

Faculty of Science Course Syllabus**Department of Biology****BIOL/SCIE 2111 & 2112*****Dalhousie Science Scholars & Leaders: Becoming a Scientist I & II****(Fall 2022 & Winter 2023)*

Dalhousie University is located in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq. We are all Treaty people.

We acknowledge the histories, contributions, and legacies of the African Nova Scotian people and communities who have been here for over 400 years.

Instructor:	Joseph P. Bielawski	j.bielawski@dal.ca	LSC 7058
Lectures:	1x 90 min lecture per week (Friday, 2:35-3:55)		
Course delivery:	In-person		

Calendar Description

This course examines the structure of science and situates science majors in the context of the scientific process. The course de-mystifies the language and culture of science. Students will develop skills to help them progress towards a science career. The course also explores the translation of science to society.

Full Course Description

This course will examine the general "culture" of academia, and that of science majors at Dalhousie University. You will learn about the many facets of science as a process. Through scholarly studies & activities, and by interacting with people who put science into practice, the course will de-mystify the language and the "unwritten rules" of the scientific community. You will develop your own science communication skills and learn practical information that will help you to plan and progress towards a science-related career. The course will also explore the translation of science to society, and the importance of community outreach activities.

The course is designed around a blend of formal lectures, presentations by guest speakers, and student activities. Students will be assigned a schedule of supplemental reading from scholarly and popular journals that complement the classroom topics and activities. There will be a series of "feedback" assignments linked to each of the major course topics. The ethos of this course is an environment that encourages the active participation of students in support of each other's success. The interactive format will support active engagement with peer questions and opinions.

NOTE: BIOL/SCIE 2111.03 and BIOL/SCIE 2112.03 should be taken in consecutive Fall/Winter terms.

Course Prerequisites

Successful admission to the Dalhousie Science Scholars & Leaders program, or permission of the course instructor.

Learning Objectives and Outcomes

- Explore the culture and practice of science.
- Learn about the diversity of pathways and careers in science.
- Learn about pro-social community science, and the elements of effective community outreach.
- Develop a conceptual and factual understanding of science programs and experiential learning opportunities at Dalhousie University.
- Plan and develop academic goals, set milestones, and make informed choices regarding your science major and career.
- Learn how to express and document your achievements within your CV/resume and a skills portfolio.
- Identify strategies to improve your performance in science courses.
- Learn peer-to-peer mentoring techniques that will enhance your success (and your peer's) in science courses.
- Develop your communication skills.
- Become a more effective participant in the scholarly community at Dalhousie.
- Learn strategies to increase your happiness as a science student and build more productive academic habits
- Learn to integrate the university experience with other aspects of your non-academic life.

Course Materials

There is no required textbook for this course. Lecture notes will be provided on **Brightspace**. In addition, key scientific papers and popular media articles relevant to the lecture material will be posted on-line. Students are advised to download these materials and read them in preparation for each lecture.

Communication

Drop-in office hours will be posted on the first day of class. Please check Brightspace for updates, as depending on schedules and technology, the details for office hours might change. The posted "drop in" office hours may be held in person, or in Microsoft Teams; meetings will be private, and students may have to wait in the "Teams lobby" for a turn. As an alternative, students can make an appointment for a meeting at another time. General course communication will be made via Brightspace announcements and e-mail, depending on need.

Course Assessment

This course will be graded on a **Pass/Fail** basis. The grade of Pass or Fail will be based in part on your completion of and satisfactory performance in all of the assigned exercises (details presented in class for each assignment). Attendance is also required, and both attendance and participation will be recorded.

"Satisfactory" status requires meeting the evaluation criteria below:

1. Complete all of the exercises to the standard defined for each exercise.
2. Have no more than two (2) "unexcused/no-contact" absences during the semester

Other course requirements

The course requires attendance in 3 evening workshops in each of the Fall and Winter terms.

Course Polices

CLASS CODE OF CONDUCT:

We expect all classroom participants to treat each other with dignity and to conduct themselves in a proper and professional manner. Harassment and sexist, racist, homophobic, or exclusionary jokes will not be tolerated.

Requests for an alternative assignment completion date due to extenuating circumstances: An alternative due date will be granted in exceptional circumstances where prior notification is provided. Such circumstances include having another Dalhousie synchronous lecture or exam scheduled at the same time, or other mitigating circumstances outside the control of the student. Elective arrangements (such as travel plans) are **NOT** considered acceptable grounds for granting an alternative due date.

Special arrangements due to illness or other exceptional circumstances: Alternate arrangements will be considered provided that:

A student who misses class work or an assignment due date because of illness/medical reason:

1. notifies the Instructor prior to, or on, the day in question
2. completes the Student Declaration of Absence, and/or provides other appropriate supporting documentation within three (3) days following the last day of absence. An SDA can be used **once** per term for absences of **3 days or less** only. For more info https://www.dal.ca/dept/university_secretariat/policies/academic/missed-or-late-academic-requirements-due-to-student-absence.html.
3. For absences of **longer than 4 days**, students cannot submit a Student Declaration of Absence Form. Please contact the Instructor.

N.B. - The decision on when special arrangements can be made, and the form of those arrangements, will be at the discretion of the Instructor.

Course Content (Fall and Winter terms)**Background & Historical context (Fall)**

1. History & brief introduction to philosophy of science
2. Diversity & the future of science
3. STEM culture at Dalhousie and beyond
4. Social context of science (people of colour & climate change, developing nations, etc.)

Science as a process (Fall)

5. What is science? Different ways of knowing (*e.g.*, “two-eyed seeing”).
6. Essentialism vs. population thinking (and its effects on society)
7. Hypothesis testing: “cartoons” vs reality
8. Reading science texts (formal structures; *e.g.*, Meyer & Poon, 2001)
9. Vetting sources of data/information
10. Peer review
11. Best practices for “Open Science”
12. Science translation & impact: education, policy, medicine & beyond

Personal goals and development (Fall and Winter)

13. Personal statements
14. CV/Resume; skills portfolio; personal website
15. Modes of science communication, and science communication skills
16. Networking and conferences
17. Interacting with profs & grad students; How to request reference letters
18. “Working smart”
19. Stress management, happiness, and the science of well-being (*i.e.*, *how to increase your own happiness as a student and build more productive habits*]

Diversity & the future of science (Fall and Winter)

20. Reflections on personal progress
21. Staying engaged and supporting the community through science outreach

STEM careers and research (Winter)

22. Overview & example science contributions in society
23. Graduate school and other pathways into science
24. Personal success stories

Science in the news (Winter)

25. Science in mainstream media & social media
26. Intellectual honesty & accurate reporting
27. Sensationalizing & politicising science
28. Spotting fake science news and post hoc rationalizations
29. Elements of good popular science writing

Undergraduate science at Dalhousie (Winter)



**DALHOUSIE
UNIVERSITY**

30. Overview of undergraduate research
31. STEM resources & support at Dalhousie (including career planning)
32. Experiential learning: courses, volunteering, fieldwork
33. Certificate programs
34. NSERC USRA: Why, when & how?
35. Honours programs

All course content will be distributed as slides and notes in PDF format via the course website.
