

**SIO 40: "Life and Climate on Earth" (Fall 2007)**  
(Formerly EARTH 40, "The Biosphere")

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 biosphere. A major goal of this course is to provide non-earth/environmental science majors with basic information to understand and appreciate current news topics related to earth and climate science.

Course website: see link at <http://barbeaulab.ucsd.edu>  
Recent lectures will be posted to this website, and all lectures will also be available on UCSD electronic course reserves (<http://reserves.ucsd.edu/eres/default.aspx>).

Grades based on: Homework assignments (30%), Mid-Term Exam (30%) and Final Exam (40%). There will be 8 homeworks and no late homework will be accepted. One sheet of handwritten notes will be allowed in each exam. Grades will be assigned using a curve system. Things like good attendance, class participation, and improved performance on the final relative to the midterm will make a positive difference for marginal grades.

Reading - Lectures will be largely based on chapters from "The Earth System" by Kump, Kasting and Crane (2<sup>nd</sup> edition). Chapter readings will be assigned as background material for each lecture, and homework will be based on review questions from the text. The text is available through the UCSD bookstore, and several copies are on reserve in Geisel Library, Social Sciences & Humanities circulation desk.

Locations and times: Sequoyah Hall 148, MWF 1:00 -1:50 pm

Weekly (non-mandatory) problem session/discussion:

2:00 - 2:50 pm, Fridays in Social Sciences Building, rm 106

Office hours by appointment at 1232 Sverdrup Hall (SIO), map available on request

Final Exam: Monday Dec 10, 11:30am, location TBA

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

Lecture list, reading and homework assignments:

<u>Date</u>	<u>Lec #</u>	<u>Lecture Topic</u>	<u>Reading/HW</u>
Sep. 28 F	1	Introduction, basics	TES Chapter 1
Oct. 1 M	2	Overview of global change over various timescales	" " "
Oct. 3 W	3	Origins: Planetary evolution	TES Chapter 10
Oct. 5 F	4	Origins: Biological evolution	" " " HW1
Oct. 8 M	5	Life's Beginnings: How the planet changed with life I	TES Chapter 11
Oct. 10 W	6	Life's Beginnings: How the planet changed with life II	" " "
Oct. 12 F	7	Atmosphere: Energy balance and greenhouse effect	TES Chapter 3 HW2
Oct. 15 M	8	Atmosphere: Circulation and hydrologic cycle	TES Chapter 4
Oct. 17 W	9	Ocean circulation	TES Chapter 5
Oct. 19 F	10	Lithosphere	TES Chapter 7 HW3
Oct. 22 M	11	Carbon Cycle I	TES Chapter 8
Oct. 24 W	12	Carbon Cycle II	" " "
Oct. 26 F	13	Life on Earth - the Biosphere	TES Chapter 9
Oct. 29 M	14	Review	HW4
Oct. 31 W		MID-TERM EXAM	
Nov. 2 F	15	Long-term climate record I	TES Chapter 12
Nov. 5 M	16	Long-term climate record II	" " "
Nov. 7 W	17	Biodiversity through time I	TES Chapter 13
Nov. 9 F	18	Biodiversity through time II	" " " HW5
Nov. 12 M		HOLIDAY VETERAN'S DAY	
Nov. 14 W	19	Glaciations I	TES Chapter 14
Nov. 16 F	20	Glaciations II	" " " HW6
Nov. 19 M	21	Short-term climate variations I	TES Chapter 15
Nov. 21 W	22	Short-term climate variations II	" " "
Nov. 23 F		HOLIDAY THANKSGIVING	
Nov. 26 M	23	Global warming I	TES Chapter 16 HW7
Nov. 28 W	24	Global warming II	" " "
Nov. 30 F	25	Ocean acidification	supplement
Dec. 3 M	26	Ozone loss	TES Chapter 17
Dec. 5 W	27	Modern extinctions	TES Chapter 18
Dec. 7 F	28	Concluding remarks/Review	HW8
Dec. 10 M		FINAL EXAM, 11:30 am	