

## **SIO 40: “Life and Climate on Earth” (Fall 2020)**

**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 Credit:** 4.00 credit hours, 10 hours per week on assignments/readings

**Course website:** All material for this course, including the course syllabus, lecture files, homework assignments and answer keys, exams, etc. will be available on the SIO 40 course website on Canvas. If you have not used Canvas before, refer to the student help guides and videos, which are located on the left-side menu’s help section (the question mark icon). Should you need any technical assistance with Canvas, please alert your instructor and send an email to [servicedesk@ucsd.edu](mailto:servicedesk@ucsd.edu). In the header of the email, please write “Canvas”. Make sure to include your name, course title and section, as well as your contact information in the email body.

**Reading:** There are no required textbooks for this course. Necessary information for homeworks, exams etc. is covered in the lecture slides posted on Canvas, 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.

**Course format:** This course will be presented in a hybrid format, with a variety of options for synchronous and/or asynchronous learning. Lectures will be presented MWF in CENTR 101. You may attend lecture in person on one of those days each week, depending on your assigned section (section A00 on M, B00 on W, and C00 on F). Attendance in-person is not required. Podcasts of each lecture, including video and screencasting, will be posted on Canvas in the Media Gallery section later in the day after each lecture is given. Slides with notes for each lecture will also be posted on Canvas. There will also be opportunities for online interaction with the instructor and TAs via Zoom and Canvas chat. Please understand that the in-person lecture component may need to be altered or eliminated depending on Covid-19 related developments, but the course is designed to shift entirely online for everyone if necessary. You are required to observe UCSD masking and social distancing protocols if attending class in-person, see:

<https://returntolearn.ucsd.edu/return-to-campus/academics/index.html>

## Lecture schedule and homework assignments:

<u>Date</u>	<u>Lec #</u>	<u>Lecture Topic</u>	<u>HW due</u>
Oct. 2 F	1	Introduction/overview	
Oct. 5 M	2	Origins: Earth and the elements	
Oct. 7 W	3	Origins: Biological evolution	
Oct. 9 F	4	Life's Beginnings: How the planet changed with life I	
Oct. 12 M	5	Life's Beginnings: How the planet changed with life II	HW1
Oct. 14 W	6	Energy balance and greenhouse effect	
Oct. 16 F	7	Maintaining a habitable planet	
Oct. 19 M	8	Climate – what could go wrong?	
Oct. 21 W		MIDTERM 1 review	HW2
Oct. 23 F	9	Atmosphere and hydrologic cycle	
Oct. 26 M	10	Oceans	
Oct. 28 W	11	Cryosphere	
Oct. 30 F	12	Lithosphere	
Nov. 2 M	13	Carbon cycle	
Nov. 4 W	14	Long-term climate record	HW3
Nov. 6 F	15	Glaciations	
Nov. 9 M	16	Recent climate	
Nov. 11 W		VETERAN'S DAY HOLIDAY	
Nov. 13 F	17	Anthropogenic climate change	
Nov. 16 M		MIDTERM 2 review	HW4
Nov. 18 W	18	Climate change projections	
Nov. 20 F	19	Impacts of climate change	
Nov. 23 M	20	Ocean acidification and warming	
Nov. 25 W	21	Climate change happening now: Polar regions	
Nov. 27 F		THANKSGIVING HOLIDAY	
Nov. 30 M	22	Climate change skepticism	
Dec. 2 W	23	The ozone hole	HW5
Dec. 4 F	24	Geo-engineering part I	
Dec. 7 M	25	Geo-engineering part II	
Dec. 9 W	26	Policy solutions	
Dec. 11 F		Review	HW6
Dec. 15 Tu		FINAL EXAM	

**Locations and times for in-person lectures:** Center Hall Room 101  
MWF 11:00 -11:50 am

**TA-led online chat sessions and extra review sessions:** TBA, watch for announcements on Canvas home page

**Instructor office hours:** online via Zoom (TBA) and by appointment.  
Instructor will also be available to speak with before or after in-person lectures, preferably outside for extended conversation.

**Suggested weekly schedule:** In order to keep up with the material, students are strongly urged to “digest” three lectures per week. This can be done by a combination of attending class in-person, and viewing the lecture podcasts online. Students attending entirely remotely can just view the lecture podcasts. Annotated lecture slides and written lecture summaries will also be provided online for each lecture, these can be used to supplement lecture attendance and podcast viewing. Students will also need to make time each week to work on homework assignments (due after every 4 or 5 lectures, see dates on lecture schedule, previous page).

**Grades based on:** 6 homework assignments (25%); Mid-Term Exam #1 (20%); Mid-Term Exam #2 (20%); and Final Exam (35%). All assignments and exams will be done asynchronously online. There will be opportunities to obtain extra credit, including a writing assignment due during finals week, course evaluation bonus, and participation points for online discussions.

**Exam format:** All exams will be open note and taken non-synchronously online. However, working with classmates is prohibited and any plagiarism will result in lost points.

**Letter grades for the class based on the overall weighted scores will be assigned as follows:**

≥ 95% = A+; 90-94% = A; 85-89% = A-; 80-84% = B+; 75-79% = B; 70-74% = B-  
65-69% = C+; 60-64% = C; 55-59% = C-

**Submitting homework:** Homework must be submitted as a PDF or Word document on Canvas. Late homework (beyond noon of the following day Pacific Time) will not be accepted. In case of emergency, extensions may be requested by emailing the instructor no later than 5 pm on the due date, and providing a documented excuse.

**Exam accommodations:** Students who require alternative timing or arrangements for taking the midterms or final are responsible for communicating with the instructor a minimum of one week in advance of the scheduled exam. Students who miss an exam due to emergency (sickness, accident, family issue) should contact the instructor ASAP with documented evidence of the emergency situation in order to arrange a make-up.

**Academic Integrity:** Students found guilty of “cut and paste plagiarism” on homework assignments (ie. copying text verbatim from my slides, the TA’s, other students, websites, etc.) will receive a warning the first time. If students are found to be copying again, copied answers will receive zero credit. Students found to be cheating on exams will receive zero credit for the exams.

**Teaching team:** Instructor - Kathy Barbeau, [kbarbeau@ucsd.edu](mailto:kbarbeau@ucsd.edu)



I am a marine chemist, my lab is located on the Scripps Institution of Oceanography campus. You can find out more about my research at <https://kbarbeau.scrippsprofiles.ucsd.edu/she/her/hers>

Teaching Assistants –



Margot White, [mewo70@ucsd.edu](mailto:mewo70@ucsd.edu)  
SIO graduate student, marine chemistry  
she/her/hers

Zev Brook, [zebrook@ucsd.edu](mailto:zebrook@ucsd.edu)  
SIO graduate student, paleobiology  
he/him/his



## Student Resources for Support and Learning

### Library Help

For questions about eReserves and research tools:  
<https://library.ucsd.edu/ask-us/triton-ed.html>

### Learning Resources

[Writing Hub](#)  
[Supplemental Instruction](#)  
[Tutoring](#)  
[Mental Health Services](#)

### Community Centers

Learn about the different ways UC San Diego explores, supports and celebrates the many cultures that make up our diverse community.  
<https://students.ucsd.edu/student-life/diversity/index.html>

### Accessibility

Students requesting accommodations for this course due to a disability must provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD) which is located

in University Center 202 behind Center Hall. Students are required to present their AFA letters to Faculty (please make arrangements to contact me privately) and to the OSD Liaison in the department in advance so that accommodations may be arranged.

Contact the OSD for further information: <https://disabilities.ucsd.edu/>.  
osd@ucsd.edu | 858. 534.4382

#### Inclusion

We are committed to creating a learning environment that supports diversity of thought, perspective, experience, and identities. We encourage students to participate in discussion and contribute to the field from their perspective.

Office of Equity, Diversity, and Inclusion:  
858.822.3542 | [diversity@ucsd.edu](mailto:diversity@ucsd.edu) | <https://diversity.ucsd.edu/>  
<https://students.ucsd.edu/student-life/diversity/index.html>  
<https://regents.universityofcalifornia.edu/governance/policies/4400.html>  
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#### Basic Needs

Any student who has difficulty accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in this course, is encouraged to contact:  
[foodpantry@ucsd.edu](mailto:foodpantry@ucsd.edu) | [basicneeds@ucsd.edu](mailto:basicneeds@ucsd.edu) | (858)246-2632

#### Technical Support

For help with accounts, network, and technical issues:  
<https://acms.ucsd.edu/contact/index.html>

For help connecting to electronic library resources such as eReserves and e-journals:  
<https://library.ucsd.edu/computing-and-technology/connect-from-off-campus/>

## **UC San Diego Academic Policies**

#### Academic Integrity

Academic Integrity is expected of everyone at UC San Diego. This means that you must be honest, fair, responsible, respectful, and trustworthy in all of your actions. Lying, cheating, or any other forms of dishonesty will not be tolerated because they undermine learning and the University's ability to certify students' knowledge and abilities. Thus, any attempt to get, or help another get, a grade by cheating, lying or dishonesty will be reported to the Academic Integrity Office and will result in sanctions. Sanctions can include an F in the class and suspension or dismissal from the University. So, think carefully before you act. Before you act, ask yourself the following questions: a) is my action honest, fair, respectful, responsible, and trustworthy, and b) is my action authorized by the instructor? If you are unsure, don't ask a friend, ask your instructor,

instructional assistant, or the Academic Integrity Office. You can learn more about academic integrity at [academicintegrity.ucsd.edu](https://academicintegrity.ucsd.edu). (Source: Bertram Gallant, T. (2017). Teaching for integrity. UC San Diego Academic Integrity Office.)

#### Classroom Behavior Policy

In order to foster a positive learning environment, please limit use of cell phones, mobile devices, etc. to break times.

Refer to:

[UCSD Student Conduct Code](https://students.ucsd.edu/files/student-conduct/ucsandiego-student-conduct-code_interim-revisions1-16-18.pdf)  
([https://students.ucsd.edu/files/student-conduct/ucsandiego-student-conduct-code\\_interim-revisions1-16-18.pdf](https://students.ucsd.edu/files/student-conduct/ucsandiego-student-conduct-code_interim-revisions1-16-18.pdf))

[Principles of Community](https://ucsd.edu/about/principles.html)

(<https://ucsd.edu/about/principles.html>)

#### Religious Accommodation

It is the policy of the university to make reasonable efforts to accommodate students having bona fide religious conflicts with scheduled examinations by providing alternative times or methods to take such examinations. If a student anticipates that a scheduled examination will occur at a time at which his or her religious beliefs prohibit participation in the examination, the student must submit to the instructor a statement describing the nature of the religious conflict and specifying the days and times of conflict.

For final examinations, the statement must be submitted no later than the end of the second week of instruction of the quarter.

For all other examinations, the statement must be submitted to the instructor as soon as possible after a particular examination date is scheduled.

If a conflict with the student's religious beliefs does exist, the instructor will attempt to provide an alternative, equitable examination that does not create undue hardship for the instructor or for the other students in the class.

#### Discrimination and harassment

The University of California, in accordance with applicable federal and state laws and university policies, does not discriminate on the basis of race, color, national origin, religion, sex, gender, gender identity, gender expression, pregnancy (including pregnancy, childbirth, and medical conditions related to pregnancy or childbirth), physical or mental disability, medical condition, genetic information, ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services (including membership, application for membership, performance of service, application for service, or obligation for service in the uniformed services). The university also prohibits harassment based on these protected categories, including sexual harassment, as well as sexual assault, domestic violence, dating violence, and stalking. The

nondiscrimination policy covers admission, access, and treatment in university programs and activities.

If students have questions about student-related nondiscrimination policies or concerns about possible discrimination or harassment, they should contact the Office for the Prevention of Harassment & Discrimination (OPHD) at (858) 534-8298, [ophd@ucsd.edu](mailto:ophd@ucsd.edu), or [reportbias.ucsd.edu](http://reportbias.ucsd.edu).

Campus policies provide for a prompt and effective response to student complaints. This response may include alternative resolution procedures or formal investigation. Students will be informed about complaint resolution options.

A student who chooses not to report may still contact CARE at the Sexual Assault Resource Center for more information, emotional support, individual and group counseling, and/or assistance with obtaining a medical exam. For off-campus support services, a student may contact the Center for Community Solutions. Other confidential resources on campus include Counseling and Psychological Services, Office of the Ombuds, and Student Health Services.

CARE at the Sexual Assault Resource Center  
858.534.5793 | [sarc@ucsd.edu](mailto:sarc@ucsd.edu) | <https://care.ucsd.edu>

Counseling and Psychological Services (CAPS)  
858.534.3755 | <https://caps.ucsd.edu>

### **Subject to Change Policy**

The information contained in this course syllabus, other than the grade and absence policies, may be – under certain circumstances such as mutual agreement to enhance student learning – subject to change with reasonable advance notice, as deemed appropriate by the instructor.