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# Faculty of Science Course Syllabus

## Department of Biology

### BIOL 2060 - Introductory Ecology

#### Fall 2024

*The BIOL 2060 Teaching Team would like to acknowledge that Dalhousie University is on Traditional Mi'kmaq Territory. We have worked to integrate indigenous perspectives and ways of knowing into the lab component of the course to show our respect and reverence for the land and the cultures of the first peoples. 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 ([elders@dal.ca](mailto:elders@dal.ca)). [https://www.dal.ca/campus\\_life/communities/indigenous.html](https://www.dal.ca/campus_life/communities/indigenous.html)*

**Lecturer:** Rajesh Rajaselvam (he/him); [Rajesh.Rajaselvam@dal.ca](mailto:Rajesh.Rajaselvam@dal.ca); Office Hrs (LSC 7130): Tue/Wed 14:30-16:00 & Thu by appointment.

**Coordinator & Lab Instructor:** Allison Schmidt (she/her); [Allison.Schmidt@dal.ca](mailto:Allison.Schmidt@dal.ca); Office Hrs: By appointment.

**Lectures:** 35 in-person 50-min lectures (see schedule for details). In the event of a lockdown (hopefully unlikely); lectures will be held **synchronously** via Collaborate Ultra on Brightspace and **will NOT be recorded**; therefore, it is very important that you attend these in-person/live online. Additionally, for admin purposes attendance will be recorded during all lectures. You will be provided with detailed PowerPoint Lecture notes and a Collaborate link for each lecture 24 hrs in advance.

**Laboratories:** Eleven 2-hr weekly labs, with some labs spanning multiple weeks. If lockdown occurs; labs will follow the same schedule and in-person sessions will instead be held **synchronously for each lab section via MS Teams and will NOT be recorded**; therefore, it is very important that you attend these sessions in-person/live online.

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## Course Description

Ecology examines interactions of plants and animals, including humans, with each other and with their non-living world. Topics include population growth, competition, predation, food webs, metapopulation dynamics, biodiversity and ecosystem function. The course has a quantitative approach providing a foundation for further work in ecology, marine biology and environmental science.

## Course Prerequisites

A grade of C+ or higher in BIOL 1011.03, BIOL 1021.03, BIOA 1003.03, ENVS 1000.06, BIOL 1030.03, or (SCIE 1505.18) AND A grade of D or higher in MATH/STAT 1060.03 or MATH/STAT 2080.03.

## Course Exclusion

BIOA 3001.03

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### Course Materials

1. Molles MC, Laursen A. 2020. Ecology: concepts and applications. 5th Canadian Edition. Toronto: McGraw-Hill. 654p
  - a. Paper copy can be purchased at bookstore
  - b. Can purchase e-book via through the link in the Brightspace Orientation unit or the bookstore (in-person or online – will need you receipt to activate access through the Brightspace link).
2. Course Brightspace page (<https://dal.brightspace.com/d2l/login>)
3. Lab manual (free, included in course Brightspace page)
4. Up to date versions of MS Excel and Teams (free download here: <https://libraries.dal.ca/help/software-downloads.html>)

### Assumed Knowledge and Skills before taking BIOL 2060

Before starting the course, you should be able to:

- **Recall** 1) exponential and logistic models describe unlimited and resource-limited population growth; 2) evolutionary trade-off underlie differences in life history strategies; and 3) basic chemistry concepts (balancing equations, molecules)
- **Distinguish** among biological interactions (predation, competition, mutualism, symbiosis, parasitism)
- **Describe** human impacts on the nitrogen cycle
- **Interpret** 1) the results of a simple field or laboratory experiment and 2) simple graphs (e.g., histograms, x versus y plots) of ecological data
- **Know** how to calculate summary statistics (mean, sample size, variance, standard deviation)
- **Familiarity** with regression analysis and t-tests

**Note:** If you are unsure about any of these, you should review them in your first-year biology, chemistry and statistics textbooks before the class begins.

### Learning Objectives -- Expected Knowledge and Skills after taking BIOL 2060

Once you have completed the class you should be able to:

- **Describe** 1) major drivers of and differences among terrestrial, marine and freshwater biomes; 2) how abiotic factors influence the distribution and abundance of organisms; 3) the mechanisms that drive primary and secondary succession; and 4) the effects of disturbance on species diversity.
- **Understand** the fundamentals of disease dynamics and transmission.
- **Interpret** 1) the evolution of animal behaviour and life history in light of natural selection and inclusive fitness and 2) food-web diagrams in terms of indirect interactions including trophic cascades.
- **Explain** 1) the concept of a fundamental and realized ecological niche; 2) top-down and bottom-up control of primary productivity and 3) the major gradients of species diversity in terrestrial and marine ecosystems.
- **Use** the BIDE (births, deaths, immigration, emigration), exponential and logistic population growth models to make predictions.
- **Manipulate and interpret** results of the Lotka-Volterra competition and predator-prey models.
- **Predict** the impacts of human activities (e.g. climate change, nutrient loading) using knowledge of the major biogeochemical cycles on the planet (e.g. water, carbon, nitrogen, phosphorus).
- **Design** a laboratory or field study using appropriate experimental design principles.
- **Generate** appropriate tables and graphs to represent ecological data.
- **Read** and interpret a scientific paper describing a straightforward experimental or observational study.
- **Conduct** statistical analyses (regression, t-test) on ecological data.
- **Communicate** research results in the style of a scientific paper and conference style presentation.

## Course Assessment

To get a passing final grade in BIOL 2060 you meet all 3 criteria:

- 1) **must get 45% or better** on your Final Lab Grade (18 out of 40 points)
- 2) **must get 45% or better** on your combined Midterm and Final Exam marks (27 out of 60 points)
- 3) **must have an overall grade (labs + exams) of 50% or better.**

See Table 1 and schedule for more information.

Table 1. BIOL 2060 course assessment.

Components	% of final grade	Date
<b>Exams (required, synchronous)</b>	<b>60</b>	
Midterm Exam	15	Oct 10 (4:35-5:25 pm, 50 min)
Final Exam	45	Scheduled by Registrar
<b>Labs</b>	<b>40</b>	
Pre-lab Quizzes	3	See schedule
Lab 1 Reflections (2 @ 3%) + Final Video (4%)	10	See schedule
Assignment 2 (A2)	5	See schedule
Competition Experiment (A3 Final Manuscript)	12	See schedule
Forest Ecology Presentation (A4)	8	See schedule
Discussion Board participation	2	5 pm Last Day of Classes
<b>Total</b>	<b>100</b>	

### 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)		

**Note:** If you require a specific final grade for a scholarship, honours degree, job, graduate or professional school or other purpose, you should ensure that you put in the work needed to earn that grade. We offer many opportunities in the lecture and lab to get bonuses, feedback and help so that you can showcase your understanding on exams and assignments; therefore, we do not offer extra assignments to “boost” your grade. Keep in mind that we already round final grades to the nearest whole number. In fairness to other students and in keeping with the university’s high academic standard, we do not take requests to bump up a grade at the end of the term. However, if you have any questions about your grade, marking or feedback, believe a mistake was made, or if you experience an extenuating circumstance, we encourage you to come and discuss this with us **as the term is progressing since it may be too late at the end of the term.** Lab assignment grades can be reviewed by the Lab Instructor upon request at the **end** of term **no later** than a week after the final grades have been submitted on Brightspace. You will need specific questions, since whole assignments will not be regraded.

## Lecture & Lab Schedule

Lecture Topic Schedule & Readings		Lab Topics & <u>Due Dates</u> . Face-to-Face (F2F) & Asynchronous
<b>Week 1</b> Sep 3-6	Tue: Introduction and Overview of Ecology ( <i>Molles &amp; Laursen 2020: Chapter 1</i> ) Thu: Evolution & Speciation (Chap 4)	<b>Orientation week (asynchronous):</b> <input type="checkbox"/> <b>Orientation Quiz</b> (need 100% to access rest of quizzes, unlimited attempts) <input type="checkbox"/> <b>Test-Your-Tech Activities</b> (not graded but required to access rest of assignment dropboxes)
<b>Week 2</b> Sep 09-13	Mon: Behavioural Ecology ( <i>Chap 8</i> ) Tue: Life History & Niche ( <i>Chap 9</i> ) Thu: Distribution, Abundance & Density ( <i>Chap 10</i> )	<b>Lab 1 (Part 1): Respecting the Land (F2F)</b> <input type="checkbox"/> Meet your lab teaching team, lab mates, & come prepared to participate in a talking circle. <input type="checkbox"/> <b>Post your reflection 96 hours after your lab.</b> <input type="checkbox"/> <b>Post your response by the start of your next lab.</b> <input type="checkbox"/> <b>Finalize</b> your Orientation Quiz and Test-Your-Tech activities
<b>Week 3</b> Sep 16-20	Mon: Dynamics & Structure ( <i>Chap 11</i> ) Tue: Population Growth I ( <i>Chap 12</i> ) Thu: Pop Population Growth II ( <i>Chap 12</i> )	<b>Lab 2: Nature of Data—Oil Spills (F2F)</b> <input type="checkbox"/> <b>Pre-Lab Quiz 1:</b> H0/HA, QC Statements, & Graphs <input type="checkbox"/> Submit <b>A2 24 hours before your next lab.</b> <input type="checkbox"/> <b>Optional A2 Resubmission</b> by <u>5 pm Mon Nov 18</u> (day after study break)
<b>Week 4</b> Sep 23- 27	Mon: Competition I ( <i>Chap 13</i> ) Tue: Competition II ( <i>Chap 13</i> ) Thu: Herbivory ( <i>Chap 14</i> )	<b>Lab 3 (Part 1): Plant Competition—Design an Experiment (F2F)</b> <input type="checkbox"/> <b>Pre-Lab Quiz 2:</b> Choose your Question <b><u>DUE 12 pm Sep 23</u></b> <input type="checkbox"/> Submit the <b>A3 Experimental Design Worksheet</b> (1 per group) <b>by the end of your lab time.</b> <input type="checkbox"/> <b>Post your reflection 96 hours after your lab.</b> <input type="checkbox"/> <b>Post your response by the start of your next lab.</b>
<b>Week 5</b> Sep 30-Oct 4	Mon: <i>National Day of Truth and Reconciliation – University Closed</i> Tue: Predation ( <i>Chap 14</i> ) Thu: Disease Ecology ( <i>Chap 15</i> )	<b>Lab 3 (Part 2): Plant Competition—Plant your Experiment (F2F)</b> <input type="checkbox"/> Discuss your <b>Feedback</b> with the instructor before planting. <input type="checkbox"/> Visit the greenhouse and plant your experiment.
<b>Week 6</b> Oct 7-11	Mon: Midterm Review & Discussion <b>Tue: MIDTERM EXAM</b> (in class, 50 min) Thu: Succession I ( <i>Chap 18</i> )	<b>Lab 4 (Part 1): Forest Ecology— Data collection (F2F)</b> <input type="checkbox"/> <b>Pre-Lab Quiz 3:</b> Forest Ecology Community Metrics <input type="checkbox"/> Collect data in Point Pleasant Park

\* Pre-lab quizzes have no deadlines, have unlimited attempts, but at least 1 attempt is required to access the associated assignment dropbox. Assignments drafts will not be graded but will receive general feedback from your Demonstrators during synchronous labs or receive peer-review feedback by your lab mates. All times are in Atlantic Time. \*\*May be in-person but if online, synchronous sessions are not recorded.

Lecture Topic Schedule & Readings		Lab Topics & Due Dates. Face-to-Face (F2F) & Asynchronous
<b>Week 7</b> Oct 14-18	Mon: <i>Thanksgiving – University Closed</i> Tue: Succession II ( <i>Chap 18</i> ) Thu: Measuring Biodiversity ( <i>Chap 16</i> ) Population	<b>Lab 3 (Part 3):</b> Plant Competition (F2F) —Write the Methods (F2F) <input type="checkbox"/> Troubleshoot your experiment in the lab. <input type="checkbox"/> Work with your group on <b>A3 Methods Draft</b> & submit <b>24 hours before your next lab.</b>
<b>Week 8</b> Oct 21-25	Mon: Dynamics of an Invader ( <i>Special Lecture</i> ) - AS Tue: Disturbance ( <i>Chaps 16, 18</i> ) Thu: Life on Land I ( <i>Chap 2</i> )	<b>Lab 4 (Part 2):</b> Forest Ecology — Research Presentation (F2F) <input type="checkbox"/> <b>Pre-Lab Quiz 4:</b> Paraphrasing vs Plagiarism <input type="checkbox"/> Submit <b>group contract by the end of your lab.</b> <input type="checkbox"/> Submit <b>A4 Draft 48 hours before your next lab.</b>
<b>Week 9</b> Oct 28- Nov 1	Mon: Life on Land II ( <i>Chap 2</i> ) Tue: Life in Water I ( <i>Chap 3</i> ) Thu: Life in Water II ( <i>Chap 3</i> )	<b>Lab 3 (Part 4):</b> Plant Competition—Collect Data (F2F) <input type="checkbox"/> Submit <b>A4 Draft Peer-Feedback</b> by the <u>start of your lab time.</u> <input type="checkbox"/> Collect data for A3 <input type="checkbox"/> Submit <b>A4 Final Presentation by the start of your next lab.</b>
<b>Week 10</b> Nov 4-8	Mon: Food Webs I ( <i>Chap 17</i> ) Tue: Food Webs II ( <i>Chap 17</i> ) Thu: Ecosystem Engineers ( <i>Chap 17</i> )	<b>Lab 3 (Part 5):</b> Plant Competition—Write the Draft Manuscript (F2F) <input type="checkbox"/> Work with your group on your draft manuscript. <input type="checkbox"/> Submit <b>A3 Draft Manuscript 24 hours before your lab after study break.</b>
<b>Week 11</b> Nov 11-15	<b>No classes or labs: Fall Study Break and Remembrance Day</b> <b>Reminder: Optional A2 resubmission due by <u>Mon Nov 18, 5 pm</u></b>	
<b>Week 12</b> Nov 18-22	Mon: Production & Energy Flow ( <i>Chaps 19, 20</i> ) Tue: Trophic Levels ( <i>Chaps 19, 20</i> ) Thu: Nitrogen + Phosphorous ( <i>Chaps 19, 20</i> )	<b>Lab 3 (Part 6):</b> Plant Competition— Finalize your Manuscript ( <b>asynchronous</b> ) <input type="checkbox"/> General feedback for <b>A3 Draft Manuscript</b> <input type="checkbox"/> Optional drop-in help sessions during lab times <input type="checkbox"/> Submit <b>A3 Final Manuscript by the start of your next lab.</b>
<b>Week 13</b> Nov 25-29	Mon: Carbon ( <i>Chaps 19, 23</i> ) Tue: Anthropocene: Media Thu: Anthropocene ( <i>Chaps 19-23</i> )	<b>Lab 1 (Part 2):</b> Final Reflection Video ( <b>asynchronous</b> ) <input type="checkbox"/> Optional drop-in help sessions during lab times <input type="checkbox"/> Submit <b>A1 Video Reflection by Tue Dec 3, 5 pm</b>

\* Pre-lab quizzes have no deadlines, have unlimited attempts, but at least 1 attempt is required to access the associated assignment dropbox. Assignments drafts will not be graded but will receive general feedback from your Demonstrators during synchronous labs or receive peer-review feedback by your lab mates. All times are in Atlantic Time. \*\*May be in person but if online, synchronous sessions are not recorded.

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Lecture Topic Schedule & Readings		Lab Topics & Due Dates. Face-to-Face (F2F) & Asynchronous
<b>Week 14</b>  Dec 2-4	Mon: Conservation ( <i>Chaps 19-23</i> ) Tue: Review & Discussion I Wed: <i>TBD</i>	No labs
<b>Scheduled by Registrar's Office</b>	<b>FINAL EXAM</b>	

*\* Pre-lab quizzes have no deadlines, have unlimited attempts, but at least 1 attempt is required to access the associated assignment dropbox. Assignments drafts will not be graded but will receive general feedback from your Demonstrators during synchronous labs or receive peer-review feedback by your lab mates. All times are in Atlantic Time. \*\*May be in person but if online, synchronous sessions are not recorded.*

### BIOL 2060 Course Policies

It is **your responsibility** to read the **BIOL 2060 Course Policies** and **University Policies and Statements** outlined in the following pages during the 1st week of class.

To ensure the fair and equal treatment of all students, these rules and policies will be followed by all members of the teaching team.

**Note:** Extenuating circumstances can arise and when they do you are encouraged to get in touch with [Allison.Schmidt@dal.ca](mailto:Allison.Schmidt@dal.ca) as soon as possible in an attempt work out reasonable accommodation.

The **Brightspace** online platform (<https://dal.brightspace.com/d2l/login>) will be used to host lecture and lab content as well as to post regular course updates and announcements. It is your responsibility to log in regularly (several times a week) to the course's Brightspace page for the most up-to-date information.

### Lectures (60% of your final grade)

The schedule gives chapter references relevant to each week's topics. However, we don't assign specific page readings – it is your responsibility to find relevant sections within each chapter. We will wherever possible give the figure reference for any textbook figures included in the lecture slides. This will give you some reference to where in the book the relevant material can be found. Note that we will draw connections between topics in different chapters of the text.

**Midterm and Final Exams** are delivered in-person either in class (Midterm) or scheduled by the registrar's office (Final), see the schedule for details. Also, refer to the **Missed Course Requirements** section of this syllabus for missed exams.

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## Labs (40% of your final grade)

Labs sessions are weekly, with much of the required work due **prior** to the lab week.

Labs have been designed for you to practice the skills you need in science and beyond:

- Critical thinking
- Initiative, self-motivation and self-assessment
- Planning, organizing and time management
- Data collection and analysis
- Data presentation, interpretation and synthesis
- Scientific research and writing
- Collaboration – working in groups
- Communication – through collaboration, writing and discussions

### In-person lab weeks

Attendance for the lab section that you are registered is **mandatory**. However, if you need to attend an alternate lab time, contact [Allison.Schmidt@dal.ca](mailto:Allison.Schmidt@dal.ca) and we will do our best to accommodate.

### Asynchronous drop-in lab weeks

Students are encouraged to drop-in for help from the Instructor and Teaching Support Person (TSP) at any time during any of the B0 lab sections.

### Course Orientation Quiz

Prior to the start of Labs, students **must obtain 100%** (unlimited attempts) on the **Orientation Quiz** to view and unlock the rest of the Pre-lab Quizzes. Based on the Orientation Unit content in the course's Brightspace. Not included in your final grade.

### Test-Your-Tech Activities

Additionally, students must submit **at least 1 attempt on all Test-Your-Tech Activities** as *one* of the pre-requisites to access the lab assignment dropboxes. Note that other dropbox pre-requisites may include completing the associated Pre-lab Quiz and viewing important video content. The purpose of these is to troubleshoot any tech-related issues and practice important skills in advance of your lab assignment. Not included in your final grade.

### Pre-Lab Quizzes

You will have an **Orientation Quiz** for which you **must achieve 100%** to gain access to the other 3 **Pre-lab Quizzes**, each worth 1%.

**Pre-Lab Quiz 2** must be completed **by the due date in the schedule**. This is not a graded quiz but instead is part of getting you ready for the up-coming plant experiment design during Lab 3 (Part 1).

There are **no deadlines for the Pre-lab Quizzes 1, 3 and 4**; however, you need to submit **at least 1 attempt to access their associated lab's assignment dropbox**. You have unlimited attempts, so feel-free to take the quizzes as many times as you like. The mastery of these quizzes will give you the tools you need to do well on your lab assignments. Pre-lab Quizzes 1, 3, and 4 will count towards your final grade.

All quizzes except PL-Q2 will be available until the last day of classes.

### Lab Assignments and Other Submissions

There will be 3 types of assignments:

- 1) multi-week labs with specific due dates for different components (i.e. plant competition group experiment, and forest ecology poster)
- 2) other self-contained weekly lab assignments (e.g. reflections and oil spills)

Each assignment **must** be submitted online in the associated Brightspace dropbox or Discussion Board by the deadline according to their specific instructions. You will have access to unlimited submissions; however, the teaching team will only mark the latest completed submission. Late marks will apply if you need to resubmit a completed version after the due date.

You will be given **guidelines for the figures, tables and formatting that must be meticulously followed** because this is a requirement in western science. You will not be given a “recipe” or rubric in advance to follow. It will often be left up to you to make judgments about what to include or how to approach a question, this is the critical thinking aspect of the assignments and providing a detailed rubric robs you of this practice. However, as is often the case in scientific writing, you will have the **opportunity to submit a draft version** for several of your assignments to obtain feedback from the teaching team (or your peers) prior to submitting the final version for marking.

You will be provided with the **rationale and examples** in the lab to help you understand the requirements and guide your thinking. You will also have **small and large group discussions** to gain a broader and deeper understanding of ideas and concepts. The instructor and TSPs will never give you the answers to assignment questions but instead direct your thinking toward the answers you are looking for.

**Assignment Drafts:** Although not worth any marks, you will be required to submit draft assignments throughout this course. The purpose of these is so you can receive valuable feedback on them to improve on your work before final submissions (which are worth marks). Failure to submit drafts on time will result in a **5% deduction** on your future assignments.

**Late Assignments:** All assignments will be considered late if submitted after the deadline. A **10% penalty per day** (30% for weekends) is levied on late assignments. Late assignments will **not** be accepted after graded papers have been handed back.

**Assignment Back-ups:** It is the student's responsibility to keep backup copies of all submitted class work. Computers meltdown often, back up your work in the cloud or email it to yourself.



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## Assignment Marking Framework

**Assignments drafts** will not be graded but all need to be completed to get a full understanding of the concepts. TSPs will provide general oral feedback of assignment drafts during in-person labs, with the opportunity to break out into smaller groups or individually for more specific feedback. For greatest value, you are encouraged to come prepared with questions during these labs. Assignments drafts that are submitted **late, incomplete, or not at all will result in a 5% penalty on the future graded assignments.**

**Final versions of assignments** will be graded by your TSP with written feedback within a week of submission, except for the Lab 3 plant competition final manuscript and Lab 4 forest ecology poster which may take longer due to being longer assignments. TSPs will not be providing specific answers in their written feedback; rather, guidance to reflect on. To review your marking, ask your TSP questions during lab or attend one of the asynchronous drop-in sessions.

**Reflective questions** will be part of every draft and final assignments. These questions will help you hone your ability to assess and improve the quality of your work. Your reflections will be marked for completion, but not graded. A **5% deduction on the associated assignment will apply if incomplete or missing** (see assignment instructions for details).

**Critically assessing** your work and improving it based on your assessment are essential skills in all professions. Evidence shows that when you assess the quality of your own work, you are developing the ability to critique how you did something and learn from your mistakes (Weimer 2014). Mastering any skill takes practice, so continually using them is vital in developing your assessment skills and preparing you for the work force (Weimer 2014). This is a crucial step in your learning and will greatly help you to understand the material and improve your work.

Therefore, the onus is on you to take the feedback you get and go back to the guidelines and assignment details to identify where you may have gone wrong and come up with specific questions for clarification to bring to the TA or the Instructor if needed.

For all assignments, you will be assessed on:

- your ability to follow guidelines where they are specified
- the quality of your work
- your understanding of the concepts
- your ability to convey that understanding

**Note:** Time and effort are not on the list because they cannot be objectively assessed, so please do not request a higher grade with these as a rationale. Carefully make notes during oral feedback sessions and read all your written feedback. Refer to the marking framework and instructions and come to labs with specific questions. This will enhance your understanding and grow your ability to self-assess.

Your work will be assessed using the following framework. Indicated below are what inadequate (F) and excellent (A) represent in the context of this class and the rest is a sliding scale. The generality of the framework allows you to think critically about what is needed and gives you the flexibility to be creative while still being rigorous and building your scientific thinking and communication skills. This framework parallels the Dalhousie University Grade Scale and Expectations.

*Inadequate:*

- inappropriate presentation and analysis of the data
- followed few to none of the guidelines for the layout of figures, tables, and their associated captions
- incorrect interpretation of the data and analyses
- demonstrated a limited understanding of the necessary background, context, and underlying concepts
- included only the minimum level, unnecessary or excessive amount of detail in the explanation
- demonstrated a limited ability to draw scientific conclusions based on data, integrate results with scientific literature and discuss the importance of results to science and society
- information poorly conveyed (not succinct, illogical, unfocused, redundant, or lacking clarity)

*Excellent:*

- best and complete way to present and analyze the data
- used a thoughtful design for the layout of figures and tables (e.g. concise tables, multi-panel figures, etc.) and their associated captions in addition to following all the guidelines
- correct and complete interpretation of the data and analysis
- demonstrated an exceptional understanding of the necessary background, context, and underlying concepts
- included an appropriate amount of detail in the explanation
- drew insightful conclusions based on data, demonstrated an exceptional ability to integrate results with literature and displayed critical thought in discussing the importance of results to and their implications for science and society
- clearly and thoughtfully conveyed information with a logical structure clearly linking ideas

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## Missed Course Requirements

Students are responsible for all material covered in the class. However, Dalhousie University recognizes that you may experience **short-term (3 consecutive days or less)** physical or mental health conditions, or other extenuating circumstances (such as caregiving duties; immediate family illness, injury, or death; involvement in an accident; legal proceedings or being a victim of a crime, domestic or intimate partner violence) that may affect your ability to attend required classes, tests, exams or submit other coursework.

If you are feeling unwell (especially with any flu-like symptoms), please stay home and contact [Allison.Schmidt@dal.ca](mailto:Allison.Schmidt@dal.ca) at least **2 hours before your lab time**. You will be able to participate virtually via MS Teams if you are feeling well enough, otherwise, you can go ahead and use a student declaration of absence.

You will be allowed to use the **Student Declaration of Absence (SDA)** form **once** in BIOL 2060 to automatically obtain (for any reason) a **penalty-free 3-day extension** for any lab assignment **except** for the A3 Draft poster and associated peer-evaluation components.

- You are **not required to provide a reason or medical note for using the SDA**, but you must submit your fully completed form (no blanks, no missing information, and must specify the assignment) using the **dropbox** in Brightspace **no later than 3 days past the assignment's deadline**.
- SDAs are not a free pass, which means **you are still responsible for completing missed course requirements**. For additional extension requests, contact [Allison.Schmidt@dal.ca](mailto:Allison.Schmidt@dal.ca).
- You **cannot use the SDA for the Midterm or Final Exams**. To request an alternate arrangement for a missed exam, contact [Allison.Schmidt@dal.ca](mailto:Allison.Schmidt@dal.ca).
  - **Note:** If you miss the scheduled Makeup Midterm Exam, your Lecture grade will be pro-rated based on your Final Exam (cumulative).
  - **Note:** Requests for alternate arrangements for missed University-scheduled Final Exams are handled under a separate University regulation: Requests for an Alternative Final Examination Time.
- You do not need the SDA if you already have an accommodation plan in place that allows for coursework deferrals or deadline extensions. However, you need to contact [Allison.Schmidt@dal.ca](mailto:Allison.Schmidt@dal.ca) in advance (usually at the start of the course) to initiate your plan and request extensions.

**“Long-term absence”** refers to absences of more than three (3) consecutive days due to major or chronic physical or mental health conditions, or other extenuating circumstances such as caregiving duties; immediate family illness, injury or death; involvement in an accident; legal proceedings; being a victim of a crime, domestic or intimate partner violence. If this applies to you, get in touch with [Allison.Schmidt@dal.ca](mailto:Allison.Schmidt@dal.ca) as soon as possible to help determine the best way to move forward.

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## Student Collaboration and Communication

You are strongly encouraged to collaborate with your classmates on all assignments since this is how you will get different perspectives and insights. However, you must also be mindful that successful collaborations and group work are based on important criteria, as summarized by Clark and Mayer (2011) in Table 2 below. You are encouraged to **discuss these 3 success criteria at the start of all collaborative group projects** so that everyone's expectations and goals are clear. You can apply this guideline in other courses too!

Table 2. Criteria for successful collaborations (Clark and Mayer, 2011).

Success Criteria	Description
Social Interdependence	The goal of each team member depends on the achievement of all other members.
Outcome Goals	The desired results of the collaboration, such as individual learning or quality of a team project.
Dialog Quality	Substantive contributions made by all parties with no one ignored.

There are 3 mandatory group submission in BIOL 2060 (Lab 3 – A3 Experimental Design Worksheet and A3 Methods Draft as well as the A4 Forest Ecology Research Presentation). You have the choice to submit the remaining competition experiment (A3) components as a group or individually. All other submissions (A1 Reflections and Final Reflection Video as well as A2) are submitted individually. This means you must ensure that even though you collaborate, your individual assignments are your own work.

- **Pro-tip:** To ensure maximum benefit with minimum chances of plagiarism, after you have discussed ideas with your classmates take some time to think independently before writing down your notes. We will be using **Turnitin** in Brightspace to analyze assignment dropbox submissions for plagiarism. Your Turnitin report will be available to us after we have graded your work. If you have any questions or concerns about this, please discuss this in-lab with your TSP or Allison or you can also email [Allison.Schmidt@dal.ca](mailto:Allison.Schmidt@dal.ca).

**Brightspace:** Your Brightspace course page (<https://dal.brightspace.com/d2l/login>) is your main point of contact for all your course needs. It is important that you monitor and navigate to the Announcements, Calendar, Content, Discussion Boards, Assignments & Quizzes (plus feedback), and Gradebook several times a week. When participating in online communications such as posting on the Discussion Board, it is important that you follow proper “**netiquette**” guidelines (see Brightspace Orientation Unit).

- **Pro-tip:** on the top right corner of your home Brightspace page, click on your name, and on “Notifications” to control how you receive these.

**Email:** Check your Dalhousie email daily! This is an additional route for communication between the teaching team and students on aspects not covered by the Brightspace course page.

**Discussion Board Participation:** Each student is required to post questions to as well as reply to other peoples' posts on the Discussion Board during the term. If you have **more than 2 posts AND more than 2 replies**, and each post/reply creates or advances good quality discussions then you will receive full marks for a **max 2%**. Be sure to follow the “**netiquette**” guidelines. The Discussion Board Intro Activity and all A1 and A4 components that are required to be submitted to the discussion board **do not** count towards this mark.

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## 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)

### Tips to avoid plagiarism:

- **Never** lend your completed or partially completed report
- **Do not** borrow a classmate's report
- **Do not** use old reports from previous terms
- **Never** simply submit 2 identical copies of tables and graphs that you and a classmate have been collaborating on. Tables and graphs can only be identical if they were given to you by the instructor.
- You must **make the report your own, independent piece of work** in all respects; otherwise, you will have “copied”, thereby committing an academic offence.

### Copyright Disclaimer

The course material on our Brightspace course page has been posted for your personal educational use only. Copying course material from this site for distribution (e.g. [uploading material to a commercial third-party or public website](#), or otherwise sharing these materials with people who are not part of the class) outside of this site may be a violation of Copyright law. If you have questions regarding copyright, please contact the Copyright Office ([copyright.office@dal.ca](mailto:copyright.office@dal.ca)).

**If you have questions regarding the use of materials from our Brightspace course page, or have any academic integrity concerns, please contact [Allison.Schmidt@dal.ca](mailto:Allison.Schmidt@dal.ca), or talk to your TA.**

### 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>

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**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&loaduserredits=False>

**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/undergrad-students/degree-planning.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.html](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](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>

### References

Clark RC and Mayer RE. 2011. E-learning and the science of instruction: proven guidelines for consumers and designers of multimedia learning, 3<sup>rd</sup> Ed. San Francisco (CA): Pfeiffer. 527p.

Weimer M. 2014. Prompts to Help Students Reflect on How They Approach Learning: The Teaching Professor. Magna Publications; [accessed 2020 Aug 12]. <https://www.teachingprofessor.com/topics/for-those-who-teach/prompts-help-students-reflect-approach-learning/>