

**Faculty of Science Course Syllabus  
Department of Biology  
BIOL/MARI 3221.03  
Diversity of Algae  
Fall 2021**

**Instructor(s):** Beverly Hymes (Beverly.Hymes@dal.ca); Dr. Herbert Vandermeulen

My name is Bev Hymes, I am the lead instructor for this course. I studied algal ultrastructure under Professors K. Cole (University of British Columbia) and T. Sawa (University of Toronto). Dr. Herb Vandermeulen (a retired macrophyte ecologist from the Bedford Institute of Oceanography) co-wrote many of the lectures with me. Some of our material was adapted from lectures developed by Drs. Ellen Kenchington and Bob DeWreede; we thank them for allowing us to incorporate some of their material. We may have guest lecturers as well.

**Course Demonstrator:**

Hi, my name is Mykola Prus. I am from the Ukraine and currently in the final year of the Marine Biology program. My interests include water quality, freshwater ecosystems, algae and microorganisms. I also love diving, camping and carving wood. You can contact me at mprus@Dal.ca and I will be happy to answer any questions.

**Course Dates:** September 7 - December 7, 2021

**Lectures:** Monday: LSC- Biol & Earth B2102: 11:35 AM - 12:25 PM

Wednesday: LSC- C334: 11:35AM - 12:25 PM

**Laboratories:** Monday: LSC- Biol & Earth B2102: 2:35 PM - 5:25 PM

**Tutorials:** Friday: LSC C234: 2:35 PM - 3:25 PM

**Field Trip:** Sunday Sept. 19 - 10:15AM - 6:00PM

**\*\*NOTE: Due to timing of field trip and school closures several tutorials will be class lectures\*\***

**Course delivery: In-person (If we need to go online recorded lectures from previous year will be available; asynchronous)**

**Course Description**

This is a taxonomic introduction to the major algal groups (macrophytic and microscopic). Basic taxonomic differences are covered, along with an introduction to macrophyte ecology, human uses and symbioses. Laboratory sessions focus on morphology and reproduction. You will learn to identify the major algal groups based upon recognition characteristics.

CREDIT HOURS: 3

### **Course Prerequisites**

BIOL 2004.03 or equivalent      CROSS-LISTING: MARI 3221.03

Course Exclusions: BIOL 3212.03, MARI 3212.03

### **Objectives**

After completing the course, students will have skills in the use of taxonomic keys and algal identification, and knowledge of the general biology of the main algal groups plus some aquatic macrophytes.

### **Course Materials**

The Brightspace system will be used to post lectures and lab outlines for the course – there is a links section as well. There is a text for this course, it is very useful but optional:

Graham, James, Wilcox, Lee W. and Graham, Linda E. 2009. ALGAE. 3<sup>rd</sup> ED.  
Prentice Hall, NJ. ISBN:0321559657. 720pp. Online only

In order to access to the **new 3<sup>rd</sup> edition** online go to:

<http://www.ljlmpress.com/algae.html>

Either a PayPal account or a credit card can be used (\$40 USD). Please note that Prof Wilcox has requested that “We realize that not all students will buy a book, as often seems be the case these days, and we’re not asking instructors to act as cops, of course, but if you’d be willing to suggest to students that they not share files, that would be much appreciated.”

There are two other books that are very useful field guides:

Sept, Duane J. 2008. A Photographic Guide to Seashore Life in the North Atlantic: Canada to Cape Cod. Princeton University Press, NJ. ISBN: 978-0-691-13319-5. 224 pp. Softcover.

Villalard -Bohnsack, Martine. 2003. Illustrated Key to the Seaweeds of New England. The Rhode Island Natural History Survey, Kingston, Rhode Island. ISBN: 1-887771-07-7. 149 pp. Softcover.

## Course Assessment

Mid-term lecture exam 20% (2:35PM Friday, October 15, 2021; 1 hour)

Final lecture exam 30% (TBA- exam period; 3 hours)

Lab mid-term exam 10% (2:35PM Monday, October 18, 2021; 3 hours )

Lab final exam 20% (2:35PM Monday, November 22, 2021; 3 hours)

Lab Project 20% (due Thursday, December 9, 2021 at 4:00PM) *mandatory*- you must hand this in to pass the course.

**NOTE: The field trip is mandatory.** Lab attendance is *mandatory* - you will lose 1 mark each time without a sufficient explanation. If you miss an exam you will be required to take a make-up exam. If you cannot be in the lab to complete your lab project an alternate assignment will be given (essay). A Student Declaration of Absence form (SDA) will be necessary for late or missed requirements.

## Course Policies:

To avoid any misunderstanding or confusion during the term, please note the following policies.

Special arrangements for examinations and assignments in the event of illness or other exceptional circumstances will be made at the discretion of the teaching staff. Alternate arrangements will be considered provided that:

- a student who misses class work (i.e. an exam or the deadline for submission of the project) notifies Beverly Hymes *no later than the day in question* and submits a Student Declaration of Absence (SDA) to Beverly Hymes by way of email. A maximum of two SDA may be used in this course throughout the term.

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

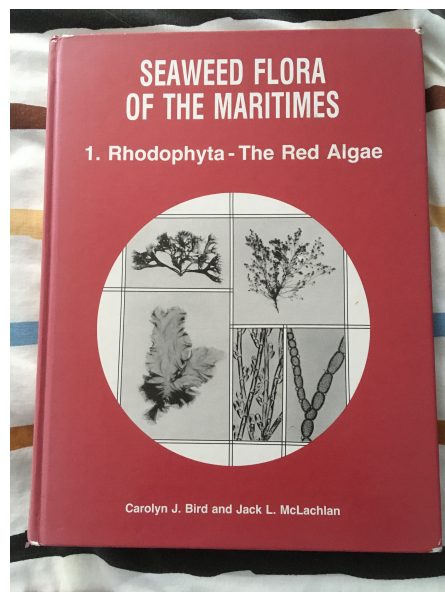
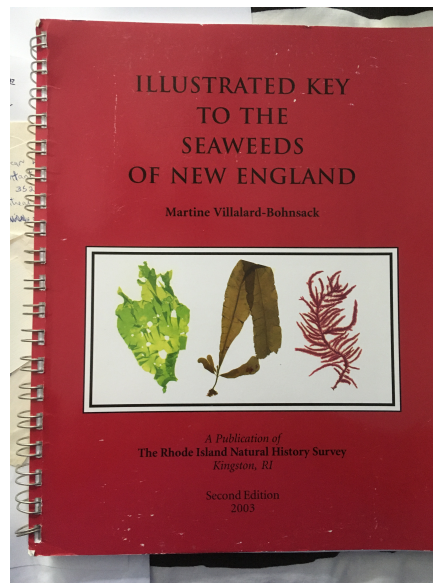
A+ (90-100)	B+ (77-79)	C+ (65-69)	D	(50-54)
A (85-89)	B (73-76)	C (60-64)	F	(<50)
A- (80-84)	B- (70-72)	C- (55-59)		

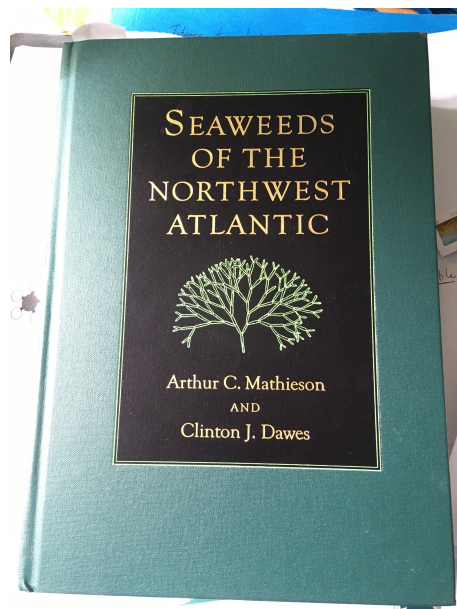
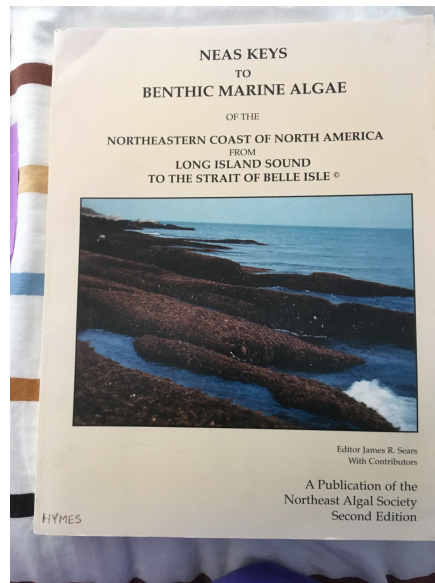
**Course Content by Module** (NB: some guest lectures may be given)

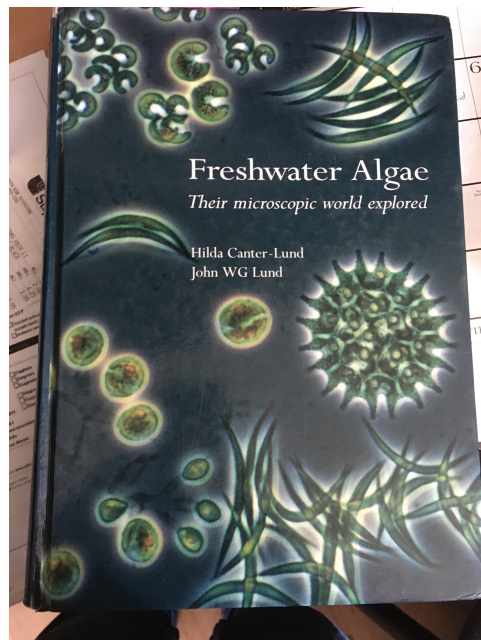
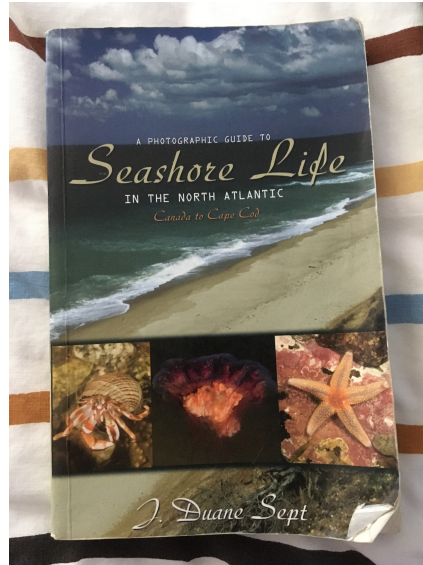
<b>Module</b>	<b>Content</b>
1	Lecture 1 - Classification & Phylogeny Lecture 2 - Morphology & Categories Lecture 3 - Cyanobacteria & Glaucophyta Lab 1 - Introduction Lab 2 - Cyanobacteria & Glaucophyta
2	Lecture 4 - Rhodophyta Lab 3 - Rhodophyta
3	Lecture 5 - Stramenopiles (part 1) Lab 4 - Stramenopiles 1
4	Lecture 6 - Chlorophyta (part 1) Lab 5 - Chlorophyta 1
5	Lecture 7 - Production & Dispersal Lecture 8 - Introduced Seaweeds Lecture 9 - Biogeography
6	Lecture 10 - Stramenopiles (part 2) Lecture 11 - Stramenopiles (part 3) Lab 6 - Stramenopiles 2
7	Lecture 12 - Euglenophyta Lecture 13 - Dinophyta Lecture 14 - Cryptophyta Lecture 15 - Haptophyta Lab 7 - Dinophyta, Cryptophyta, etc.
8	Lecture 16 - Chlorophyta (part 2) Lab 8 - Chlorophyta 2
9	Lecture 17 - Algal Symbiosis Lecture 18 - Non-seaweed Macrophytes
10	Lecture 19 - Commercial Algae Lecture 20 - Human Uses of Algae Lab 9 - Human Uses



Some of the taxonomic key books used in the lab:







## 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](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](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](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](mailto:elders@dal.ca)).

**Information:** [https://www.dal.ca/campus\\_life/communities/indigenous.html](https://www.dal.ca/campus_life/communities/indigenous.html)

### Important Dates in the Academic Year (including add/drop dates)

[https://www.dal.ca/academics/important\\_dates.html](https://www.dal.ca/academics/important_dates.html)

### University Grading Practices

[https://www.dal.ca/dept/university\\_secretariat/policies/academic/grading-practices-policy.html](https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html)

## Student Resources and Support

### Advising

**General Advising** [https://www.dal.ca/campus\\_life/academic-support/advising.html](https://www.dal.ca/campus_life/academic-support/advising.html)

**Science Program Advisors:** <https://www.dal.ca/faculty/science/current-students/academic-advising.html>

**Indigenous Student Centre:** [https://www.dal.ca/campus\\_life/communities/indigenous.html](https://www.dal.ca/campus_life/communities/indigenous.html)

**Black Students Advising Centre:** [https://www.dal.ca/campus\\_life/communities/black-student-advising.html](https://www.dal.ca/campus_life/communities/black-student-advising.html)

**International Centre:** [https://www.dal.ca/campus\\_life/international-centre/current-students.html](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](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](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/services-support/student-health-and-wellness.html](https://www.dal.ca/campus_life/health-and-wellness/services-support/student-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](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>