

# SIO 101: California Current Oceanography (Fall Quarter 2024)

The goal of this class is to use examples from the California Current Ecosystem to help students understand the complex connections and feedbacks between physics, chemistry and biology in the marine environment.

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**Lectures:** Tuesdays/Thursdays, 9:30-11:00 a.m., MCTF 210

**Labs:** Fridays, A01 10:30-1:20 p.m.; A02 02:00pm-04:50 pm (MCTF 130)

**ANNOUNCEMENTS, LECTURE NOTES AND READING MATERIALS:** PDF files of the lecture notes and reading materials will be available throughout the quarter via Canvas ([canvas.ucsd.edu](https://canvas.ucsd.edu)). Please check Canvas for announcements, assignments, surveys, etc.

**OFFICE HOURS:** We are mostly available immediately following classes on Tuesday and Thursday. To meet at another time please email us, and we will schedule a time to meet, either in person or virtually via Zoom. Please contact us through canvas, and we encourage you to post any questions about the lecture materials and the labs in the **Discussion tab in Canvas**.

**READING ASSIGNMENTS:** Some classes will involve a lecture-relevant reading from the scientific literature **every Tuesday** (authors and publication dates noted for each week in the syllabus below). In addition, during the class period we will share a mandatory question about the reading that must be answered on Canvas (single paragraph answer) by 11 p.m. that day. This question will only be available in class and the goal is to ensure that you attend class. If you think you will be absent from class you will need to email the TAs or the Professors to obtain the question (this can happen twice). Since many of the papers may involve new vocabulary or unfamiliar concepts, you are encouraged to utilize web, wits, or other resources to complete these tasks. We also plan to have pop-quizzes in some of the classes on the material covered that day.

**LABS AND LAB ASSIGNMENTS:** Scheduled labs are on the course schedule in **bold font**. You will be required to adhere to usual lab requirements of closed toed shoes and clothing that covers your arms and legs. Several labs will have either homework or in-class assignments to be completed within one week (i.e., on or before the following Friday), unless otherwise noted. Homework assignments will be graded.

**GRADING RUBRICS:** Grading rubrics will be provided after the assignments have been graded. This is because it is not always clear what students have learned and how they will focus their answers to open ended questions. This approach will allow you to understand where you lost points and will be more true to what you as a class actually learned.

**FINAL EXAM:** An in class final exam will be held on Thursday, 12 December between 8-11 AM. The exam questions will be shared with you two weeks prior to the exam date to help you prepare, but the exam itself will feature a subset of the questions and will be closed book.

**ATTENDANCE:** Labs are mandatory. Lectures are mandatory but with an excuse you can miss up to two classes (but not labs).

**COURSE GRADING:**

10 Weekly paper reading assignments (**20%**); 10 in class quizzes (**10%**); 7 lab assignments (**40%**); Final exam (**30%**).

## SIO 101 SCHEDULE

### **WEEK 0**

- 26 Sept. Syllabus Discussion, Introduction, Overview (Aluwihare & Décima)  
27 Sept. **Ocean Tracks Lab Module 1 – Upwelling (One page “flier,” due in 1 week; Virtual)**

### **WEEK 1** Reading: Kahru et al. 2009

- 01 Oct. Local-scale physical forcing and circulation (Aluwihare)  
03 Oct. Phytoplankton and primary production (Décima) (Paper Assignment)  
04 Oct. **Introduction to phytoplankton (MCTF 130, homework assignment 1 week)**

### **WEEK 2** Reading: Howell et al. 2012

- 08 Oct. Basin-scale physical forcing and circulation (Aluwihare) (Paper Assignment)  
09 Oct. The El Nino Southern Oscillation (Aluwihare)  
11 Oct. **Phytoplankton grow out start (MCTF 130, homework assignment 3 weeks)**

### **WEEK 3** Reading: Landry et al. 2009

- 15 Oct. Decadal and long-term climate variability (Aluwihare) ((Paper Assignment)  
17 Oct. Plankton food web structure and processes (Décima) (Short Quiz)  
18 Oct. **Dilution experiment (MCTF 130, homework assignment 1 week)**

### **WEEK 4** Reading: Wilson et al. 2021

- 22 Oct. Microbial Processes (Aluwihare) (Paper Assignment)  
24 Oct. Carbon cycling in planktonic food webs (Aluwihare) (Short Quiz)  
25 Oct. **Phytoplankton termination (MCTF 130, homework assignment 1 week)**

### **WEEK 5** Reading: Gastauer & Ohman 2024

- 29 Oct. *Mid quarter review*  
31 Oct. Zooplankton and ecosystem role. (Décima) (Paper Assignment)  
01 Nov. **Zooplankton introduction (MCTF 130, homework assignment 1 week)**

### **WEEK 6** Reading: *Rykaczewski & Checkley 2008*

- 05 Nov. Pelagic fisheries (Décima) (Paper Assignment)  
07 Nov. Benthic resources (Décima) (Short Quiz)  
08 Nov. ***Calanus grazing experiment* (MCTF 130, homework assignment 1 week)**

### **WEEK 7** Reading: *Rykaczewski & Dunn 2010*

- 12 Nov. Biological impacts of climate change (Décima) (Paper Assignment)  
14 Nov. Harmful algal blooms (Décima) (Short Quiz)  
15 Nov. **Bacterial lab start (MCTF 130; homework assignment due in 2 weeks)**

### **WEEK 8** Reading: *Koslow et al. 2011*

- 19 Nov. Hypoxia in the northeast Pacific (Décima) (Paper Assignment)  
21 Nov. Ocean acidification (Aluwihare) (Short Quiz)  
22 Nov. **Bacterial lab termination II and sample collection (assignment due in 1 week)**

### **WEEK 9** Reading: *Feddersen et al., 2021*

- 26 Nov. Nearshore mixing and pathogen/pollutant transport (Aluwihare) (Paper Assignment)  
28 Nov. **HOLIDAY: No lecture (Final exam questions assigned)**  
29 Nov. **HOLIDAY: No lab**

**WEEK 10** Reading: *Gulland et al., 2020*

- 03 Dec. Persistent pollutants in the Southern California Bight (Aluwihare) (Paper Assignment)  
05 Dec. End of quarter learning outcomes survey  
06 Dec. Review for each section (**MCTF 130 - come at your appointed lab times**)  
**12 Dec. FINAL EXAM (8-11 pm; TBA) (Thursday)**

**COURSE GRADES**

Letter Grade Range

- A+ 100%to97%  
A < 97%to94%  
A- < 94%to90%  
B+ < 90%to87%  
B < 87%to84%  
B- < 84%to80%  
C+ < 80%to77%  
C < 77%to74%  
C- < 74%to70%  
D < 70%to60%  
F < 60%to0%

**Late Work Policy:**

There are no make-ups for exams. Late homework is accepted with a penalty of 10%/2 day, with a documented reason, at instructor's discretion. Submit on time so that we can all progress through this learning experience together.

**Extra Credit:**

Additional assignments may be offered with extra credit points assigned for correct completion. These may include online quizzes on the reading, practice exam questions, and course surveys. Canvas will not add these extra credit points to your grade until the end of the course.

**Grades of "Incomplete":**

The current university policy concerning incomplete grades will be followed in this course. Incomplete grades are given only in situations where unexpected emergencies prevent a student from completing the course and the remaining work can be completed the next semester. Your instructor is the final authority on whether you qualify for an incomplete. Incomplete work must be finished by the end of the subsequent quarter or the "I" will automatically be recorded as an "F" on your transcript.

**Attendance Policy:**

All students are responsible for all information and updates provided in all scheduled lectures. Our expectations for your attendance of class is that you be prepared, engaged, and "present"

for all discussions or activities. Illness and unforeseen circumstances may prevent you from attending one or more classes during the quarter. Automated recordings have been scheduled, but they do not always work perfectly. Policies and Information

### **Our Classroom:**

I hope you will join me in creating a class that upholds these values to further enhance our learning as a community. For more information, please visit: <http://diversity.ucsd.edu> (<http://diversity.ucsd.edu/> ). All UC San Diego students are part of the UC San Diego community and are expected to follow university and UC-wide policies, including the Student Conduct Code (<https://studentconduct.ucsd.edu/procedures/index.html> ). The UC San Diego Student Conduct Code represents the pride and values that define our community, and include the UC San Diego Principles of Community (<https://ucsd.edu/about/principles.html> ), which further illustrate the expectations for all members of our community.

### **Academic Integrity and Artificial Intelligence:**

In this course, you are encouraged to ask for help from the instructors and other students for the homework in order to develop your answer, as long as you understand the answer you turn in and you cite any sources you use other than the course material. On the homework assignments you may not ask help from other students (or Chegg-like services) but you may use publicly available artificial intelligence tools, such as Google search and ChatGPT, as an aid to finding answers, if you clearly cite these sources. However, answers are considered correct based on the course material rather than cited sources, so please be sure that you verify information from other sources in the context of the course material. Reports of alleged violations of academic integrity will be handled under the policies and procedures set forth in the UCSD Policy on Integrity of Scholarship (<https://senate.ucsd.edu/Operating-Procedures/Senate-Manual/Appendices/2> ).

### **Non-Discrimination and Sexual Harassment:**

The University of California, in accordance with applicable Federal and State law and University policy, does not allow discrimination or harassment based on race, color, national origin, religion, sex, gender identity, pregnancy, physical or mental disability, medical condition (cancer related or genetic characteristics), ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services. If you have questions, contact the Office for the Prevention of Harassment and Discrimination (OPHD) (<http://reportbias.ucsd.edu> ) at (858) 534-8298 or [ophd@ucsd.edu](mailto:ophd@ucsd.edu).

### **Land Acknowledgement:**

UC San Diego was built upon the territory of the Kumeyaay Nation. From time immemorial, the Kumeyaay people have been a part of this land. Resources. UCSD provides important services to support you in completing this course, including those listed below.

### **Learning and Academic Support:**

Ask a Librarian: Library Support (<https://library.ucsd.edu/ask-us> ) Chat or make an appointment with a librarian to focus on your research needs

First Gen Student Success Coaching Program (<https://successcoaching.ucsd.edu/>) Peer mentor program that provides students with information, resources, and support in meeting their goals Office of Academic Support & Instructional Services (OASIS) (<https://oasis.ucsd.edu/>) Intellectual and personal development support

Writing Hub Services in the Teaching + Learning Commons (<https://commons.ucsd.edu/academicsupport/writing/index.html>) One-on-one online writing tutoring and workshops on key writing topics

Supplemental Instruction (<https://aah.ucsd.edu/supplemental-instruction-study-group/>) Peerassisted study sessions through the Academic Achievement Hub to improve success in historically challenging courses

### **Support for Well-being and Inclusion:**

Basic Needs at UCSD (<https://basicneeds.ucsd.edu/>) Any student who has difficulty accessing sufficient food to eat every day, or who lacks a safe and stable place to live is encouraged to contact: [foodpantry@ucsd.edu](mailto:foodpantry@ucsd.edu) (mailto:foodpantry@ucsd.edu) | [basicneeds@ucsd.edu](mailto:basicneeds@ucsd.edu) (mailto:basicneeds@ucsd.edu) | (858) 246-2632

Counseling and Psychological Services (<https://wellness.ucsd.edu/caps>) Confidential counseling and consultations for psychiatric service and mental health programming

Triton Concern Line (<https://blink.ucsd.edu/instructors/advising/concern/>) Report students of concern: (858) 246-1111 Office for Students with Disabilities (OSD) (<https://disabilities.ucsd.edu/>) Supports students with disabilities and accessibility across campus

Community and Resource Centers (<https://students.ucsd.edu/student-life/diversity/>) Office of Equity, Diversity, and Inclusion (<https://diversity.ucsd.edu/>) As part of the Office of Equity, Diversity, and Inclusion (<https://diversity.ucsd.edu/>), the campus community centers provide programs and resources for students and contribute toward the evolution of a socially just campus (858).822-.3542 | [diversity@ucsd.edu](mailto:diversity@ucsd.edu) (mailto:diversity@ucsd.edu)

Get Involved (<https://getinvolved.ucsd.edu/>) Student organizations, clubs, service opportunities, and many other ways to connect with others on campus Undocumented Student Services (<https://uss.ucsd.edu/>) Programs and services are designed to help students overcome obstacles that arise from their immigration status and support them through personal and academic excellence