

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

Syllabus for BIOLOGICAL OCEANOGRAPHY

BIOL/EOS 311

Fall 2019 (201909) – A01

Course Instructor: Dr. John Dower
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Office Hours: by appointment

Laboratory Personnel:

Senior Laboratory Instructor: Dr. Karina Giesbrecht karinag@uvic.ca
Teaching Assistants: Matt Miller mattmiller@uvic.ca and Shea Wyatt snywatt@uvic.ca

Course Objectives: The objective of this course is to introduce the field of biological oceanography and explore how interactions between biology, chemistry and physics regulate the structure, function and productivity of marine ecosystems. Although we will consider a variety of marine ecosystems, we will focus primarily on planktonic systems.

Lectures: Mondays and Thursdays, 1:00 - 2:20 PM, MacLaurin Building D207

Optional textbook: “**Biological Oceanography - An Introduction**” (2nd edition) by Lalli & Parsons is freely available online through the UVic library:
<http://www.sciencedirect.com/science/book/9780750633840>.

Another valuable resource available (as a hardcopy) in the UVic library is: “Biological Oceanography” (2nd edition) by Miller and Wheeler.

Laboratories: Labs will be held in the Petch building (PCH) 107 (except when specified), and begin on Tuesday September 10th. All lab sections are full so you can only attend the section in which you are officially registered. There will also be a six-day research cruise on UVic’s research vessel, the RV *John Strickland* (**September 24-29**). Each student is required to participate in one full day of the cruise. 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 during lecture and labs throughout the term.

Lecture and laboratory materials: There is no formal lab manual or mandatory textbook. Lab handouts, lab report guidelines and lecture notes will be posted on CourseSpaces as required. It is your responsibility to check CourseSpaces regularly and before every lecture and lab.

The following site will also help in your research for course assignments:
<http://libguides.uvic.ca/BiologicalOceanography>

Marking Scheme:

<i>Lecture Component (60%):</i>	
Midterm Exam (Mon Oct 21)	20%
Final Exam (Date TBA)	40%
<i>Laboratory Component (40%):</i>	40%
See mark break-down in lab schedule	
Final Course Mark	100%

Students must achieve a passing grade ($\geq 50\%$) in BOTH the lecture component ($\geq 30/60$) and laboratory component ($\geq 20/40$) to pass the course.

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, wrote final exam and completed course requirements, no supplemental.

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

Freedom of information legislation allows the instructors to post full student numbers and grades, with names stripped out. Students have the right to refuse grade posting but must inform the instructor in writing at the beginning of the course. Final grades will be made available no sooner than one week after the Final Exam.

Examinations:

- Students must write the Midterm Exam. If you miss it for valid reason (personal illness, accident, family affliction or official sporting commitments as a UVic athlete), you must notify Dr. Dower as soon as possible and provide written documentation (note from a medical doctor, counselor, or UVic coach). If you are excused from the missed Midterm, your Final Exam will count for 60% of the final course mark. If you are not excused from the missed Midterm, you will receive a zero for the missed exam.
- Writing the Final Exam is mandatory. Although the Final Exam cannot be written early under any circumstances, it can be deferred in cases of illness, accident, family crisis, or official commitments as a UVic athlete. If you miss or expect to miss the Final Exam for any of these reasons, please notify Dr. Dower as soon as possible. When you are able to do so, you must then apply for academic concession using a *Request for Academic Concession* form that can be found on the Office of the Registrar's website.
- Travel plans are not a valid reason for missing exams or assignments, even if plans have been made and tickets purchased for you without your knowledge. In particular, the date for the Final Exam will not be known until at least mid-October. The last day for final exams this term is December 21st. You are safe to make travel arrangements for *after* that date.
- Students must obtain a passing grade in the laboratory component to be permitted to write the Final Exam.
- Both Midterm and Final Exams will contain a combination of definitions, plus short and longer (e.g. multi-part or essay) questions from lecture and lab material. The Final Exam will include all of the course material covered in lectures and laboratories since the beginning of the course.
- All course materials (*i.e.* instructor commentaries, class discussions and figures, posted notes, readings and lab materials) are fair game for Midterm and Final Exams. Consulting the optional textbook may help you to supplement the lecture material and provide you with additional insight and illustrations, and in-depth explanations.
- Students who require special arrangements for testing should contact the Centre for Accessible Learning (CAL) to register and request academic accommodations *at the beginning of the term (during the first two weeks of classes)*. <https://www.uvic.ca/services/cal/>
- No supplemental examinations or additional course work (for extra marks) are offered in this course.

Academic Regulations:

Please read the appropriate section of the 2019-2020 University of Victoria Undergraduate Calendar (<https://web.uvic.ca/calendar2019-09/undergrad/index.html>) particularly the General, Undergraduate and Faculty of Science sections, regarding your rights and obligations. It is the student's responsibility to attend to ADD/DROP dates listed at <https://web.uvic.ca/calendar2019-09/general/dates.html>. Students must not assume they will be dropped automatically from any course that they do not attend.

It is the students' responsibility to check their records and registration status (<http://www.uvic.ca/registrar/>). In addition, students need to check the Calendar course descriptions for all currently registered courses and transfer credit to check for duplicate or mutually exclusive (DUP or M/X) courses that would result in denial of course credit and/or influence eligibility for student loans.

Plagiarism and cheating are considered very serious offenses subject to disciplinary action. It is your responsibility to understand the University's policy on **academic integrity**. Please check the University's Policy on Academic Integrity in the Calendar and in other UVic sites:

<https://web.uvic.ca/calendar2019-09/undergrad/info/regulations/academic-integrity.html>

<https://www.uvic.ca/learningandteaching/students/index.php>

<http://library.uvic.ca/instruction/cite/plagiarism.html>

Academic integrity is intellectual honesty and responsibility for academic work that you submit individually or as group work. It involves commitment to the values of honesty, trust, and responsibility. It is expected that students will respect these ethical values in all activities related to learning, teaching, research, and service. Therefore, plagiarism and other acts against academic integrity are serious academic offences.

The responsibility of the institution: Instructors and academic units have the responsibility to ensure that standards of academic honesty are met. By doing so, the institution recognizes students for their hard work and assures them that other students do not have an unfair advantage through cheating on essays, exams, and projects.

The responsibility of the student: Plagiarism sometimes occurs due to a misunderstanding regarding the rules of academic integrity, but it is the responsibility of the student to know them. If you are unsure about the standards for citations or for referencing your sources, ask your senior lab instructor and/or the course instructor. Depending on the severity of the case, penalties include a warning, a failing grade for an assignment/exam, a failing grade for the course, a record on the student's transcript, or a suspension.

UVic is committed to promoting, providing and protecting a supportive and safe learning and working environment for all its members.

LECTURE SCHEDULE

Date	Day	Lecture Topics
Sep 05	Thu	Course Introduction
Sep 09	Mon	Intro to Biological Oceanography and the Abiotic Marine Environment
Sep 12	Thu	Key players in Marine Food Webs: Phytoplankton
Sep 16	Mon	Key players Marine Food Webs: Zooplankton
Sep 19	Thu	Oceanographic sampling methods
Sep 23	Mon	No lecture
Sep 24-29	Tue-Sun	STRICKLAND FIELD TRIPS – No lectures or labs
Sep 30	Mon	Oceanographic Data Analysis and Presentation
Oct 03	Thu	Intro to Marine Food Webs
Oct 07	Mon	Key players: Microbes, Viruses, and the Microbial Loop
Oct 10	Thu	Factors Regulating Primary Production – Light
Oct 14	Mon	Thanksgiving Day – No lecture
Oct 17	Thu	Factors Regulating Primary Production – Nutrients
Oct 21	Mon	MIDTERM EXAM
Oct 24	Thu	Factors Regulating Primary Production – Micronutrients and Grazing
Oct 28	Mon	Cabled Underwater Observatories: Ocean Networks Canada (ONC)
Oct 31	Thu	Plankton Blooms and Patterns of Global Primary Production
Nov 04	Mon	Regulation of Secondary Production in Marine Food Webs
Nov 07	Thu	Links to Higher Trophic Levels: Larval Fish and Fisheries Oceanography
Nov 11 – 13		Reading Break - No lectures or labs
Nov 14	Thu	Oceanography of Anoxic/Hypoxic Basins and Oxygen Minimum Zones
Nov 18	Mon	Upwelling Ecosystems
Nov 21	Thu	Ocean Acidification
Nov 25	Mon	Fisheries and the Ecosystem Effects of Overfishing
Nov 28	Thu	Atmosphere-Ocean Interactions and Effects on Marine Ecosystems
Dec 02	Mon	Review Session

LAB SCHEDULE

Week	Lab Topic	Assignment
Sep 3 – 6	No labs	
Sep 10 – 13	Lab 1: Marine Plankton: Diversity and Abundance; Intro to Zoop field gear	Brief graphing of zoop data - checked in class (1.5%)
Sep 17 – 20	Lab 2: Preparation for Strickland cruises / intro to study area (graphing past CTD data); Demo sampling gear (CTD/Niskin bottles)	Graphing CTD data from past cruise - checked in class (1.5%)
Sep 24 – Sep 29	Lab 3: Strickland Research Cruises (Tues – Sun)	
Oct 1 – 4	No labs this week	Annotated bibliography due Thurs Oct 4 (5%)
Oct 8 – 11	Lab 4: Analysis of Strickland Samples: Nutrient I	Nutrient data entry / quality check (2%)
Oct 15 – 18	Lab 5: Analysis of Strickland Samples: Nutrient II, Phytoplankton	Nutrient and Chl data entry / quality check (2%)
Oct 22 – 25	Lab 6: Analysis of Strickland Samples: Zooplankton	Zoop data + graph + compare samples (2%)
Oct 29 – Nov 1	Lab 7: ONC – buoy data graphing lab	Graphing ONC data and analysis questions (2%)
Nov 5 – 8	Lab 8: Saanich Abiotic Environment	Graphing / analysis questions (2% - participation mark ONLY)
Nov 12 – 15	No labs – reading break Nov 11 – 13	
Nov 19 – 22	Lab is open for working on Strickland project	
Nov 26 – 29	Lab is open for working on Strickland project	
Dec 3 – 6	No labs	Strickland project due Tuesday Dec 3 (22%)

INFORMATION ABOUT THE LABORATORY COMPONENT

All lab exercises will be posted on CourseSpaces prior to your lab session. We will assume you have read over each lab exercise, both the introduction and procedure sections, and any related material posted prior to the start of each lab. You are expected to bring a hardcopy of these lab exercises to your lab session.

Participation in one full-day oceanographic field trip is mandatory (no exceptions).

You are required to sign up for one full-day trip on the Strickland, which will take place during the week of September 24th (Tuesday) – September 29th (Sunday). You will be informed when sign up starts.

Lab Grading Summary: The lab portion of BIOL/EOS 311 is worth 40% of the final course grade. The grade will be calculated as follows:

Assignments	% of final course mark
7 In-Class Assignments	13%
2 Take-Home Assignments	
Annotated Bibliography	5%
Strickland Project Report – Graphs and Discussion	22%
TOTAL LAB	40%

Details and Deadlines: You are expected to complete all assignment in this course. However, the Strickland Project Report must be completed to get credit for this course. Failure to do so will result in a grade of N for the course.

Late assignments will be penalized by 10% per day, unless there is a valid excuse with appropriate documentation (please refer to 'Academic Concessions' in the UVic undergraduate calendar).

Assignments must be submitted as both hard copies and in electronic format. Hardcopies must be placed in the drop-box outside the SEOS Office (BWC A405) before 4 PM on the due date. Do not submit assignments to anyone else and do not slide them under our office doors. Electronic copies must be submitted to the assignment dropbox on CourseSpaces. Both hard and electronic copies must be identical and are both due by the specified deadline.

Laboratory Attendance

You are required to attend and participate in your weekly lab section.

You may only attend the section for which you are registered. If you miss a laboratory exercise or in-class assignment without providing a valid reason and proper documentation, you will receive zero on any assignment based on that exercise.

In case of illness or family crisis, you can be excused only if you have the proper documentation (e.g. doctor/counselor note). Absence due to commitments as a UVic athlete (during official varsity events) is acceptable assuming an original signed letter from your team's coach is provided in advance. Notes related to laboratory absences should be provided to the Senior Laboratory Instructor, Dr. Karina Giesbrecht.