.6,14.7; 14.4: pp.529-530, 535, Figs 14.8,14.10,14.15; 14.5: pp.537-539; Box 14.1, 14.2	Box 13.2, Geology at a Glance (pp. 498-499) 14.1: Fig 14.2; 14.2: All pages, Fig. 14.3; 14.3: All pages, Figs 14.4,14.6,14.7; 14.4: pp.510-512, 517, Figs 14.8,14.10,14.15; 14.5: pp.517-520; Box 14.1, 14.2
May 11	W	Lecture 19	Chapter 14 Squeezing Power from a Stone: Energy Resources II	14.6: p.542, 545, Figs 14.18-14.21; 14.7: All pages; 14.8: All pages; 14.9: All pages, Figs. 14.27,14.28 (NOT Geology at a Glance); Box 14.3	14.6: p.524-525.5, 526-527, Figs 14.18-14.21; 14.7: All pages; 14.8: All pages; 14.9: All pages, Figs. 14.27,14.28 (NOT Geology at a Glance); Box 14.3
May 13	F	Lecture 20	Chapter 14 Squeezing Power from a Stone: Energy Resources III	Finish up Chapter 14!	Finish up Chapter 14!
May 16	M	Lecture 21	Interlude F Ever-Changing Landscapes and the Hydrologic Cycle	F.1: All; F.2: All; F.3: All; F.4: All; F.5: All; Box F.2	F.1: All; F.2: All; F.3: All; F.4: All; F.5: All; Box F.2
May 18	W	Lecture 22	Chapter 16 Unsafe Ground: Landslides and Other Mass Movements Chapter 10 Tsunamis	16.1-16.3: All pages, NOT figs 16.2,16.7,16.14,16.15,16.18; Box 16.2 10.6 (Tsunami subsection)	16.1-16.3: All pages, NOT figs 16.2,16.7,16.14,16.15,16.18; Box 16.2 10.6 (Tsunami subsection)
May 20	F	Lecture 23	Chapter 17 Streams and Floods: The Geology of Running Water I	17.1: All pages, 17.2: All pages, 17.3: All pages, 17.4: All pages, 17.5: All pages	17.1: All pages, 17.2: All pages, 17.3: All pages, 17.4: All pages, 17.5: All pages
May 23	M	Lecture 24	Chapter 17 Streams and Floods: The Geology of Running Water II	17.6: All pages, Figs. 17.15,17.16,17.20-17.22; 17.8: All pages, All Figs (NOT Geology at a Glance); 17.9: All pages, Fig 17.41; Box 17.1	17.6: All pages, Figs. 17.15,17.16,17.20-17.22; 17.8: All pages, All Figs (NOT Geology at a Glance); 17.9: All pages, Fig 17.41; Box 17.1
May 25	W	Lecture 25	Chapter 18 Restless Realm: Oceans and Coasts I	18.3: All pages, Figs. 18.9, 18.10; 18.4: All pages, Figs 18.11-18.13; 18.6: All pages, Figs. 18.17, 18.20	18.3: All pages, Figs. 18.8-18.10, 18.12; 18.4: All pages, Figs 18.13-18.14
May 27	F	Lecture 26	Chapter 18 Restless Realm: Oceans and Coasts II	18.5: All pages, Figs. 18.14-18.16; 18.7: All pages, Figs. 18.23, 18.24, 18.27-18.29, 18.32, 18.33; 18.9: All pages, Figs. 18.36-18.40	18.5: All pages, Figs. 18.15-18.17; 18.6: All pages, Figs. 18.20, 18.22, 18.23, 18.26, 18.27; 18.9: All pages, Figs. 18.30-18.33
May 30	M	Holiday			
June 1	W	Lecture 27	Chapter 21 Dry Regions: The Geology of Deserts	21.1; 21.2: All pages/figs; 21.3: Wind Erosion, Figs 12.11-13, 21.5: 1st paragraph + p.817 "inselbergs", Fig. 21.19c; 21.6: All pages, Figs 21.26-27	21.1; 21.2: All pages/figs; 21.3: Wind Erosion, Figs 12.10-12, 21.5: 1st paragraph + p.783 "inselbergs", Fig. 21.19c; 21.6: All pages, Figs 21.25-26
June 3	F	Lecture 28	Chapter 22 Amazing Ice: Glaciers and Ice Ages	22.2: pp.834-837, Figs 22.2, 22.4; 22.5: Sea Level Changes, Fig 22.24; 22.6: All pages, Figs 22.28, 22.31; 22.7: Long-term+Short-term, Glacial Advance, Fig 22.34	22.2: pp.797-799, Figs 22.2, 22.4; 22.5: Sea Level Changes, Fig 22.23; 22.6: All pages, Figs 22.27, 22.30; 22.7: Long-term+Short-term, Glacial Advance, Fig 22.33
June 8	W	Final Exam	Short final (in-person exam at scheduled exam time)		

- Introduction
- The Rocky Earth
- The Dynamic Earth
- The Giving Earth
- The Water Earth

*Chapter 2, Section 2.3: do not read the list of Earth materials starting with "Organic Chemicals" and ending with "Volatiles." Section 2.4: do not read "Clues from the Study of Earthquakes."

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*Interlude A.3: start at "in the modern genetic scheme of rock classification..."

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