

**Faculty of Science Course Syllabus – Draft January 2017****Department of Biology***BIOL 3664.03**Intertidal Ecology and Diversity**June 15-30, 2017*

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<b>Instructor:</b>	<i>Isabelle Aubé</i>	<i>isabelle.aube@dal.ca</i>	<i>LSC 2123</i>
<b>Lectures:</b>	<i>MTWRFSatSun 9:05-16:55 (full details in schedule)</i>		<i>LSC B4012</i>
<b>Laboratories:</b>	<i>MTWRFSatSun 9:05-16:55 (full details in schedule)</i>		<i>LSC B4012</i>
<b>Field Trips:</b>	<i>Overnight field trips on June 18-20 and on June 26-27; day trips on June 23 and Jun 24</i>		

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**Course Description***(from Dalhousie Calendar)*

Hands-on, intensive introduction to ecological research on rocky shores, tidal flats, and sandy beaches. Relevant ecological concepts, sampling techniques for flora and fauna, and statistical skills are learned. Field sampling on day and camping trips is followed by lab work (e.g., identification of seaweeds, invertebrates), statistical analysis, and report preparation.

NOTES: Offered in summer through **SEASIDE**. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

**Course Prerequisites**

Prerequisites: BIOL 2060.03 (or BIOA 3001.03), and STAT 1060.03 (or MATH 1060.03 or SCIE 15xx), and BIOL 2003.03

Cross-listings: ENVS 3664.03, MARI 3664.03

Exclusions: BIOL 3662.03, BIOL 3663.03

**Course Objectives/Learning Outcomes**

After successfully completing this course, the student will have the ability to:

- ✓ Understand ecological concepts that pertain to intertidal habitats found in Nova Scotia (rocky shores, tidal flats, salt marshes, sandy beaches).
- ✓ Design, setup, and collect data from field experiments specific to intertidal habitats
- ✓ Use sampling equipment and keep meticulous field notes.
- ✓ Troubleshoot all logistical aspects of field experiments, from start to finish.
- ✓ Use the statistical package Primer to analyze field data from 3 separate types of intertidal experiments.
- ✓ Write a technical report on the results of field experiments.

**Required Course Materials**

- No required textbook, online access codes, lab manual, clicker, or lab coat
- Course website: BIOL 3664 Intertidal Ecology and Diversity (Brightspace link at [dal.ca](http://dal.ca))
- Field books will be provided

**Course Assessment**

<b>Component</b>	<b>Weight (% of final grade)</b>	<b>Date</b>
<b>Quizzes</b>		
<i>Experimental Design Quiz</i>	<i>(15%)</i>	<i>Jun 17</i>
<i>HLC Intertidal Habitat and Experiment Quiz</i>	<i>(15%)</i>	<i>Jun 22</i>
<i>LP Intertidal Habitat and Experiment Quiz</i>	<i>(15%)</i>	<i>Jun 27</i>
<b>Assignments</b>		
<i>LP Results Section Assignment</i>	<i>(5%)</i>	<i>Jun 26</i>
<i>HLC Technical Report</i>	<i>(30%)</i>	<i>Jun 30</i>
<b>Other course requirements</b>		
<i>Field Book</i>	<i>(10%)</i>	<i>Jun 30</i>
<i>Participation Grade</i>	<i>(10%)</i>	<i>Jun 30</i>

**Conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale**

<b>A+</b> (90-100)	<b>B+</b> (77-79)	<b>C+</b> (65-69)	<b>D</b> (50-54)
<b>A</b> (85-89)	<b>B</b> (73-76)	<b>C</b> (60-64)	<b>F</b> (<50)
<b>A-</b> (80-84)	<b>B-</b> (70-72)	<b>C-</b> (55-59)	

**Course Policies**

*(modified from the BIOL 3623 Syllabus)*

- **Attendance is mandatory unless a VALID REASON is given. Attendance will be taken every day, and is part of the Participation Grade.**
- The instructor must be contacted by email ([Isabelle.aube@dal.ca](mailto:Isabelle.aube@dal.ca)) at the earliest possible time in the event of a missed lab.
- In the event of a school closure (sign up at <https://dalalert.dal.ca/>), the on-campus lab will be cancelled or rescheduled. More details will be provided on the BIOL 3664 Brightspace page. If labs are cancelled or rescheduled for other reasons, an announcement will be made on the BIOL 3664 Brightspace page.

**What to Expect (and what is expected of YOU) on Field Trips and during Labs:**

1. You are expected to attend all field trips and participate! It is not fair for 5 students to do all the work in the field and lab, and everyone else reap the benefits. Even though you will be working in groups, you are expected to participate fully. You will never be expected to do anything you are not comfortable with, nor if you think situations are too dangerous- there are lots of students for delegation.
2. Expect to get wet and muddy! We will be going on field trips to the intertidal zones- this means close to the ocean, this means lots of water... and because you will be doing lots of examinations in the field, lots of dirt (mud, salt water, sand, grass) to sit/kneel on. Don't wear your nicest clothes!
3. Be academically prepared for the field trips. We will go over each field trip in class, but make sure you read your field exercises ahead of time, so you know what you should be doing at what to expect. We will prepare all field guides and equipment the day before or the morning of the trip. It is your responsibility to bring writing equipment and your field exercises/books!
4. Bathrooms? Not all field trip locations will have them. DON'T avoid drinking so you won't have to go pee. It's very important to stay hydrated!
5. Be respectful and mature on field trips. Yes, it's important to have fun, but complete silliness will not be tolerated- you have work to do in the field! This goes for texting and cell phone use.
6. You will be sharing accommodations and meals during overnight trips; therefore, you are expected to help schedule and plan meals as well as cleanup duties.
7. During overnight trips, it is important to always let someone from the group know where you are at all times.

**What to Bring:**

Pay attention to the forecasted weather (of the place we are going!) and remember, we will be at the coast (they don't lie when they say "high of 25, except 14 along the coast" during weather forecasts).

**Field trips are rain or shine!** Extra items may be emphasized before the field trip, and the list will change based on location. Use common sense! Below is a list that may help you:

- appropriate footwear for walking and getting wet... -rubber boots... -rain pants or hip waders if you have them (we can supply some)
- jacket, layers of clothes, in case it starts off cool and gets really warm (and vice versa!)
- HAT!... -extra pair of socks, if you are wearing them
- sunscreen, bug spray, if desired
- energy-rich food, snacks and LOTS of water! (you will get hungrier than you think!) for day trips
- plastic bag for garbage and wet clothes... kleenex or baby wipes
- recommended: soapy facecloth in a Ziploc bag to wash your hands for day trips
- digital camera, cell phone... -pen, pencils, field book and field exercises, clipboard
- cash for pit-stops
- an ergonomic back pack to carry it in! We can drop our stuff when we work, but sometimes we will have a lot of hiking to get to where we need to go!
- sleeping bag, mat and pillow for overnight trips

**Course Schedule and Content (Tentative)**

Thursday Jun 15	<b>Introduction and Ecological Concepts Lecture(s)</b>	The purpose of these lectures is to introduce students to ecological concepts that pertain to intertidal habitats. Particular focus will be made on the variety of intertidal habitats found in Nova Scotia (rocky shores, tidal flats, salt marshes, sandy beaches).	9:05-11:55 13:05-16:55
Friday Jun 16	<b>Experimental Design Lecture(s) (Computer lab)</b>  <b>Harrison Lewis Centre (HLC) Experimental Design Lab</b>	In these lectures, students will cover a variety of classic experimental designs performed in intertidal habitats; how to design an experiment with proper controls and replicates; the types of data that can be collected; and how to design an experiment to satisfy statistical criteria. Students will be given an introduction to the statistical package Primer and practice using it.  After reviewing background information on the HLC, in groups, students will choose one of 3 intertidal habitats found around the HLC (rocky, sandy, or eelgrass beds) and design a short-term (24-48hrs) and week-long experiment for it. Within a limited budget and available field and lab equipment, students will have to determine all the details needed including all materials, setup, when and how to collect their data, potential troubleshooting issues, and how to resolve them, as well as how to breakdown the experiment at the end.	9:05-11:55 13:05-16:55
Saturday Jun 17	<b>Experimental Design Quiz (15%)</b>  <b>HLC Experimental Design Equipment Preparation Lab</b>	Students will be tested on their level of understanding of a properly designed field experiment, followed by a review, and final modifications to their experimental design if needed.  Students will gather, catalog, construct (if needed), prepare their field and lab equipment needed for their experiment. They will also have to determine the logistical components of bringing their equipment to the HLC. If needed, a trip to the local hardware store will be done during this lab.	9:05-11:55 13:05-16:55
Sunday Jun 18 to Tuesday Jun 20	<b>Overnight Field Trip to HLC</b>	Early departure in order to arrive with enough time to setup the experiments by low tide (09:00). Students will be required to help out with the setup and data collection of the other teams' experiments if needed. Students should be keeping good field notes during their stay. Accommodations and meals will be provided.	06:00 (?) departure on 18 <sup>th</sup> ; 17:00 (?) arrival on 20 <sup>th</sup>
Wednesday Jun 21	<b>Day Off</b>	(non-academic day)	

Thursday Jun 22	<b>HLC Intertidal Habitat and Experiment Quiz (15%)</b>  <b>Lower Prospect (LP) Experimental Design Lecture(s)</b>  <b>LP Experimental Design Lab</b>	<p>Students will be tested on the specific intertidal habitats found near the HLC as well as on all the experiments that were performed so far.</p> <p>In these lectures, students will be given background information on the intertidal habitat of LP to recreate 2 experiments that were done by past students.</p> <p>Students will determine the logistics of both LP experiments with proper controls and replicates; the types of data to be collected; and design the experiments to satisfy statistical criteria.</p>	9:05-11:55 13:05-16:55
Friday Jun 23 to Saturday Jun 24	<b>LP Day Trips</b>	<p>Final modifications, purchases, and gathering of all equipment for both LP experiments will be made prior to departure in the field.</p> <p>Depart in order to arrive with enough time to setup the experiments by low tide (13:20 on the 23<sup>rd</sup> and 14:20 on the 24<sup>th</sup>). Students will be required to help out with the setup, data collection and breakdown of the both experiments. Students should be keeping good field notes.</p> <p>Students will compile all data collected on a shared file and statistically analyze the 2 sets of data and hand in a completed Results Section due Jun 26, before departure to the HLC.</p>	9:05-16:55
Sunday Jun 25	<b>Day Off</b>	(non-academic day)	
Monday Jun 26 to Tuesday Jun 27	<b>LP Results Section Assignment Due (5%)</b>  <b>Overnight Field Trip to HLC</b>  <b>LP Intertidal Habitat and Experiment Quiz (15%)</b>	<p>Afternoon departure in order to arrive with enough time to setup and/or collect final HLC experimental data by low tide (16:05). Students will be required to help out with the setup and data collection of the other teams' experiments if needed. Students should be keeping good field notes during their stay. Accommodations and meals will be provided.</p> <p>In the morning of the 27<sup>th</sup>, at the HLC, students will be tested on the specific intertidal habitats found near LP as well as on the LP experiments.</p>	13:00 (?) departure on the 26 <sup>th</sup> ; 13:00 (?) arrival on the 27 <sup>th</sup>
Wednesday Jun 28 to Thursday Jun 30	<b>HLC Data Analysis, Research and Write-Up (Computer Lab)</b>  <b>Field Book Due (10%) &amp; HLC Technical Report Due (30%)</b>	<p>Students will compile the data from each HLC experiment in a shared file. Help sessions on the analysis and writing of a technical report will be provided in an open-lab concept throughout the day. Students will be working with their group's data but will submit their own individual HLC Technical Report and their Field Book for grading by June 30<sup>th</sup>.</p>	9:05-11:55 13:05-16:55

### **ACCOMMODATION POLICY FOR STUDENTS**

Students may request accommodation as a result of barriers related to disability, religious obligation, or any characteristic protected under Canadian Human Rights legislation. **Student Accommodation Policy:** [http://www.dal.ca/campus\\_life/student\\_services/academic-support/accessibility.html](http://www.dal.ca/campus_life/student_services/academic-support/accessibility.html)

Students who require accommodation for classroom participation or the writing of tests and exams should make their request to the **Advising and Access Services Centre (AASC)** prior to or at the outset of the regular academic year. More information and the **Request for Accommodation** form are available at [www.dal.ca/access](http://www.dal.ca/access).

### **ACADEMIC INTEGRITY**

Academic integrity, with its embodied values, is seen as a foundation of Dalhousie University. It is the responsibility of all students to be familiar with behaviours and practices associated with academic integrity. Instructors are required to forward any suspected cases of plagiarism or other forms of academic cheating to the Academic Integrity Officer for their Faculty.

**Policy on Intellectual Honesty and Faculty Discipline Process:**  
[https://www.dal.ca/dept/university\\_secretariat/academic-integrity.html](https://www.dal.ca/dept/university_secretariat/academic-integrity.html)

### **STUDENT CODE OF CONDUCT**

Dalhousie University has a student code of conduct, and it is expected that students will adhere to the code during their participation in lectures and other activities associated with this course.  
[http://www.dal.ca/dept/university\\_secretariat/policies/student-life/code-of-student-conduct.html](http://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html)

### **COPYRIGHT**

All members of the Dalhousie community are expected to comply with their obligations under Canadian copyright law. Dalhousie copyright policies and guidelines, including our Fair Dealing Guidelines, are available at <http://www.dal.ca/dept/copyrightoffice.html>.

**SERVICES AVAILABLE TO STUDENTS**

The following campus services are available to all Dalhousie students. Unless noted otherwise, the services are free.

<b>Service</b>	<b>Support Provided</b>	<b>Location</b>	<b>Contact</b>
<b>General Academic Advising</b>	Help with <ul style="list-style-type: none"> <li>- understanding degree requirements and academic regulations</li> <li>- choosing your major</li> <li>- achieving your educational or career goals</li> <li>- dealing with academic or other difficulties</li> </ul>	<b>Killam Library Ground floor Rm G28 Bissett Centre for Academic Success</b>	In person: Killam Library Rm G28 By appointment: <ul style="list-style-type: none"> <li>- e-mail: <a href="mailto:advising@dal.ca">advising@dal.ca</a></li> <li>- Phone: (902) 494-3077</li> <li>- Book online through MyDal</li> </ul>
<b>Dalhousie Libraries</b>	Help to find books and articles for assignments Help with citing sources in the text of your paper and preparation of bibliography	<b>Killam Library Ground floor</b>  Librarian offices	In person: Service Point (Ground floor) By appointment: Identify your subject librarian (URL below) and contact by email or phone to arrange a time: <a href="http://dal.beta.libguides.com/sb.php?subject_id=34328">http://dal.beta.libguides.com/sb.php?subject_id=34328</a>
<b>Studying for Success (SFS)</b>	Help to develop essential study skills through small group workshops or one-on-one coaching sessions  Match to a tutor for help in course-specific content (for a reasonable fee)	<b>Killam Library 3<sup>rd</sup> floor</b>  Coordinator Rm 3104  Study Coaches Rm 3103	To make an appointment: <ul style="list-style-type: none"> <li>- Visit main office (Killam Library main floor, Rm G28)</li> <li>- Call (902) 494-3077</li> <li>- e-mail Coordinator at: <a href="mailto:sfs@dal.ca">sfs@dal.ca</a> or</li> <li>- Drop in to see us during posted office hours</li> </ul> <b>All information can be found on our website: <a href="http://www.dal.ca/sfs">www.dal.ca/sfs</a></b>
<b>Writing Centre</b>	Meet with a tutor to discuss writing assignments (lab report, research paper, thesis, poster) <ul style="list-style-type: none"> <li>- Learn to integrate source material into your own work appropriately</li> <li>- Learn about disciplinary writing from a peer or staff member in your field</li> </ul>	<b>Killam Library Ground floor</b> Learning Commons & Rm G25	To make an appointment: <ul style="list-style-type: none"> <li>- Visit the Writing Centre in the Killam Learning Commons (Rm G40) and book an appointment</li> <li>- Call (902) 494-1963</li> <li>- e-mail <a href="mailto:writingcentre@dal.ca">writingcentre@dal.ca</a></li> <li>- Book online through MyDal</li> </ul> We are open six days a week <b>See our website: <a href="http://writingcentre.dal.ca">writingcentre.dal.ca</a></b>