

## **SIO 40: "Life and Climate on Earth" (Fall 2014)**

**Description:** This course is an introduction to how the living things on our planet affect, and are affected by, the global environment. We will discuss how life evolved on earth, and how the planet changed with the advent of life. We will explore how the non-living components of the earth system (atmosphere, solid earth, water) interact with the living components to create the comfortable planet that we know and love. In the second part of the course, we will discuss issues related to global climate change, and the potential impacts that mankind has had and will have on our environment. A major goal of this course is to provide non-earth/environmental science majors with the basic scientific background and facts needed to understand and appreciate current news topics and political issues related to earth and climate science.

**Course website:** Material for this course, including the course syllabus, lecture files, homework assignments and answer keys, etc. will be available on the SIO 40 course website on Ted at Ted.ucsd.edu.

**Grades based on:** 8 best out of 9 homework assignments (25%); Mid-Term Exam #1 (20%); Mid-Term Exam #2 (20%); and Final Exam (35%). Grades will be assigned using a curve system. Attendance and active participation in class is noted and will make a positive difference for marginal grades. There will be opportunities to obtain extra credit, more details TBA.

**Reading** - There are *no required textbooks* for this course. Necessary information for homeworks, exams etc. is covered in the lecture slides posted on line, unless you are specifically instructed otherwise. Supplementary reading materials and links to websites relevant to various lecture topics will also be posted on the class website.

**Locations and times:** Center Hall Room 109, MWF 11:00 -11:50 am

Weekly (*optional*) problem sessions: TBA

Instructor office hours on campus (TBA) and by appointment at Scripps Institution of Oceanography campus

**Contact info:** Instructor - Kathy Barbeau, [kbarbeau@ucsd.edu](mailto:kbarbeau@ucsd.edu), 858-822-4339

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## Lecture list and homework assignments:

<u>Date</u>	<u>Lec #</u>	<u>Lecture Topic</u>	<u>HW due date</u>
Oct. 3 F	1	Introduction/overview	
Oct. 6 M	2	Basic concepts	
Oct. 8 W	3	Origins: Planetary evolution	
Oct. 10 F	4	Origins: Biological evolution	HW1
Oct. 13 M	5	Life's Beginnings: How the planet changed with life I	
Oct. 15 W	6	Life's Beginnings: How the planet changed with life II	
Oct. 17 F	7	Energy balance and greenhouse effect	HW2
Oct. 20 M	8	Atmosphere: Circulation and hydrologic cycle	
Oct. 22 W	9	Oceans	
Oct. 24 F		Review	HW 3
Oct. 27 M		MID-TERM #1	
Oct. 29 W	10	Cryosphere	
Oct. 31 F	11	Lithosphere	
Nov. 3 M	12	Carbon cycle	
Nov. 5 W	13	Long-term climate record	HW 4
Nov. 7 F	14	Glaciations	
Nov. 10 M	15	Recent climate	
Nov. 12 W	16	Climate change basics I	HW 5
Nov. 14 F	17	Climate change basics II	
Nov. 17 M		Review	HW 6
Nov. 19 W		MID-TERM #2	
Nov. 21 F	18	Climate change projections	
Nov. 24 M	19	Impacts of climate change	
Nov. 26 W	20	Ocean acidification and warming	
Nov. 28 F		THANKSGIVING HOLIDAY	
Dec. 1 M	21	Climate change NOW: The Arctic	HW 7
Dec. 3 W	22	The ozone hole	
Dec. 5 F	23	Climate change skepticism	
Dec. 8 M	24	Mitigating climate change I: Geo-engineering	HW8
Dec. 10 W	25	Mitigating climate change II: Reducing emissions	
Dec. 12 F		Review	HW9
Dec. 16 Tu		FINAL EXAM, 11:30 am	