

UNIVERSITY OF VICTORIA
Department of Biology & School of Earth and Ocean Sciences

BIOLOGICAL OCEANOGRAPHY
BIOL 311 (CRN: 10390) / EOS 311 (CRN: 11507) Fall 2023

Course Outline

Lead Instructor: Roberta Hamme
Email: rhamme@uvic.ca
Office: Bob Wright Centre (BWC) A417
Telephone: 250-472-4014
Office Hours: Mondays and Thursdays that I teach 2:20-3:00pm
or by appointment (in-person or on Zoom)

Instructor: Shea Wyatt
Email: snwyatt@uvic.ca
Office: Bob Wright Center (BWC) A403
Office Hours: Mondays and Thursdays that I teach 2:30-3:00pm
or by appointment (Zoom)

Senior Lab Instructor: Casey Brant
Email: cbrant@uvic.ca
Office: Bob Wright Centre (BWC) B111

Teaching Assistants:

B01 Tues 2:30 pm & B05 Thurs 8:30 am : Olivia Melville (oliviamelville@uvic.ca)
B02 Weds 2:30 pm & B06 Fri 8:30 am Eva MacLennan (evamegan@uvic.ca)
B03 Thurs 2:30pm : Matt Miller (mattmiller@uvic.ca)
B04 Fri 2:30pm : Liam Hubbert (lhubbert@uvic.ca)

Lecture classroom: Clearihue (CLE) A127
Lecture times: Mon and Thu, 1:00-2:20 PM

Laboratory classroom: Bob Wright Centre (BWC) B118
Lab Manual: Fall 2023 edition required. Purchase from UVic bookstore
Other materials: Lab coats, safety glasses, long trousers, and closed shoes are required when specific chemical analyses are listed in the schedule.

Website: <https://bright.uvic.ca/> "Fall 2023 BIOL 311 A01 - EOS 311 A01 X"
Echo360: We will use Echo360 for polls in the large classroom. Click on the link through Brightspace AND download the Echo360 app to use your phone for polls.

Course Objectives: Despite their small biomass, marine phytoplankton are responsible for half of all photosynthesis on Earth and support rich, thriving ecological networks. In this course, we explore how marine phytoplankton, zooplankton, and bacteria interact with each other and their environment (the ocean's chemistry and physics). These interactions regulate the structure, function, and productivity of marine ecosystems. We will primarily investigate planktonic systems over annual cycles throughout the world's oceans.

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.

Inclusion and Accessibility: The University of Victoria is committed to creating a learning experience that is as accessible as possible. If you anticipate or experience any barriers to learning in this course, please discuss your concerns with us. If you have a disability, learning challenge, or chronic health condition, or think you may have one of these, we encourage you to meet with an advisor at the Centre for Accessible Learning (CAL) as early in the term as possible. You can find more information about CAL at <https://www.uvic.ca/accessible-learning/>.

Territory Acknowledgment: We acknowledge and respect the lək̓wəŋən peoples on whose traditional territory the university stands and the Songhees, Esquimalt, and W̱SÁNEĆ peoples whose historical relationships with the land continue to this day.

Illness: Please **DO NOT** attend any in-person activity (class, labs, or field trip) for any reason if you feel unwell (especially sore throat, runny nose, fever and/or chills, recent onset of coughing, or diarrhea) even if you have tested negative for COVID-19.

If you need to miss any in-person activity due to illness, inform as soon as possible the instructor for the day about classroom sessions missed and the Senior Lab Instructor (Casey) about lab or field activities. For classroom activities, you will be able to earn discussion participation marks by turning in written answers to the questions and you can receive an extension for Brightspace assessments. For labs, expect to complete an alternate assignment if you cannot participate in the scheduled lab activity. If you miss activities without contacting the instructors, you will receive zero for those activities (including labs).

Mental Health and Wellbeing: A note to remind you to take care of yourself. Diminished mental health can interfere with optimal academic performance. Do your best to engage in self-care and maintain a healthy lifestyle this term. 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.** The source of symptoms might be related to your course work; if so, please speak with us, your instructors. However, other parts of your life can also contribute to decreased academic performance. The [UVic Student Wellness Centre](#) provides cost-free and confidential mental health services to help you manage personal challenges that impact your emotional or academic well-being.

Class recordings: Classroom sessions in this course will be recorded to allow students who are ill to watch later. The microphones in our classroom pick up individual conversations around the room clearly unless many people are speaking at once. 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 only 70-90% accurate and will include errors depending on the subject matter, speaker, audio quality, etc. Words prone to error include specialized terminology and proper names. Please refer to the audio feed for clarification of errors. If you find captioning that is offensive, please make your instructor aware.

Course activities:

Classroom: This course will be primarily taught in-person, though we'll have two "classes" taught via recorded videos overlapping with our at-sea field work. Classroom sessions will typically consist of lectures combined with activities / exercises designed to promote a deeper understanding. There may be short, required readings posted in advance of each class, which will provide some important background information for the classroom discussion and exercises. Discussions and exercises will take place in small groups. Groups will be asked to present the conclusions of their discussions to the rest of the class. Unless ill, you should attend classroom activities to be successful in this course (and to receive your participation grade).

In addition to classroom exercises, online assessments will be posted on Brightspace as part of each module.

Laboratories: The laboratory component of this course will be devoted to our class project on Saanich Inlet. **In-person labs begin on Thursday September 7th** and will be held in Bob Wright Centre (BWC) B118 unless otherwise specified. We are starting early to accommodate our field trip schedule! You are expected to attend all of your laboratory sessions, unless you are unwell. If you need to miss a laboratory session, contact Casey (cbrant@uvic.ca) **as soon as possible** – preferably in advance, but no later than one week following the missed lab section. If you miss a laboratory exercise without contacting Casey, you will receive a zero on that exercise.

Most lab sections are full, so, unless you have previous permission from Casey, you may only attend the section in which you are officially registered.

Further information about laboratory policies and procedures can be found in the Lab Manual.

Field Trip: A series of one-day research cruises on UVic's research vessel, the *R/V John Strickland* is scheduled for **September 21 to October 1**. Each student is expected to participate for one day on the ship. Data collected on these trips 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 lecture and labs throughout the term.



Lab assignments consist of a combination of in-lab assignments and a series of three longer assignments associated with the dataset. In-lab exercises are due at the end of the lab period.

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

Readings: Short required readings will be posted in advance of some classes, to provide background information for the discussion and exercises that will take place in class. Otherwise, we are not using a textbook in this course in the usual way with readings assigned to each module. However, if you feel that a textbook is useful to you, we can suggest two that cover some of the same material as this course.

1) Biological Oceanography – An Introduction (2nd edition) by C.M. Lalli & T.R. Parsons (1997) Butterworth Heinemann. Freely available online through the UVic library:

<http://www.sciencedirect.com/science/book/9780750633840>.

2) Biological Oceanography” (2nd edition) by C.B. Miller and P. Wheeler (2012) Wiley-Blackwell.

Essential Course Requirements: At minimum, you must complete the final exam and all three parts of the Strickland Cruise Report to pass the course. Students must also achieve a passing grade ($\geq 50\%$) in each of 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%.

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

Classroom Component (60%):

In-class Discussion Participation (Echo360)	5%
Module Assessment Questions (Brightspace)	10%
Midterm Exam	18%
Final Course Exam	27%

Laboratory Component (40%):

In-lab exercises	20%
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Strickland Cruise Report Assignments

Introduction	3%
Figures, Tables, and Captions	3%
Final Report (Written Results and Discussion)	14%

Final Course Mark	100%
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Grading Scheme:

A+	90 – 100%	B+	77 – 79%	C+	65 – 69%	F	0 – 49%
A	85 – 89%	B	73 – 76%	C	60 – 64%	N	0 – 49%
A-	80 – 84%	B-	70 – 72%	D	50 – 59%		

F: Unsatisfactory performance, completed essential course requirements, no supplemental.

N: Did not complete essential course requirements by the end of term, no supplemental.

Final grades will be made available no sooner than one week after the Final Exam.

Late Policy: If other commitments will prevent you from meeting a due date, contact Roberta to discuss possible accommodation. Due dates for Brightspace assessments and for the components of the Strickland Cruise Report can be flexible, if you contact Roberta at least 24 hours before the due date and negotiate a new due date for yourself. Otherwise, **late work will be assessed a penalty of 10% per day** unless illness or a personal/family crisis has interfered.

Assessments and Exams: All module assessments, exams, and reports in BIOL/EOS 311 must be completed individually. You are not permitted to share your work with others. Assessments for each module will be posted on Brightspace preceding each module. The assessments count for 10% of your total grade and are weighted according to the proportion of the class material covered.

The only acceptable reasons to miss an exam are: illness, injury, personal crisis, or sporting commitments as a UVic athlete. In some circumstances, we will ask you to provide supporting written documentation (e.g., a note from an official UVic coach). Students who miss the Midterm Exam for legitimate reasons (i.e., excused as above) will have the Final Exam count for 45% of their final grade. 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 20 December. 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.

Academic regulations: Please refer to the [2023-09 UVic Calendar](#), particularly to the Undergraduate and Faculty of Science sections, regarding your rights and obligations. It is **YOUR** responsibility to attend to ADD/DROP dates published in the Calendar. Your instructors cannot drop you from a course that you do not attend. It is also **YOUR** responsibility to check your records and registration status.

Academic Integrity: Academic integrity requires commitment to the values of honesty, trust, fairness, respect, and responsibility. It is expected that students, faculty members, and staff at the University of Victoria, as members of an intellectual community, will adhere to these ethical values in all activities related to learning, teaching, research, and service. Any action that contravenes this standard, including inappropriate sharing of work, misrepresentation, falsification, or deception, undermines the intention and worth of scholarly work and violates the fundamental academic rights of members of our community. UVic has a policy on academic integrity that is designed to ensure that the university's standards are upheld in a fair and transparent fashion. Violations to the policy are considered serious offenses. See [UVic Policy on Academic Integrity](#) in the undergraduate calendar.

BIOL/EOS 311 Module Topics and Course Schedule

Date	Lecture Topics (CLE A127)	Instructor	Lab Topics (BWC B118)
Th - Sept 7	Introduction to the course & FIRST DAY OF LABS	Roberta	1 – Intro to Lab and Oceanographic Data
M - Sept 11	Productivity and Limiting Factors	Roberta	
Th - Sept 14	The Role of Light I	Shea	2 – Saanich Inlet Intro & Cruise Preparation
M - Sept 18	The Role of Light II	Shea	
Th - Sept 21	No Class	Roberta	3 – Strickland Cruises (21 Sept – 1 Oct)
M – Sept 25	Video Modules – Saanich Inlet & Nutrient Dynamics I		
Th – Sept 28			
M – Oct 2	No Class – Day for Truth and Reconciliation	--	4 – Chlorophyll Analysis & CTD data overview
Th – Oct 5	Saanich & Nutrient Dynamics II	Roberta	
M – Oct 9	No Class – Thanksgiving	--	5 – Silicic Acid Report Introduction Due Friday Oct 13 @ 4 pm
Th – Oct 12	Episodic Productivity I	Roberta	
F – Oct 13	--	--	
M – Oct 16	Episodic Productivity II	Roberta	6 – Phosphate Analysis & Zooplankton Biomass I
Th – Oct 19	Adaptations in Phytoplankton	Roberta	
Su – Oct 22	Midterm Exam Q&A Review Session 3-5 pm (Zoom)		
M – Oct 23	Midterm Exam	--	7 – Nitrate & Zooplankton Biomass II
Th – Oct 26	Grazing Pressures I	Roberta	
M – Oct 30	Grazing Pressures II	Roberta	8 – Zooplankton Abundance
Th – Nov 2	Grazing Pressures III	Roberta	
M – Nov 6	Nutrient Recycling I	Shea	9 – Ocean Data View and CTD Data
Th – Nov 9	Nutrient Recycling II	Shea	
M – Nov 13	No Class – Reading Break	Shea	No Labs – Reading Break
Th – Nov 16	Systems Without Blooms I	Shea	
F – Nov 17	--	--	Report Figures Due Friday Nov 17 @ 4 pm
M – Nov 20	Systems Without Blooms II	Shea	10 – Report Workshop I
Th – Nov 23	Deep Ecosystem Cycles I	Shea	
M – Nov 27	Deep Ecosystem Cycles II	Shea	11 – Report Workshop II
Th – Nov 30	The Changing Ocean I	Shea	
M – Dec 4	The Changing Ocean II	Shea	Saanich Inlet Report Due @ 4 pm