DALHOUSIE UNIVERSITY

Faculty of Science Course Syllabus
Department of Biology
Biol 2004
Diversity of Plants and Microorganisms
Winter 2022

2022 Instructional Plan

We will be following the guidance from Nova Scotia Public Health and Dalhousie University as we navigate this term. To start we will be holding remote- synchronous lectures through brightspace and asynchronous online labs through January 29th.

When in-person learning is approved, we will move to live, in- person lectures, and depending on the number of weeks left in the term, a revised plan for in person labs will be distributed.

All the material required for the laboratory assignments will be presented online.

We are currently planning the three major assessments, Test 1 on the Microorganism lecture material, Test 2 on the Plant lecture material, and the Lab Exam, on the plant lab material to be in person proctored exams.

Instructor(s):

Dr. Alastair Simpson (Microorganisms)

Alastair.Simpson@Dal.Ca LSC-Biology 5088

Office hours: Tues & Thurs 2:30-3:30, or by appointment

Dr. Arunika Gunawardena (Plants)

Arunika.Gunawardena@dal.ca LSC- Biology 6076 B,

Office hours: Tues & Thurs 2:30-3:30 or by appointment

Ms. Lara Gibson (Lab Instructor)

ldgibson@dal.ca LSC- Biology 5089

Office hours: By appointment

Available for academic advising for biology or marine biology majors or minors on Wednesday morning from 11:30-12:30.

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Course Description: Introduces the main domains of plant, fungal and microbial life, based on modern phylogenetic taxonomy. Examines the diversity, structure, physiology and ecology of non – animal life forms. Reviews the origins of the main lineages of living things - Archaea, Eubacteria and Eukaryota, as well as the main groups of eukaryotes

Course Prerequisites: A grade of C+ or higher in BIOL 1010.03 or (BIOL 1020.03, or BIOA 1002.03 or BIOL 1030.03) and BIOL 1011.03 or (BIOL 1021.03, BIOA 1003.03, or BIOL 1031.03); or SCIE 1505.18.

Lectures: Synchronous Lectures will occur on Tuesday & Thursday from 1:05- 2:25

Remote synchronous lectures Jan 5- Jan 27 at a minimum. These sessions will be held through Collaborate Ultra. To enter the lectures click on the links labeled Tuesday Lecture & Thursday Lecture on the main course page.

- Power Point files of the lectures will be posted before the scheduled lecture
- These lectures will be recorded and available, after the live lectures. It may take us up to 72 hours to post the captioned lectures.

Attendance at the remote synchronous lectures is recommended. If you miss a synchronous session due to technological malfunction, or other circumstances beyond your control, you will be able to view the recorded lecture.

Office hours will take place directly after lecture. To access the office hours, use the link on the main course page. The links will be named Tuesday Office Hours, and Thursday Office Hours. The link will lead you to a brightspace collaborate session. These are opportunities for you to ask questions and ensure that you have a correct understanding of the material.

In person lectures, (no earlier than Feb 1) will be held in Dunn room 117

- PowerPoint files of the lectures will be posted before the scheduled lecture
- There will be no recordings of these lectures.

Since we currently do not know what instructional mode will be after January 29th, the lecture and lab schedule is presented in three tables, Table 1, 2, & 3. Table 1 reflects the plan for Jan 5th – Jan 29th.

Table 2 is the schedule we will follow if we move to In-Person learning after Jan 29th. Table 3 is the schedule we will follow if we continue with remote learning. Table 3 will be revised as the balance between remote and in-person learning changes.

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Table 1: Schedule of Lecture date, topic and laboratory topic for Winter term 2022. Lecture topics may vary slightly by date but test dates are fixed.

Please Note: The Microorganism test will be held outside of class time on Friday March 4th, from 6-8 pm, in LSC C236 & C242. There will be a brightspace announcement regarding which room you will write in.

If you are ill for the test you must contact Lara or Alastair.

Week	Date	Topic
1	Jan. 6	Thursday Lecture**: Introduction to microorganisms: The prokaryote cell**
2	Jan 11	Tuesday Lecture: **The prokaryote cell continued** Lab: Lab Safety, Microscope Use, & Techniques to study Microorganisms – transfers, streak plates, & lawn plates.
	Jan 13	Thursday Lecture: **Metabolic diversity in prokaryotes**
3	Jan 17	Microorganisms Quiz 1 (2%)
	Jan 18	Tuesday Lecture: **Bacterial diversity 1** Lab: Bacterial Stains & Fungi
	Jan 20	Thursday Lecture: **Bacterial diversity 2**
4	Jan 24	Microorganism Quiz 2 (2%)
	Jan 25	Tuesday Lecture: **Bacterial diversity 3** Lab: Bacterial Unknowns
	Jan 27	Thursday Lecture: **Archaea**
5	Jan 31	Microorganism Quiz 3 (2%) Bacterial Unknowns Assignment Due (2%)

Sometime before this date the format for the remaining classes will be communicated to you. Most likely as a brightspace announcement. If possible, we will flip to an in-person instructional model and follow the schedule presented in Table 2.

If remote learning stays in place, we will follow the schedule in Table 3.

If a new date is set for in-person learning we communicate a new schedule through brightspace announcements.

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Table 2: Schedule of lecture dates, topics, and lab topic for **IN PERSON instructional model**. Lecture topics may vary slightly by date, but test dates are fixed.

Date		Lecture Topic	Laboratory Topic
Feb. 1 Feb. 3	8 9	Introduction to microbial eukaryotes (cells and evolution) Microbial eukaryotes diversity 1: Mostly microalgae	Micro Quiz 3 (online) Lab Techniques Practice Bacteriophage (1)
Feb. 8 Feb. 10	10 11	Microbial eukaryotes diversity 2: Mostly protozoa Fungi	Micro Quiz 4 (online) Lab Techniques Practice Bacteriophage (2)
Feb. 15 Feb. 17		Macroalgae Introduction to Plants	Protists, Cyanobacteria, & algae
Feb. 22 Feb. 24	12 13	**Study Break: No Class** **Study Break: No Class**	**No Labs**
March 1 March 3	14 15	Bryophytes (i) Bryophytes (ii), Seedless vascular plants (i)	Bryophytes
March 4		** Microorganism Test** Outside of class time: 6:00-8:00, LSC C240 and C242 There will be a brightspace announcement regarding which room you will write in	
March 8 March 10	16 17	Seedless vascular plants (ii) Gymnosperms (i)	Seedless Vascular Plants
March 15 March 17	18 19	Gymnosperms (ii) Angiosperms (i)	Gymnosperms
March 22 March 24	20 21	Angiosperms (ii) Diversity of flowering plants (i)	Angiosperms
March 29 March 31	22 23	Diversity of flowering plants (ii) Primary plant body: roots, leaves, stems	Plant Lab Exam
April 5	24	The private life of plants/ Programmed cell death in plants.	

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Table 3: Schedule of lecture dates, topics, and lab topics if we are mandated to continue with an **ONLINE instructional model**. Lecture topics may vary slightly by date, but dates are fixed. This plan is subject to change depending on when in person learning is permitted.

5	Jan 31	Microorganism Quiz 3 (2%)
		Bacterial Unknowns Assignment Due (2%)
	Feb 1	Tuesday Lecture: **Introduction to microbial eukaryotes (cells and evolution)**
		Lab: Bacteriophage
	Feb 3	Thursday Lecture: **Microbial eukaryotes diversity 1: Mostly microalgae**
6	Feb 7	Microorganism Quiz 4 (2%)
		Bacteriophage Assignment (2%)
	Feb 8	Tuesday Lecture: **Microbial eukaryotes diversity 2: Mostly protozoa**
		Lab: Protists, Cyanobacteria, & Algae
	Feb 10	Thursday Lecture **Fungi**
7	Feb 14	Microorganism Quiz 5 (2%)
	Feb 15	Tuesday Lecture: Macroalgae
	Feb 17	Thursday Lecture: Introduction to Plants
8	Feb 22	**Study Break**
	Feb 24	**Study Break**
9	Feb 28	Fungi Report Due (5%)
		Protist Assignment (3%)
	March 1	Tuesday Lecture: **Bryophytes (i)**
		Lab: Bryophytes
	March 3	Thursday Lecture: **Bryophytes (ii), Seedless vascular plants (i)**
	March 4	** Microorganism Test** Outside of class time: 6:00-8:00, LSC C240 and C242
		There will be a brightspace announcement regarding which room you will write in
10	March 7	Plant Natural History Page 1 (1%)
		Plant Quiz 1 (2%)
	March 8	Tuesday Lecture: **Seedless vascular plants (ii)**
		Lab: Seedless Vascular Plants
	March 10	Thursday Lecture: **Gymnosperms (i)**
11	March 14	Plant Natural History Page 2 (1%)
		Plant Quiz 2 (2%)
	March 15	Tuesday Lecture: **Gymnosperms (ii)**
		Lab: Gymnosperm
	March 17	Thursday Lecture: **Angiosperms (i)**
12	March 21	Plant Natural History Page 3 (1%)
		Plant Quiz 3 (2%)
	March 22	Tuesday Lecture: **Angiosperms (ii)**
		Lab: Angiosperms
	March 24	Thursday Lecture: **Diversity of flowering plants (i)**
13	March 28	Outside gymnosperm Quiz (2%)
		Plant Quiz 4 (2%)
	March 29	Tuesday Lecture: **Diversity of flowering plants (ii)**
	March 31	Thursday Lecture: **Primary plant body: roots, leaves, stems**
14	April 5	The private life of plants/ Programmed cell death in plants.
15	Exam	Plant Lab Exam: Scheduled by Registrars Office (9%)
	Period	Test 2, Plant Lecture Exam: Scheduled by Registrars Office. (28%)

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Laboratories:

With Remote Learning

The first 3 lab sessions will be delivered asynchronously. This material will be posted after lecture on Tuesdays.

Lab Quizzes will be available on Monday's for 24 hours and will be based on the previous week's material.

All assignments will be due on Monday's by 11:59pm. See Table 1

With In-Person Learning

Laboratory sessions occur weekly in rooms 5009 & 5012 of the biology tower. Laboratory sessions will not **start prior to February 1st**. You are expected to attend each lab session in your own lab period. If you know you are going to miss a session, please contact Lara Gibson prior to your regular date. The date and time of each lab are as follows:

Table 4: Laboratory sessions for Diversity of Plants and Microorganism by lab section, indicating time and teaching staff.

Lab Section	Room	Day and Time	TA
B01	5009	Monday 2:35 pm- 5:25 pm	Patrick
B02	5012	Monday 2:35 pm- 5:25 pm	Liz
B04	5012	Tuesday 10:05- 12:55	Alice
B05	5009	Tuesday 2:35- 5:25 pm	Sonja
B06	5012	Tuesday 2:35- 5:25 pm	Matt
B07	5009	Wednesday 2:35-5:25 pm	Lena
B08	5012	Wednesday 2:35 pm- 5:25 pm	Michaela
B09	5009	Thursday 2:35 pm- 5:25 pm	Julia
B10	5012	Thursday 2:35 pm- 5:25 pm	Zania

DALHOUSIE UNIVERSITY

COURSE ASSESSMENT:

There are both lecture and lab assessments in this class.

56% of your grade results from two lecture tests, one which covers the Microorganism material (March 4th 6:00-8:00 pm) and one which covers the Plant material (TBA: Scheduled by the Registrar during the regular exam period).

If you miss the test you must contact Lara or Alastair.

The labs are worth 44% of your overall mark and will be assessed through both practical skills and written work.

All course assessments, weights and due dates are presented in Table 5, on the following page.

Table 5: Assessment component, value and due dates.

Evaluation Component	**Weight (% of Final Grade)**	**Due Date**
Lecture Test 1 Based on Microorganism material	28	March 4th, 6-8 pm
Lecture Test 2 Based on Plant material	28	TBA: Scheduled by Registrar in exam period. April 8th-26th.
Microorganism Quizzes (online)	2/ Quiz **Total 8 marks**	Micro Quiz 1: January 17th Micro Quiz 2: January 24th Micro Quiz 3: January 31st Micro Quiz 4: February 7th
Bacterial Unknowns	2	January 31st
Bacteriophage Worksheet	2	Due date depends on instructional mode Online: Feb 7th In- Person: Feb 14th
Fungi Report	5	February 28th
Protist Assignment	3	February 28th
TBA: Dependent on Instructional Mode	2 marks	TBA: Dependent on Instructional Mode
Quizzes: In Lab	2/ quiz **Total of 6 marks**	Bryophyte Quiz: March 7th- 10th SVP Quiz: March 14th – 17th Inside Gymnosperm Quiz: March 21st - 24th
Quizzes: Online	2/ Quiz for a t **Total of 4 marks**	Outside Gymnosperms: Due by March 27th Angiosperm: Due by March 27th
Plant Natural History Page	1/ page **Total of 3 marks**	Page 1: March 7th Page 2: March 14th Page 3: March 21st
Plant Lab Exam	9.0	March 28th- 31st In Lab

DALHOUSIE UNIVERSITY

Quiz Structure:

The first four quizzes, and the outside gymnosperm quiz, will be presented online through brightspace quizzes. These will be based on microorganism material from both lecture and laboratory sessions/ documents.

The structure will be as follows:

- Consist of 10 (ten) questions. There will be 3-4 lecture questions and 6-7 lab questions per quiz. Lecture questions will only cover the material in the previous week's lectures; with the exception of the quiz on January 17th, which will cover the first three (3) lectures.
- You will only be able to move forward in the quiz
- You will be given 15 minutes to complete the quiz.
- You will be able to review the questions you got wrong, on Wednesday's from 12am to 11:59pm.

The goal with these quizzes is to encourage you to review the new course material on a weekly basis, and for you to see what material you understand and what material you should review prior to the final.

The plant quizzes, with the exception of the outside gymnosperm quiz, will be held at the start of lab.

Plant Lab Exam

A lab exam will be held in the week of March 28th – 31st. Students are expected to write their lab exam in their registered lab section.

The lab exam will be two hours in duration and will cover all plant lab material. No microorganism material will be on the test. The lab exam will be an untimed station exam, consisting of identification, definitions and short answer questions. Students are expected know and spell the names of the taxa covered in the labs.

DALHOUSIE UNIVERSITY

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)	

The common grade scale defines achievement of each grade level as follows:

A- to A+: "Considerable evidence of original thinking; demonstrated outstanding capacity to analyze and synthesize; outstanding grasp of subject matter; evidence of extensive knowledge base."

B- to B+: "Evidence of grasp of subject matter, some evidence of critical capacity and analytical ability; reasonable understanding of relevant issues; evidence of familiarity with the literature"

C- to C+: "Evidence of some understanding of the subject matter, ability to develop solutions to simple problems; benefitting from his/ her university experience"

WOW Factor: For each assignment in this course, submitting work which fulfills the requirements of the assignment will earn you a good grade. However, maximum points will only be awarded for exceptional work. Exceptional work can result from presentation, a creative approach, expansion of the content, or linkage of the content to other classes. In short there is no single definable factor that will make your work exceptional, instead it will reflect the criteria outlined in the A- to A+ definition.

When thinking about the 'WOW factor', consider the community you are training to be a part of, ie. a biological scientist. This community values characteristics such as building on the work of others, good experimental design, creativity, clear data presentation and analysis, excellent descriptions, thoughtful observations, and a wide variety of other skills. How have you emulated these skills in your work?

Note: As the Dalhousie common grade scale specifies grades as a whole number, we will consider the first decimal place when assigning grades and use standard rounding rules.

DALHOUSIE UNIVERSITY

Course Materials

Required:

1. Slonczewski & Foster. 2017. Microbiology An Evolving Science. 6th edition. W.W. Norton & Company. Available electronically. You will purchase the book through the bookstore and access the book through the Willow platform on Brightspace.
2. Raven, Evert & Eichhorn. 2013. Raven Biology of Plants. Available electronically. You will purchase the book through the bookstore and access the book through the Willow platform on Brightspace.
3. For In-Person labs, a lab coat is required. Dalhousie university policy states that all students will wear a lab coat when attending a laboratory session with potential hazards. Lab coats can be transported to and from lab in a plastic bag.
4. Supplementary course notes: There are supplementary course notes for parts of the microorganisms section. These will be made available to you on brightspace.

<u>On course reserve</u> at the Killiam Library:

The following items will be placed on course reserve:

- Two copies of Microbiology, An Evolving Science. 4th ed. One on 2 hr loan, one on 24 hr loan.
- One copies of Microbiology, An Evolving Science. 3rd ed. On 24hr loan
- One copy of Raven Biology of Plants. 8th Ed. 2 hr loan.
- One copy of Introduction to Botany. 24 hr loan.

WEB SITES: The course maintains a brightspace page.

You can access this from the main Dalhousie page by clicking on the brightspace link on the upper right page banner. Once you log in you should be able to see links for any of your classes that have brightspace pages.

The class maintains a class twitter feed @DalBiodiversity. You are not obliged to sign up to twitter or follow this feed. However this feed is for you if want articles on biodiversity, animals, plants, and the occasional picture. As a general rule we will not follow student accounts (we're sure there are things you want to tell your friends and not us).

The Dalhousie University Science Librarian, Michelle Paon, has put together a subject guide for biology. On this page you will find links to the key databases, relevant books, writing guides, and other useful research tools. You can find the subject guide here: http://dal.ca.libguides.com/content.php?pid=453&hs=a, and as a link on the OWL page.

DALHOUSIE UNIVERSITY

Course Policies

1) Lecture Recordings: It is not permissible to make video or audio recordings of the lectures. The PowerPoint slides of the lectures will be made available to you.

2) Absences:

This class does not accept Student Declaration of Absence forms.

It is possible that at some point during the term you will have to miss some instructional time due to illness or other exceptional circumstances. It is your responsibility to contact us as soon as you know you will miss a lab or test.

For labs, the ideal situation would be to cover the material at a later lab session. However, it will not always be possible to accommodate requests to attend an alternate lab. The appropriate accommodation will be decided on a case by case basis. In all cases you are responsible for the missed material.

If you attend another lab section your assignment due date does not change.

Make-up examinations will be scheduled to accommodate students who miss an exam through illness and other legitimate reasons.

If you know of your absence prior to the exam or are ill on the day of the exam please contact Lara or the appropriate lecture.

3) Assignments: All work submitted for credit must be completed independently, unless designated as a group project. Group work should be peer-reviewed prior to submission and all members of the group will be assigned the same grade.

4) Late Assignments: Please consult table 3 for the due dates for each assignments. Assignments turned in shortly after the due date will not be considered lab. If you need an extension, please contact Lara. Very late assignments will be penalized at 10% per day.

5) Referencing & Photo Credits: In your work, ANY and ALL statements that were not empirically derived for yourself as part of an experiment or study, for that assignment, must be credited to a source. When crediting other people's work please use the Name-Date system of the Council for Science Editors (CSE) style. There is a link to the style guide on brightspace.

All sources should be collected into a list at the end of your work and presented in CSE style. Your source list should be in alphabetical order.

DALHOUSIE UNIVERSITY

Referencing & Photo Credits (Con't):

A skill you should be cultivating throughout your academic career is to determine the credibility of your sources. The peer review process, where the methodology, results and broader context of an experiment are written up and submitted to other researchers in the same field of study are the most credible forms published work. Books and documentaries often draw their evidence from the peer-reviewed literature and as such would be considered credible sources. New articles may or may not be based on peer-reviewed sources and so have varying degrees of credibility. Web sources can be very confusing, some are based on the peer reviewed literature, some are based on people's unsupported opinion or current working theories.

There is a credible checklist flowchart to help you determine the credibility of web sources. A PDF copy of the flowchart document is located brightspace, under the lab folder. The flow chart was developed based on the criteria outlined by Dalhousie University Librarians.

Please use the flowchart in conjunction with the following table (This will also be posted on OWL as a word document). As you move through the flowchart add "+" or "-" to your table. As you increase the number of "-" signs the credibility of your site decreases. After you have gone through all criteria you can determine if you site is credible, less credible or not credible.

Table 6 Summary of online source credibility

Web Site	1. Authority	2. Purpose/ Objectivity	3. Currency	4. Accuracy	Overall
1.					
2.					

If you are using websites as a references, please include the table as an appendix to your report.

Photos: Not all photos presented on the internet are available for use. Some were developed for specific companies or sites and require permission or payments for use. However, if you look around you can often find photos that are published with creative commons or educational use licenses. A good source for useable photos is http://commons.wikimedia.org/wiki/Main_Page

If it unclear under which type of license the photo was posted, you must contact the creator of work to ask permission to use it for your project.

When you present a photo you should place the name of the photographer and the license under which the photo is being used beside the photo. The full reference for where the photo was taken from should be included in your reference list.

DALHOUSIE UNIVERSITY

Referencing & Photo Credits (Con't):

For example if you wanted to use this photo of *Marchantia polymorpha*, you would place the name of the photographer and the licence you are using the photo under either underneath or beside the photo. Then in your reference list you would include the full web reference.

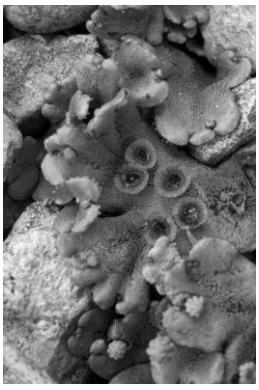

Figure 2: *Marchantia polymorpha*. Photo taken by Ryan Hodnett CC BY-SA 4.0

If you use photos/ video in your work, you must 1) ensure the photo is licensed under a creative commons, public domain, or educational use license, and 2) on or near the photo indicate who the photographer is and the type of license it is used under.

DALHOUSIE UNIVERSITY

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://www.dal.ca/academics/important_dates.html

University Grading Practices

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

DALHOUSIE UNIVERSITY

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/academic-advising.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/services-support/student-health-and-wellness.html

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

Dalhousie Student Union Food Bank: Food Bank — Dalhousie Student Union (dsu.ca)

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