

GEOLOGY 107-L

Spring, 2017

ELEMENTS OF OCEANOGRAPHY

LUND

This course introduces students to oceanographic processes active at the Earth's surface and their relationship to other components of the Earth's overall environment including climate variability and Global Change issues. Oceanographic processes include plate tectonics, ocean circulation, biogeochemical cycles, marine sedimentation, and marine biology/ecology. The course also surveys the relationship between oceanographic processes and human activities that use ocean resources. The laboratory component employs a hands-on approach to illustrate the methods which oceanographers use to develop an understanding of how the world's oceans work. Videotapes will be shown in lectures to better illustrate dynamic ocean processes.

WEEK	DATE	LECTURE	CHAPTERS IN TEXT
1	Jan 08	0: Introduction	
1	Jan 10	1: History of Oceanography	1
1	Jan 12	2: Origin and Structure of the Earth	1
2	Jan 15	HOLIDAY	
2	Jan 17	3: The Earth's Ocean Basins	2,3
2	Jan 19	4: Plate Tectonics - Historical Foundations	2
3	Jan 22	5: Plate Tectonics - Current Views	2
3	Jan 24	6: The Earth's Atmosphere and Global Heat Budget	6
3	Jan 26	7: Atmosphere Circulation/Circulation of Fluids	6
4	Jan 29	8: Ocean Waves and the Tides	8,9
4	Jan 31	9: The 2004 Indian Ocean and 2010 Japan Tsunamis	8
4	Feb 02	10: Surface Ocean Circulation - Driving Forces	7
5	Feb 05	11: Surface Ocean Circulation - Patterns around the world	7
5	Feb 07	FIRST MIDTERM EXAM (Lectures 1-11)	
5	Feb 09	12: The Nature and Properties of Sea Water	5
6	Feb 12	13: The Variability of Water in the World's Oceans	5
6	Feb 14	14: Deep Ocean Circulation	7
6	Feb 16	15: Weathering and Erosion	4,10
7	Feb 19	HOLIDAY	
7	Feb 21	16: Marine Sedimentation	4
7	Feb 23	17: Coastal Environments (photic zone and coastal margin)	10,11
8	Feb 26	18: Beach Processes and Human Impact	10,11
8	Feb 28	19: Nutrients/Dissolved Gasses and Biogeochemical Cycling	13
8	Mar 02	20: Systematics of Marine Biology	12
9	Mar 05	21: Ecosystems and Biodiversity	12,13
9	Mar 07	22: Marine Ecology and Food Webs	12,13
9	Mar 09	23: Pelagic Marine Ecosystems	14
10	Mar 12	SPRING BREAK	
10	Mar 14	SPRING BREAK	
10	Mar 16	SPRING BREAK	
11	Mar 19	24: Deep Ocean Benthic Ecosystems	15
11	Mar 21	SECOND MIDTERM EXAM (Lectures 12-23)	
11	Mar 23	25: Coastal Marine Environments	15
12	Mar 26	Movie – Sea of Cortez	

12 Mar 28	26: Coral Reef Environments	15
12 Mar 30	Movie – Coral Reefs	
13 Apr 02	27: Marine Ecosystem Assessment: California Margin	
13 Apr 04	28: Perspectives on Global Climate Change	16
13 Apr 06	29: Paleoceanography – The Cretaceous Greenhouse World	16
14 Apr 09	30: Paleoceanography - The Quaternary Icehouse World	16
14 Apr 11	31: Today’s World - ENSO Variability	16
14 Apr 13	32: Today’s World - Global Warming	16
15 Apr 16	33: Managing the Oceans – Physical Resources	11
15 Apr 18	34: Managing the Oceans - Ocean Fisheries	13
15 Apr 20	35: Managing the Oceans – Sources of Pollution	11
16 Apr 23	36: Managing the Oceans – The California Standard	11
16 Apr 25	REVIEW	
16 Apr 27	THIRD MIDTERM Exam (Lectures 24-36)	

(students may take the Third Midterm Exam on either of two days)

Final Exam Period

May 07 **THIRD MIDTERM Exam (Lectures 24-36) 8-10 AM**
(students may take the Third Midterm Exam on either of two days)

LECTURE MATERIAL: The class text is Essentials of Oceanography, Trujillo and Thurman, 12th ed., Pearson Publ. You are required to purchase the ‘Mastering Oceanography’ electronic supplement. Students can buy an electronic copy of the text (etext, good for 18 months) plus access to the Mastering Oceanography component (a class requirement) at www.masteringoceanography.com. The cost is \$78.95. Students can also buy the Mastering Oceanography component alone (no etext) for \$45.95. Go to www.mypearsonstore.com/bookstore/essentials-of-oceanography-plus-masteringoceanography-9780134113043 if you NEED to have a hard-copy of the text. The course id is geollund33962.

OFFICE HOURS: 9:00-10:00 A.M
Office – Zumberge Hall of Science (ZHS) 273; 740-5835
email - slund@usc.edu

CLASS GRADE:	Three mid-term examinations.....	50%
	Attendance.....	10%
	Digital Assessment.....	10%
	Laboratory.....	30%
		100%

LAB GRADE: 11 Labs (drop one).....100%
(students must pass the lab component to pass the class)

EXTRA CREDIT: 5% extra credit can be earned through participation in the JEP program (details will be explained in class). The extra credit is NONCOMPETITIVE. It will be added after calculating the final curve for the class. Those who do not participate are not penalized in the grading process.