DALHOUSIE UNIVERSITY

Faculty of Science Course Syllabus
Department of Biology
BIOL/MARI/ENVS 3623.03
Coastal Ecology
July 5-23, 2024

Instructor: **Dr. Jen Frail-Gauthier (she/her) jfrail@dal.ca 902-497-6372**

Jen's "Reachability" Disclaimer: How best to contact Jen during Coastal Ecology?? Email is fine for general questions, but due to the amount of contact time we have together, asking in-person is probably easiest! If it's a question that could benefit the entire class, our Slack page would be a great place to ask that question. If immediate concern (e.g., you missed the bus and will be a few minutes late for the field trip departure time) call or text me!

Lectures: 9:05 AM LSC 240 (full details in schedule and will be given on first day)

Laboratories: LSC 2102 (full details in schedule and will be given out on first day)

Field trips: July 8, 10, 11, 15, 16 (half day), 19 (full details in schedule and will be given out on the first day. Some days leave earlier than 9 AM.

Demonstrators: Monica Wright and Nicole Harrington

Dalhousie University is located in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq. We are all Treaty people.
We recognize that African Nova Scotians are a distinct people whose histories, legacies and contributions have enriched that part of Mi'kma'ki for over 400 years.

What does this mean for SEASIDE Coastal Ecology?
We are incredibly privileged to be learning on and from the land that was Traditional Mi'kmaq Territory. Although the Mi'kmaq signed Treaties with the British Colonists, they never gave up their land. We are guests and settlers on their land, and we need to learn and understand their past AND current struggles and experiences.

Coastal Ecology supports an **open**, **respectful**, and **safe** learning environment, for all students. We want you to feel like **you belong** and are welcome in this learning space. We understand that not all disabilities are visible. No matter how you gender identify, what your background is, and who you love, you belong.
We encourage diversity, equity, accessibility, respect, and inclusion and we will **not** tolerate hate, harassment, or discrimination.

Course Description
(from Dalhousie Calendar)
Hands-on study of the anthropogenic impacts on the structure and function of coastal ecosystems. Through field trips, laboratories and guest demonstrations, students examine ecosystem health, e.g. communities on rocky shores, salt marshes and sandy shores and learn basic experimental design, principles of environmental assessment and monitoring, and coastal habitat remediation.

Course Prerequisites
BIOL 2003.03 (Diversity of Life 1); BIOL 2060.03 (Ecology)

Overview
Coastal Ecology aims to provide students with field and laboratory experiences, including the geology, biology, ecology and conservation, of the sensitive coastal ecosystems in Nova Scotia. Nova Scotia is surrounded by the ocean (over 7 500 km of coastline!), and we will get to experience various coastal zones along the Atlantic Coast and the Bay of Fundy during this three-week course. Students will learn about the geological dynamics, ecology and biological interactions of the main coastal zones seen in Nova Scotia (rocky shores, sandy beaches, sand dunes, mudflats and salt marshes) through lectures and accompanying field trips. Physical and biotic factors will be examined and compared across various coastal zones, including the intertidal zonation, physical parameters, and biological interactions. Specifically, comparisons of pristine and impacted coastal areas will be done to examine the human impacts along our coasts. Day-long field trips will explore each of the main coastal zones, and short experiments and collections will be done in the field and during lab times. Additionally, through guest lectures and student-led seminars, students will explore the sensitivity of these coastal ecosystems and examine various human impacts on coastal zones in Nova Scotia and all over the world. We will also recognize, understand, and respect indigenous knowledge and traditional land-use issues in Nova Scotia, specific to coastal zones. Canada's Ocean Playground, here we come!

Course Objectives/Learning Outcomes
As described above, by the end of this course, students…

- ✓ … will gain skills to recognize the biology, ecology and geology of sandy shores, rocky shores, salt marshes and mudflats.
- ✓ … will be able to identify key flora and fauna of these ecosystems, and know which are indicative of 'pristine' versus human-impacted coastal areas.
- ✓ … will be able to effectively and efficiently work in the field (collecting samples, writing thorough field notes, following instructions and using scientific curiosity to explore key questions) in any and all environmental and weather conditions.
- ✓ … will be able to use scientific equipment in the lab and field and be able to effectively process samples in the lab and quantify animals and plants to explore key questions.
- ✓ … will be able to manage group work and work effectively with peers.
- ✓ … will be able to critical analyze and synthesize information in independent term projects on human impacts in the coastal zone (written paper and oral presentation).

- ✓ … will gain extensive information and external knowledge from a variety of invited guests from industry, government and research.
- ✓ … will recognize, understand, and respect indigenous and traditional knowledge and land-use issues in Nova Scotia.
- ✓ … will develop new time management tools to manage a variety of work tasks in a short period of time.
- ✓ … will have greatly enhanced their undergraduate learning experience through the SEASIDE program!

Course Materials

No extra course material needs to be purchased for this class. Field books will be provided. Course information will be available on the BrightSpace online learning classroom. Casual communication is through our Coastal 24 Slack channel, and students may need to download (free) apps for various activities in the course (e.g., Kahoot, iNaturalist).

Course Assessment

Participation: 10%

- Includes attendance (virtual and in-person), participation on field trips and during class discussions (especially during student seminars).

Quizzes and lecture content activities, and guest lecture reflections: 15%

- Based on lecture material; usually given same day (Kahoot "pop quizzes") or beginning of following lecture. Guest lecturer reflections will include any activities done with the guest lecturers, and questions submitted that you did (or would have) asked the guest. Active-learning lecture activities done in-class are also included here.

Field Book: 15%

- A good scientist needs good notes (thorough AND neat!). The field book is like your "lab book". Record ALL observations from the field, notes, and activities. We will go over a good "field book" during the first class. Drawings included! Every student must hand in their own field book. The field notebooks will be provided for you- they are made of "rain-writeable" paper, so they can still be used if they get damp and wet! Field books must be initialed by myself or one of the Demonstrators at the end of the field day.

Laboratory/Field Exercises: 25%

- Depending on the field trip, there will be short exercises to do in the field, and again once you are back in the lab. Some field trips may require data analysis and mini-field trip/lab reports will be written. The three lab assignments are **group assignments**. You will work in the lab with your field trip group (~4 students depending on class size) and work on questions and data analyses together.

Seminar Presentation: 10%

- (Individual assignment) Over 1/3 of your grade comes from your Human Impacts on the Coast seminar (paper and presentation), so most of your out-of-class energy will be focused on creating a way to "teach the class", and subsequent paper, on a topic of impacts in the coastal zone (list will be given out during the first class and you should choose your topic by the end of the first class- no duplicates!). "Presentations" (see details in Human Impacts

project guideline document) are to be approximately 6 minutes long, with questions from the class at the end.

Seminar Process "Paper": 25%

- (Individual Assignment) Includes 20% for the process paper and 5% for the seminar outline due at mid-week 1. At the end of week 2, you will submit a "check-in" progress of your process "paper." Full details in a separate document and on the first day of class.

What does Academic Integrity look like in Coastal Ecology? Individual work needs to be just that – individual, in your own words, and your own ideas. Proper citations to published work need to be included, if you are referring to work that is not your own thoughts and ideas. For the field and lab assignments, these are group assignments (submitted by one person, group members get the same grade). Therefore, collaboration is encouraged among group members for the lab assignments, and it is expected that all group members **contribute equally**. Please refer to the Academic Integrity statement at the end of the syllabus for University Policies and Guidelines.

Remember, we aim to have a lot of fun in this class, with an outgoing, relaxed atmosphere, but this is a third year Biology class, and you are expected to perform as you would in any upper-level class! I (and past students) HIGHLY recommend doing work early (seminar paper) to avoid last minute rush and stress! Take advantage of any early days and the first week, and the weekends.

Component	Weight (% of final grade)	Date
Tests *No formal exams in BIOL 3623*		
Assignments		
Field Book (Individual)	15%	Last Day – July 23
Quizzes, Guest Lecture Prep, Reflections	15%	All Course
Lab Assignments (3; Group)	25%	see schedule
Seminar Outline (Individual)	5%	Sun July 7 (12 noon)
Process "Paper" (Individual)	20%	Last Day – July 23
Process Paper Progress (Individual)	no grade	Sun July 14
"Oral Presentation" (Individual)	10%	July 22 and 23
Participation	10%	All Course

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

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

Course Policies

Attendance is mandatory unless a VALID REASON is given. Attendance will be taken every day, and is part of the Participation grade. If you get ill during the course, accommodation will be made to complete tasks/attend virtually as much as possible. Attendance (punctuality) and respect is especially important for our invited guest lectures during the course – these people are taking time out of their own schedules to visit YOU and give you the best multidisciplinary experience possible in Coastal Ecology. Guest lectures are instrumental to this course.

Assignments and Extensions

SEASIDE courses are fast paced, often with daily deadlines for various assignments and reflections. Life happens (after a hot day in the sun, you may fall asleep as soon as you get home!) and I understand that – if you need a "get out of jail free card" for a submission, please just ask Jen.

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 1 student to do all the work in the field and lab, and everyone else in the group 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 any and all **environmental conditions** (just hopefully not snow or hurricanes at this time of year). We will be going on field trips to the coastal zones- this means close to the ocean (could be much colder than expected!), 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, your clothes will probably get wet/muddy. Also remember to be sun-safe, even if foggy/cloudy. Biting insects are also to be expected, especially midges at Windsor and mosquitoes at Chezzetcook and inlets behind Conrad's Beach.

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 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 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.

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 prepare ahead of time:

-appropriate footwear for walking and getting wet… (and a pair to change into if they get wet)
-rubber boots, rain pants (for certain field trips – comfortable footwear more important)
-jacket, layers of clothes, in case it starts off cool and gets really warm (and vice versa!)
-HAT!
-extra socks, if you are wearing them
-spare clothes/swimwear and beach towel (if you want to get in the water)
-sunscreen, bug spray, if desired (Jen will always have extra)
-energy-rich food, snacks and LOTS of water! (you will get hungrier than you think!) (Jen will have extra water/Gatorade on the bus)
-plastic bag for garbage and wet clothes… kleenex or baby wipes
-recommended: soapy facecloth in a Ziploc bag to wash your hands
-digital camera, cell phone…
-pencils, field book (provided to you) and field exercises, clipboard
-medications as needed (allergy meds, prescriptions, pain killers…)
-cash/money for pit-stops (if desired)

And an ergonomic backpack 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! (i.e. Blue Beach, Kingsburg Beach). The bus also stays with us, so we can leave items on the bus.

Tentative Course Schedule

Guest lectures could change last min (which may affect normal lectures/labs). Field trips booked rain/shine.

Date	Activity	Extra Information
Fri July 5	Lectures: Introduction to the class, logistics, evaluations, field trips, etc. Introduction to Coastal Ecology- Setting the Scene	Sign up for Seminar topic! In-class Reflections/Kahoot Quizzes Introduce yourself on Slack! **Land Statement Reflection due**
Sat July 6 (the ONLY Saturday class)	Lectures AM: The Coastal Zones (ecology, biology, processes, etc). Lectures PM: Human Impacts in the Coastal Zone	In-class Reflections/Kahoot quizzes **Guest:** Dr. Grace Murphy, Healthy Oceans, DFO **(Reflection)** **Outline of Seminar paper and Annotated Bibliography due BEFORE Sunday July 7 at 12 noon**
Mon July 8	FIELD TRIP 1! Conrad's Beach and Rainbow Haven (Atlantic Shore sandy beaches and dunes)	Bus leaves at 9 AM
Tues July 9	Lectures AM: Geology of Nova Scotia Guest Lecture AM: Lachlan Riehl and Nikki-Marie Lloyd, The Confederacy of Mainland Mi'kmaq Lab PM: Sandy Beaches Lab	GUEST 10 AM: The Confederacy of Mainland Mi'kmaq (**Reflection due**) **Lecture Kahoot/Reflection activity**
Wed July 10	FIELD TRIP 2! Windsor Causeway (macrotidal, new salt marsh) and Blue Beach Fossil Museum	Bus leaves at 8 AM **Sandy Beaches Lab Assignment due**
Thurs July 11	FIELD TRIP 3! Chezzetcook Inlet, Eastern Shore (old Atlantic salt marsh, tidal inlets, mudflats) and Lawrencetown Beach (for Coastal Scenery Index)	Bus leaves at 730 AM
Fri July 12	Guest Lectures AM: Dr. Camilo Botero – Coastal Scenery Index Lab PM: Lab work for Salt Marshes	930 AM Dr. Camilo Botero (**Reflection**) **Salt Marsh Assignment due Sat July 13** **Progress of Process Paper Check-In due Sun July 14**
Mon July 15	FIELD TRIP 4! Cranberry Cove/Peggy's Cove ("pristine" rocky shore)	Bus leaves at 8:30 AM!
Tues July 16	AM FIELD TRIP 5 (part day)! Halifax Harbour (impacted rocky shore) Lectures PM: Guest Lectures TBA	Kahoot/Lecture activities **AM Walking Trip: Meet at Halifax Waterfront at 9:30 AM after getting field gear at Dal at 9 AM**
Wed July 17	Guest Lecture AM: Dr. Tyler Eddy Rocky shore lab day	9:30 AM Dr. Tyler Eddy, MPAs, MUN (**Reflection**)
Thurs July 18	Guest Lecture Day! Hunter Stevens & Madie Stewart – Canada Parks and Wilderness Society Megan Carver, Elliott Godfrey, Sarah Thompson – DFO Fisheries Officers Mimi O'Handley – Coastal Action, Ecology Action Centre Dr. Hannah Harrison – Marine Affairs – Right of Way	Reflections due for all! 10 AM – CPAWS 11:30 AM – DFO Fisheries Officers 2 PM – Ecology Action Centre 3:30 PM – NS Coasts: Right of Way
Fri July 19	FIELD TRIP 6! Sand Dollar Beach, Hirtle's Beach and Lunenburg (various coastal systems with visible coastal threats and impacts; Coastal Scenery)	Bus leaves at 800 AM SHARP **Rocky shore assignment due 11:59PM Sat July 20**
Mon July 22	Student "Seminars" (speaker order random)	Bring treats to class!
Tues July 23	Student "Seminars" (speaker order random)	Bring treats to class, and Potluck lunch! **Human Impacts Process 'papers' due** **Field Books due**

Faculty of Science Course Syllabus (Section B) **(revised April-2022)**

Summer 2023-24

BIOL/MARI/ENVS 3623.03 Coastal Ecology SEASIDE

University Policies and Statements

This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate

Academic Integrity

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity.

Information: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Accessibility

The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (Canada and Nova Scotia).

Information: https://www.dal.ca/campus_life/academic-support/accessibility.html

Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner—perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution.

Code: https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

Diversity and Inclusion – Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness

Statement: http://www.dal.ca/cultureofrespect.html

Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support. Visit or e-mail the Indigenous Student Centre (1321 Edward St) (elders@dal.ca).

Information: https://www.dal.ca/campus_life/communities/indigenous.html

Important Dates in the Academic Year (including add/drop dates)
https://academiccalendar.dal.ca/Catalog/ViewCatalog.aspx?pageid=viewcatalog&catalogid=117&chapterid=-1&topicgroupid=31821&loaduseredits=False

University Grading Practices

https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html

Faculty of Science Course Syllabus (Section C) **(revised April-2022)**

Summer 2023-24

BIOL/MARI/ENVS 3623 Coastal Ecology SEASIDE

Student Resources and Support

Advising

General Advising https://www.dal.ca/campus_life/academic-support/advising.html

Science Program Advisors: https://www.dal.ca/faculty/science/current-students/undergrad-students/degree-planning.html

Indigenous Student Centre: https://www.dal.ca/campus_life/communities/indigenous.html

Black Students Advising Centre: https://www.dal.ca/campus_life/communities/black-student-advising.html

International Centre: https://www.dal.ca/campus_life/international-centre/current-students.html

Academic supports

Library: https://libraries.dal.ca/

Writing Centre: https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html

Studying for Success: https://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html

Copyright Office: https://libraries.dal.ca/services/copyright-office.html

Fair Dealing Guidelines https://libraries.dal.ca/services/copyright-office/fair-dealing.html

Other supports and services

Student Health & Wellness Centre: https://www.dal.ca/campus_life/health-and-wellness.html

Student Advocacy: https://dsu.ca/dsas

Ombudsperson: https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html

Safety

Biosafety: https://www.dal.ca/dept/safety/programs-services/biosafety.html

Chemical Safety: https://www.dal.ca/dept/safety/programs-services/chemical-safety.html

Radiation Safety: https://www.dal.ca/dept/safety/programs-services/radiation-safety.html

Scent-Free Program: https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html

Dalhousie COVID-19 information and updates: https://www.dal.ca/covid-19-information-and-updates.html