**BISC 582, Fall 2022**

**Advanced Biological Oceanography**

**Instructors**

Dave Hutchins ([dahutch@usc.edu](mailto:dahutch@usc.edu))

Jim Moffett ([jmoffett@usc.edu](mailto:sanudo@usc.edu))

Jed Fuhrman ([fuhrman@usc.edu](mailto:fuhrman@usc.edu))

**Class meetings-** Tuesdays and Thursdays at 2:00-3:20 PM in AHF 259, unless extraordinary conditions call for lectures on Zoom. All PowerPoint lectures and assigned readings will be posted on Blackboard, <https://blackboard.usc.edu/> . Please check Blackboard regularly for announcements, including possible changes to the lectures and presentations.

**Office hours**- Over Zoom or in person as required; please email us any time and we will be happy to set up a time to meet with you individually.

**Required Textbook –**

David W. Townsend, Oceanography and Marine Biology, 2012, Sinauer Assoc.

**Additional outside reading assignments-** Will be provided via Blackboard prior to many of the lectures.

**Literature reading and discussion-** Some of the lecture periods will be devoted to an active, open and critical discussion of assigned papers from the recent literature. Your participation in discussions will help to determine your participation grade for the course. If there is sufficient interest, we may also have journal club sessions on papers of interest to the group, which would be voluntary, outside of class time (e.g. late on Thursday or Friday), and not affect the grade.

**Grading:**

1. **Tests-** will consist of two mid-term exams (20% each) and a comprehensive final (30%). Details of testing procedures will be discussed in class.
2. **Participation -** Class participation will make up 10% of the grade, based on your attendance and active participation in class discussions.
3. **Research report and presentation**- An individual research report on a topic of current interest in biological oceanography will be due on November 15 (20% of the grade). The research report will consist of a written review-style term paper (~10 pages) and a short (15 min) presentation during lecture periods noted below. (with possibly additional time if needed outside class hours, TBA). Paper topics should be approved by one of the instructors by the middle of September. Further instructions on the format of the paper will be provided after the start of the class.

**Lecture, discussion and test schedule. Potentially subject to change, and would be announced in class and on Blackboard**

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| Date | Topic | Lecturer | Reading |
| Aug 23 | Ocean Circulation and description of the major basins | Moffett |  |
| Aug 25 | Introduction to Ocean Chemistry | Moffett |  |
| Aug 30 | Dynamics of the upper ocean; the mixed layer, stratification and seasonality | Moffett |  |
| Sept 1 | Phytoplankton 1 | Hutchins |  |
| Sept 6 | Phytoplankton diversity and primary production 2 | Hutchins |  |
| Sept 8 | Case study: Coastal Upwelling off the California Coast | Moffett |  |
| Sept 13 | Microbial Loop, Bacteria, Archaea, Viruses I | Fuhrman |  |
| Sept 15 | Microbial Loop, Bacteria, Archaea, Viruses II | Fuhrman |  |
| Sept 20 | Mid-term 1 |  |  |
| Sept 22 | Zooplankton & Secondary Production | Hutchins |  |
| Sept 27 | Special Environments/oxygen | Hutchins/Moffett |  |
| Sept 29 | Iron controversy | Hutchins |  |
| Oct 4 | Nutrient Biogeochemistry- C cycle | Hutchins |  |
| Oct 6 | Nutrient Biogeochemistry- N-cycle | Hutchins |  |
| Oct 11 | Nutrient Biogeochemistry-P, S cycles | Fuhrman |  |
| Oct 13 | Fall Recess |  |  |
| Oct 18 | Benthic biogeochemistry | Fuhrman |  |
| Oct 20 | Ecological modelling | Levine |  |
| Oct 25 | Mid-term 2 |  |  |
| Oct 27 | The deep ocean / benthic pelagic coupling | Fuhrman |  |
| Nov 1 | Climate Change, Ocean Acidification and Other Human Impacts-Corals | Kenkel |  |
| Nov 3 | Climate Change and CO2 | Moffett |  |
| Nov 8 | Student Presentations | All |  |
| Nov 10 | Student Presentations | All |  |
| Nov 15 | Student Presentations/Literature Discussion | All |  |
| Nov 17 | Higher trophic Levels Literature discussion | All |  |
| Nov 22 | Time Series and Global Surveys | Fuhrman/Moffett |  |
| Nov 29 | Satellite Oceanography | Moffett |  |
| Dec 1 | Special Topic | Fuhrman |  |

**Statement on Academic Conduct and Support Systems**

**Academic Conduct:**

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” [policy.usc.edu/scampus-part-b](https://policy.usc.edu/scampus-part-b/). Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, <https://ooc.usc.edu/research-compliance/scientific-integrity/>

**Support Systems:**

*Counseling and Mental Health - (213) 740-9355 – 24/7 on call*

[studenthealth.usc.edu/counseling](https://studenthealth.usc.edu/counseling/)

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

*National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call*

[suicidepreventionlifeline.org](http://www.suicidepreventionlifeline.org/)

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

*Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call*

[studenthealth.usc.edu/sexual-assault](https://studenthealth.usc.edu/sexual-assault/)

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

*Office of Equity and Diversity (OED) - (213) 740-5086 | Title IX – (213) 821-8298*

[equity.usc.edu](https://equity.usc.edu/), [titleix.usc.edu](http://titleix.usc.edu)

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

*Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298*

[usc-advocate.symplicity.com/care\_report](https://usc-advocate.symplicity.com/care_report/)

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity |Title IX for appropriate investigation, supportive measures, and response.

*The Office of Student Accessibility Services - (213) 740-0776* [*osasfrontdesk@usc.edu*](mailto:osasfrontdesk@usc.edu)

For all USC students requesting online/remote class accommodations due to the student’s medical-related reasons, the first step is to register with the Office of Student Accessibility Services (OSAS). OSAS will follow a standard review process in determining reasonable accommodations. OSAS follows a thorough review process to verify a student’s disability and to determine whether or not requests are considered “reasonable accommodations.” All requests and decisions should go through OSAS. For more information, please visit the [OSAS When & How to Register](https://osas.usc.edu/new-students/when-how-to-register/) webpage. Please know that accommodations are not guaranteed and determined on an individualized basis as it relates to the student’s disability. OSAS will work with the student and with the school/program as needed, to determine reasonable accommodations and to ensure they do not fundamentally alter the core nature of the course or program.

Note OSAS is unable to support students who have concerns for COVID risks related to their family members as our services are designated for USC students with disabilities. It is recommended that schools or programs determine appropriate options such as a leave/health leave and direct students to the USC [COVID Resource Center](https://coronavirus.usc.edu/) (COVID-19 hotline: [213-740-6291](tel:1-213-740-6291) Email: [covid19@usc.edu](mailto:covid19@usc.edu))

Please contact us with any questions at [osasfrontdesk@usc.edu](mailto:osasfrontdesk@usc.edu)

*USC Campus Support and Intervention - (213) 821-4710*

[campussupport.usc.edu](https://campussupport.usc.edu/)

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

*Diversity at USC - (213) 740-2101*

[diversity.usc.edu](https://diversity.usc.edu/)

Information on events, programs and training, the Provost’s Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

*USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call*

[dps.usc.edu](http://dps.usc.edu/), [emergency.usc.edu](http://emergency.usc.edu/)

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

*USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call*

[dps.usc.edu](http://dps.usc.edu/)

Non-emergency assistance or information.