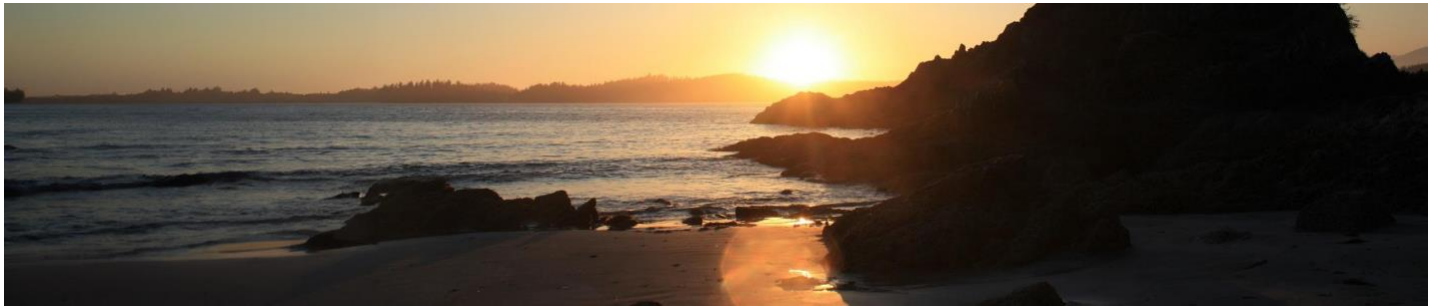




We acknowledge and respect the Lək̓ʷəŋən (Songhees and Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.

COURSE OUTLINE

BIOLOGICAL OCEANOGRAPHY

Lecture: DTB A104, Mon & Thu 1:00-2:20pm (in person)

CRN: 10340/11452 (lecture); 10341-10346/11453-11458 (lab)

PREREQUISITES: One of CHEM 101 or 150; CHEM 102; Two of MATH 100, 101, 102, 109, 151; One of PHYS 102, 102A & 102B, 110 & 111, 112, or 120 & 130. Minimum third-year standing.

CONTACT INFO:

Instructor:	Dr. Adrian Marchetti	amarchetti@uvic.ca
Office:	BWC A323	
Office Hours:	By appointment (in person or Zoom)	
Senior Lab Instructor:	Eva MacLennan	evamegan@uvic.ca
	BWC B111	
Teaching Assistants:	Tessa Rehill	tessarehill@uvic.ca
	Fleur Fenijn	ffenijn@uvic.ca
	Nicholas Ens	nens@uvic.ca
	Matt Miller	mattmiller@uvic.ca

COURSE DESCRIPTION

An introduction to the ways in which physical, chemical and biological processes interact to regulate structure and productivity of marine ecosystems. Lectures focus primarily on planktonic ecosystems. Participation in a one-day oceanographic cruise is required.

Biological oceanography is the study of marine organisms, their quantitative distributions in time and space and their interactions with each other and their ocean environment. The course is divided into four units. The first unit provides a brief history of biological oceanography and reviews the physical and chemical processes in the ocean that influence marine biota. In the second and third units we will explore the diversity of pelagic marine organisms, bioelemental cycling within these life forms and the factors that influence their abundance and distributions. In the last unit we will

learn about extreme ocean environments, natural cycles and human-induced impacts on the marine environment.

- Units:
1. Introduction and Overview
 2. Primary Production - Formation of organic matter
 3. Secondary Production and the Microbial Loop – Cycling of organic matter
 4. Extreme environments, natural cycles and human impacts
-

LEARNING OUTCOMES

You will understand and be able to explain the factors that drive variability in biological production in different regions of the ocean, and at different times of the year. You will also understand the distinguishing characteristics and ecological roles played by the “key players” in marine food webs.

After completing this course, you should be able to:

1. Define the major life forms in the ocean, describe the characteristics that differentiate these life forms and how these forms interact with each other.
 2. Explain how marine organisms influence the cycling of bioelements, particularly carbon.
 3. Define the environmental factors and processes that control the abundance and distributions of marine organisms in space and time on a variety of scales.
 4. Describe methodological approaches for evaluating the biomass, growth, and mortality of marine organisms, including their strengths and weaknesses.
 5. Explain how marine organisms have influenced the evolution of Earth and predict how ocean biota will be affected by future climate changes.
-

COURSE MATERIALS

Course Readings: There is no required textbook. I do recommend the following two books for additional reading to help assimilate the concepts covered in this course. These books are available as an eBook (Lalli and Parsons) or a physical copy at the library (Miller). See course reserves in Brightspace for more details.

1. Lalli, CM & TR Parsons (1997) Biological Oceanography, An Introduction, (Second Edition), Elsevier Butterworth-Heinemann Publishing
2. Miller, CB (2004) Biological Oceanography, Wiley Blackwell Publishing

Readings will also be assigned from the primary scientific literature and made available on Brightspace in advance. There are two categories of readings: a) required readings and b) recommended readings. Some of these readings will be discussed in class. You will be responsible for absorbing and comprehending the required readings for the problem sets and exams.

Lab Manual: Fall 2026 edition required.

Other materials: Lab coats, safety glasses, long pants, and close-toed shoes are required when specific chemical analyses are listed in the schedule. A limited number of lab coats and safety glasses are available to borrow in the lab if you do not have your own.

Class recordings: Classroom sessions in this course will be recorded to allow students who are ill to watch later. These recordings will be made available on a case-by-case basis during the term and to everyone just before exams. Students who have questions or concerns regarding class recording and privacy may contact privacyinfo@uvic.ca. Auto-

generated captioning is enabled for recordings in this course. Automated captioning is not 100% accurate, however, and may therefore include errors depending on the subject matter, speaker, audio quality, etc. If you find captioning that is offensive, please make your instructor aware.

BRIGHTSPACE

<https://bright.uvic.ca/> "Fall 2026 BIOL & EOS 311 A01 X"

EVALUATION

Marking Scheme: No supplemental examinations or additional course work for extra marks are offered in this course.

Classroom Component (55%):

In-class Discussion Participation (including Echo360)	10%
Problem Sets	15%
Midterm Exam (Oct. 26, in class)	15%
Final Course Exam (date TBA)	15%

Laboratory Component (45%):

Pre-lab Quizzes	10%
In-lab exercises	15%
Strickland Cruise Project	
<i>Pre-field trip Assignment</i>	5%
<i>Figures, Tables, and Captions</i>	3%
<i>Final Group Presentation</i>	12%

Final Course Mark

100%

Essential Course Requirements: *At minimum, you must complete the final exam and all three parts of the Strickland Cruise project to pass the course. Students must also achieve a passing grade ($\geq 50\%$) in both the lecture component and the laboratory component to pass the course. Students who do not complete at least these requirements will be assigned an N in the course and a maximum grade of 49%.*

COURSE POLICIES

Classroom: This course will be primarily taught in-person. Classroom sessions will typically consist of lectures combined with activities/exercises designed to promote a deeper understanding. Discussions and exercises will take place in small groups. Groups will occasionally be asked to present the conclusions of their discussions to the rest of the class. Class participation will be assessed through participation in polls and completion of small assignments in Echo360 and Brightspace. To facilitate small group work associated with problem sets and paper discussions (see below), we will meet in the Bob Wright Centre (BWC) during specific class times (see schedule below) and divide the class into three smaller classrooms. Further details will be provided in class.

Problem Sets and Paper Discussions: There will be three problem sets and three paper discussions throughout the semester. Problem sets will be made available on Brightspace one week in advance. During the problem set class times, you will be assigned to a small group to discuss the problems. The instructor and TAs will be present to answer any questions that come up. Although you will work in groups, problem sets should be submitted individually by the posted due dates in Brightspace. Similarly, for the paper discussions, the assigned reading and guidance questions will be provided in advance on Brightspace. During the paper discussion class times, you will be assigned into a group (approximately 15 students) to discuss the paper and respond to the questions. Paper discussions will be led by the instructor and TAs.

Laboratories: The laboratory component of this course will be devoted to our class project on Saanich Inlet. **In-person labs begin on Tuesday September 14th** and will be held in BWC B118 unless otherwise specified.

Most lab sections are full, so unless you have previous permission from Eva, you can only attend the section in which you are registered. Further information about laboratory policies and procedures can be found in the Lab Manual.

Field Trips: A series of one-day research cruises on UVic's research vessel, the *R/V John Strickland* are scheduled for **Oct. 2-4 and 8-11**. Each student is expected to participate for one day on the ship. Data collected will form the basis for subsequent laboratory analyses and assignments. More information on the *Strickland* trips and lab exercises will be provided in the lab manual and during lectures and labs. Lab assignments consist of a combination of in-lab assignments and a series of three longer assignments associated with the *Strickland* dataset. In-lab exercises are due at the end of the associated lab period.



Lab Manual: The printed lab manual contains the background and analytical procedures for successful completion of the pre-lab quizzes and lab activities. Instructions for Lab 1, the *Strickland* Cruise Report Assignments, and other materials will also be posted on Brightspace.

POLICY: LATE/MISSED ASSIGNMENTS OR EXAMINATIONS

All exams in BIOL/EOS 311 must be completed individually. Problem sets will be performed in groups although should be handed in individually.

If other commitments or circumstances arise that will prevent you from meeting a due date, contact the instructors at least 24 hours before the due date to discuss a possible accommodation. Otherwise, late work will be assessed a penalty of 10% per day unless illness or a personal/family crisis has interfered.

The only acceptable reasons to miss an exam are illness, injury, personal crisis, or sporting commitments as a UVic athlete. Depending on circumstances, we may ask you to provide supporting documentation (e.g., a note from an official UVic coach). Students who miss the Midterm Exam for legitimate reasons will have the Final Exam count for 30% of their final grade. Personal travel plans are not a valid reason for missing the Midterm or the Final Exam, even if the plans were made and tickets purchased for you by family members without your knowledge. The date for the BIOL/EOS 311 Final Exam will not be known until the final exam schedule is posted in late October. The last day for final exams this semester is December 23rd. You are safe to make travel arrangements for after that date. All requests for Deferred Status for the Final Exam must be made through the Office of the Registrar on a [Request for Academic Concession](#) form.

POLICY: ATTENDANCE

Unless ill, you are expected to attend all lectures in this course (and to receive your participation grade) and all of your laboratory sessions, unless you are unwell. While attendance is mandatory, the two lowest participation marks (assessed through Echo360) will be dropped for each student at the end of the semester to allow for unanticipated lecture absences due to injury, illness, personal crisis, or sporting commitments. Please do not contact us for make up points for missed lectures. If you need to miss a laboratory session, contact Eva (evamegan@uvic.ca) **as soon as possible** – preferably in advance, but no later than one week after the missed lab section. If you miss a lab exercise without contacting Eva, you will receive a zero on that exercise.

POLICY: ACADEMIC INTEGRITY

It is every student's responsibility to be aware of UVic's [Policy on Academic Integrity](#), including policies on **cheating, plagiarism, unauthorized use of an editor, multiple submission, and aiding others to cheat**.

Students found to be cheating will receive a zero for their assignment and may receive a failing grade for the course. See also the UVic Ombudsperson's [publication on plagiarism](#). You may be surprised to learn all of the actions that are considered plagiarism and cheating.

If you have any questions or doubts, talk to me, your course instructor. For more information, see also uvic.ca/learningandteaching/cac.

POLICY: USE OF AI

Please be advised that in this course you are not authorized to use any form of generative AI. In order to successfully complete course activities, generative AI is not required nor welcomed. Students should not make any use of generative AI tools such as ChatGPT, Grammarly, among others that use AI for content generation and editing. As UVic states in its Academic Integrity Policy "*Academic integrity requires commitment to the values of honesty, trust, fairness, respect, and responsibility.*" Therefore, we expect you to comply with the course syllabus and we encourage you to enhance your academic experience in this course by refraining from use generative AI.

COURSE FEEDBACK

We value your feedback on this course. Towards the end of term, as in all other courses at UVic, you will have the opportunity to complete an anonymous survey regarding your learning experience (CES). **The survey is vital for providing feedback** to us regarding the course and our teaching, as well as to help the department improve the overall program for students in the future. The survey is accessed online and can be done on your laptop, tablet, or mobile device. We will remind you and provide you with more detailed information nearer the time but please be thinking about this important activity during the course.

COURSE SCHEDULE

UVic Important Dates - uvic.ca/calendar/dates/

Last day to add courses: September 25th

Last day to drop a course without penalty of failure: October 31st

Date	Day	Lec#	Unit	Lecture Topic	Lab Topic
10-Sep	Th	1	1	Introduction and historical overview of biological oceanography	No labs
14-Sep	M	2	1	General principles and nomenclature	1- Introduction & Graphing
17-Sep	Th	3	1	The physical and chemical ocean environment	
21-Sep	M		1	Problem set 1 activity	2- Saanich Inlet & Project Proposals
24-Sep	Th		1	Paper discussion 1	
28-Sep	M	4	1	Ecological geography of the oceans (asynchronous lecture)	3- Strickland Intro & Cruise Prep
1-Oct	Th	5	2	Primary productivity (asynchronous lecture)	
5-Oct	M	6	2	Phytoplankton diversity	4- Strickland field trip
8-Oct	Th			No lecture - Field trip	
12-Oct	M			No lecture - Thanksgiving	5- Chlorophyll-a
15-Oct	Th	7	2	Phytoplankton ecology	
19-Oct	M		2	Problem set 2 activity	6- Silicic Acid & Zooplankton Biomass
22-Oct	Th		2	Paper discussion 2	
26-Oct	M			Midterm exam (in class)	7- Nitrate
29-Oct	Th			Bacterial production and ecology	
2-Nov	M	8	3	Zooplankton diversity and ecology	8- Zooplankton Abundance
5-Nov	Th	9	3	OceanECO (Guest lecture)	
9-Nov	M			No Lecture - Reading break	No labs
12-Nov	Th	10	3	Viruses and the microbial loop	
16-Nov	M	11	3	Biological carbon pump	9- Project Workshop 1
19-Nov	Th		3	Problem set 3 activity	
23-Nov	M		3	Paper discussion 3	10- Project Workshop 2
26-Nov	Th	12	4	Ocean fertilization	
30-Nov	M	13	4	Natural climate cycles	11- Presentations
3-Dec	Th	14	4	Climate change	
7-Dec	M			Final exam review	No labs
TBA				Final exam	

The above schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances. In the event of significant changes, a revised outline will be posted/circulated.

APPENDIX

SCHOOL OF EARTH AND OCEAN SCIENCES INFO

- SEOS Website: uvic.ca/seos
- SEOS Office: seos@uvic.ca
- SEOS Director: Dr. Roberta Hamme, seosdirector@uvic.ca
- SEOS Mental Health & Wellness Contact: Dr. Andy Fraass, andyfraass@uvic.ca
- SEOS Undergraduate Advisor: Dr. Lucinda Leonard, seosadvisor@uvic.ca
- SEOS Graduate Advisor: Dr. Stan Dosso, seosgradadvisor@uvic.ca
- Ocean Science Mentor: Dr. Jody Klymak, seosoceansci@uvic.ca
- Climate Science Advisor: Dr. Shannon Fargey, climateadvising@uvic.ca

UNIVERSITY STATEMENTS & POLICIES

- Academic Calendar: [Information for All Students](#)
- [Creating a respectful, inclusive, and productive learning environment](#)
- [Accommodation of Religious Observance](#)
- [Accommodation and Access for Students with Disabilities](#)
- [Student Conduct](#)
- [Non-academic Student Misconduct](#)
- [Accessibility](#)
- [Diversity / EDI](#)
- [Equity statement](#)
- [Sexualized Violence Prevention and Response](#)
- [Discrimination and Harassment Policy](#)
- [Graduate Supervision Policy](#)

UVIC GRADING SYSTEM

As per the Academic Calendar:

Passing Grades

Grade	Grade Point Value	Percentage*	Description	Achievement of Assignment Objectives
A+	9	90 - 100	Exceptional Work	Technically flawless and original work demonstrating insight, understanding and independent application or extension of course expectations; often publishable.
A	8	85 - 89	Outstanding Work	Demonstrates a very high level of integration of material demonstrating insight, understanding and independent application or extension of course expectations.
A-	7	80 - 84	Excellent Work	Represents a high level of integration, comprehensiveness and complexity, as well as mastery of relevant techniques/concepts.
B+	6	77 - 79	Very good work	Represents a satisfactory level of integration, comprehensiveness, and complexity; demonstrates a sound level of analysis with no major weaknesses.
B	5	73 - 76	Acceptable work that fulfills the expectations of the course	Represents a satisfactory level of integration of key concepts/procedures. However, comprehensiveness or technical skills may be lacking.

Grade	Grade Point Value	Percentage*	Description	Achievement of Assignment Objectives
B-	4	70 - 72	Unacceptable work revealing some deficiencies in knowledge, understanding or techniques	Represents an unacceptable level of integration, comprehensiveness and complexity. Mastery of some relevant techniques or concepts lacking. Every grade of 4.0 (B-) or lower in a course taken for credit in the Faculty of Graduate Studies must be reviewed by the supervisory committee of the student and a recommendation made to the Dean of Graduate Studies. Such students will not be allowed to register in the next session until approved to do so by the Dean.
C+	3	65 - 69		
C	2	60-64		
D	1	50-59		

Failing Grades

Grade	Grade Point Value	Percentage*	Description
F	0	0 - 49	Failing grade. Unsatisfactory performance. Wrote final examination and completed course requirements.
N	0	0 - 49	Did not write examination or otherwise complete course requirements by the end of term or session. This grade is intended to be final.

*The grading scale for the evaluation of course achievement at the University of Victoria is a percentage scale that translates to a 9-point GPA/letter grade system. The 9-point GPA system is the sole basis for the calculation of grade point averages and academic standing. Standardized percentage ranges have been established as the basis for the assignment of letter grades. The percentage grades are displayed on the official and administrative transcripts in order to provide fine grained course assessment which will be useful to students particularly in their application to graduate studies and for external scholarships and funding. Comparative grading information (average grade [mean] for the class), along with the number of students in the class, is displayed for each course section for which percentage grades are assigned.

STUDENT RESOURCES

POSITIVITY AND SAFETY

The University of Victoria is committed to promoting, providing, and protecting a positive and safe learning and working environment for all its members.

[Student Groups & Resources](#)

ACADEMIC RESOURCES

UVic Library - *UVic Library offers many services and resources for undergraduate and graduate students.*
uvic.ca/students/academics/library-services

Learning Resources - *UVic Learn Anywhere is the primary learning resource for students that offers many learning workshops and resources to help students with academics and learning strategies.*
onlineacademiccommunity.uvic.ca/uviclearn

Centre for Academic Communication - *Offers online and in-person one-on-one tutorials, workshops, and more.*
uvic.ca/learningandteaching/cac

Math & Stats Assistance Centre - *Offers drop-in, face-to-face tutoring and a friendly, collaborative study space for 100- and 200-level math and stats courses.*
uvic.ca/science/math-statistics/current-students/undergraduate/msac

MENTAL HEALTH & WELLNESS

A note to remind you to take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, getting enough sleep, and taking some time to relax. This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle. You are not alone.

SEOS Mental Health & Wellness Contact - Dr. Fraass is a faculty member who can act as a sympathetic ear and (more importantly) provide guidance about: how to access the multitude of University support services, and which are useful in different circumstances. Andy can be found by dropping by his office or lab (Bob Wright A431, B409). He is also available via email for questions or to arrange a time to have a chat. andyfraass@uvic.ca

Student Wellness Centre - Our team of practitioners offers a variety of services to support students' mental, physical, and spiritual health. uvic.ca/student-wellness

Counselling Services - Counselling Services can help you make the most of your university experience. They offer free professional, confidential, inclusive support to currently registered UVic students. uvic.ca/services/counselling/

Health Services - University Health Services (UHS) provides a full-service primary health clinic for students and coordinates healthy student and campus initiatives. uvic.ca/services/health/

ACCESSIBILITY

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a documented disability or health consideration that may require accommodations, please feel free to approach me and/or the Centre for Accessible Learning (CAL) as soon as possible.

Centre for Accessible Learning - The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course. uvic.ca/services/cal/

ADVISING

For academic advising-related questions, students in the School of Earth and Ocean Sciences are also encouraged to meet with the SEOS Undergraduate Advisor (seosadvisor@uvic.ca) as well as an academic advisor in the Academic Advising Centre early in their studies to help map out a plan to declare a major and complete university program requirements.

Academic Advising Centre - Academic advice and support is currently available by phone, email and virtual or in-person appointments. uvic.ca/services/advising

Ombudsperson - The ombuds office is an independent, impartial, and confidential resource for undergraduate and graduate students and other members of the University of Victoria community. The ombudsperson helps resolve student problems or disputes fairly. uvicombudsperson.ca

ACADEMIC CONCESSION

You can request an academic concession if your course requirements are affected by unexpected and unavoidable circumstances, or conflicting responsibilities. Please speak to an advisor at the Academic Advising Centre if you have questions on how requesting a concession will affect your academic program.

Undergraduate Academic Concessions uvic.ca/students/academics/academic-concessions-accommodations/request-for-academic-concession/index.php

EQUITY AND HUMAN RIGHTS AT UVIC

EQHR is a resource for students, staff, and faculty who have experienced sexualized violence, discrimination, and/or harassment and are looking for informal and/or formal resolution options as well as advice, coaching, and/or education. We are available for confidential consultations so that you can ask questions and learn your options.

EQHR – By email at eqhr01@uvic.ca or in-person (Sedgewick C115). uvic.ca/equity

Sexualized Violence Resource Office – *If you have been directly or indirectly impacted by sexualized violence, reach out to the SVRO for information, advice, resolution options (restorative and disciplinary) as well as support options and referrals. The SVRO is both survivor-centred and trauma-informed in their approach. You can reach us by phone at [250-721-8021](tel:250-721-8021) or by email at eqhr01@uvic.ca to book either an in-person (Sedgewick C119) or online appointment.* uvic.ca/svp

RESOURCES FOR INTERNATIONAL STUDENTS

International Centre for Students - *The primary office supporting international students on campus at the university-wide level.* uvic.ca/international-experiences

UVic Global Community Initiative - *Provides various supportive programming, including a Mentorship Program and Conversation Partner Program.* uvic.ca/international-experiences/get-involved/uvic-global-community

RESOURCES FOR INDIGENOUS STUDENTS

Indigenous Student Support - *UVic offers holistic services to Indigenous students throughout their academic journey.* uvic.ca/students/info-for/indigenous-students

Elders in Residence - *The Office of Indigenous Academic and Community Engagement (IACE) has the privilege of assembling a group of Elders from local communities to guide students, staff, faculty, and administration in Indigenous ways of knowing and being.* uvic.ca/services/indigenous/students/programming/elders