

Dalhousie University operates in the unceded territories of the Mi'kmaw, Wolastoqey, and Peskotomuhkati Peoples. These sovereign nations hold inherent rights as the original peoples of these lands, and we each carry collective obligations under the Peace and Friendship Treaties. Section 35 of the Constitution Act, 1982 recognizes and affirms Aboriginal and Treaty rights in Canada.¹ We recognize that African Nova Scotians are a distinct people whose histories, legacies and contributions have enriched that part of Mi'kma'ki known as Nova Scotia for over 400 years.

Faculty of Medicine
Department of Biochemistry and Molecular Biology
BIOC 5915: Scientific Communications
Winter 2026

Section A: Course Information

Instructor Information

Dr. Barbara Karten, Sir Charles Tupper Building 9015, bkarten@dal.ca (Coordinator)

Course Description

The course focuses on the critical evaluation of primary research articles in biochemistry and molecular biology. Students will learn to assess experimental design, data interpretation, and conclusions. In addition, the course emphasizes the development of effective scientific communication skills through presentation and discussion of journal articles. Oral communication skills will be complemented by short writing exercises.

Class Format

The course is a seminar-style course, with student presentations, in-class discussions, and writing exercises.

Course Delivery Mode:

In person with videoconferencing to DMNB

Class time:

Tuesdays, 11:35 – 13:25, beginning Jan 13. No class Feb 17.

DMNS Halifax – Tupper, G36

DMNB Saint John – Room 221

Departmental Seminars: Tuesdays 4:00-5:00 – usually Theatre A

Learning Management System Site Information

The course schedule and assigned reading will be posted on the course Brightspace page. The course uses freely available primary research papers and review articles.

Course Pre-requisites, Co-requisites, Exclusions and/or other Restrictions

Prerequisites: None. Instructor approval required for registration.

Co-requisites: BIOC9000/9530

Other Requirements

In person attendance in the weekly classes is mandatory. Students are expected to notify the instructor by email if they miss class.

Course Learning Outcomes

Upon completion of this course, students will be able to:

- Critically read and analyze current literature.
- Explain scientific concepts and studies to a broad scientific audience in oral and written formats
- Discuss scientific concepts and research openly and respectfully.
- Formulate and propose a scientific question and experimental approach
- Recognize the common structure, elements, and principles of a research proposal, and apply these elements in oral and written communication.

Course Assessment

Journal article discussion (40%): Over the course of the term, each student will lead one seminar-style discussion of a journal article. Students should prepare a short presentation of the background and rationale of the research study, and then lead an informal discussion of the findings presented in the article. The goal is for students as a group to thoroughly analyze and understand all figures, and to discuss the strengths, weaknesses, and impact of the study in the context of the scientific field. Students choose the topic of their seminar in consultation with the course instructor by Jan 27. The course instructor or a faculty member from the research area of the article being discussed will be present during the seminar. The last three presentations will cover high-quality preprint manuscripts. These manuscripts should be impactful and describe a significant conceptual or technical advance in the field. Pre-prints will be found on common pre-print publishing sites like *BioRxiv*. Usually, presentations of pre-print manuscripts will be given by students in the PhD program, who have more experience in their field of research. The discussion should incorporate the main aspects of peer review. More information will be posted on the Brightspace course page.

Experimental proposal (25% oral, 15% written): In an experimental design exercise, students will work in small groups to develop and propose an experiment within the scope of their own graduate research. In this exercise, students will practice informal scientific discussions, explore collaborative potential, and to identify and apply the key elements of a research proposal.

Proposal Development: Following brief introductions of students and research projects in the whole group, students will break up into groups of two or three (assigned by the instructor) in which they will discuss their research projects in more detail, including research questions, approaches, methods, and model systems. They will identify points of connection between their projects, such as shared scientific themes, model systems, or methodologies, and collaboratively design two experimental approaches. Each approach should address a question from one student's project using an element from the other student's research. These elements can, for example, be scientific concepts, model systems, or technical approaches. Groups will begin this work during class and may continue outside of class as needed.

Oral presentation of proposal: Students will present their experimental proposal to the class in an informal format (15 min including discussion). Visual aids are optional; if slides are used, they should be limited to one slide per experimental approach. Presentations should include a brief description of the research element incorporated into the proposed experiment. Each experiment should be explained in terms of its rationale, the research question, the experimental approach including controls, what insight could be gained from the experiment, and how it contributes to the progress of the research project.

Written proposal: Following the presentations, students will prepare a written mini-proposal based on their presentation or a related experimental approach. The proposal should be no longer than two pages and include background and rationale, a clear research question/hypothesis, the experimental approach, expected outcomes, potential pitfalls with mitigation strategies, and references. This assignment is due two weeks after the presentation.

Participation (20%): Students are expected to read journal articles presented by the other students and be prepared for a scientific discussion of the paper. Given the diversity of the research topics, students' level of expertise in the field of the manuscript will be taken into account.

Journal article presentation and discussion lead	40%
Experimental Proposal, oral presentation	25%
Experimental Proposal, written proposal	15%
Participation in discussions	20%

Conversion of numerical grades to final letter grades (Dalhousie Grade Scale for Graduate Courses):

A+ (90-100)	B+ (77-79)	F (0-69)
A (85-89)	B (73-76)	
A- (80-84)	B- (70-72)	

Course Schedule (subject to change based on the number of students enrolled)

Week	Date	Learning Activity	Instructor
1	13 Jan	Introduction Group Work for Experimental Proposal	BK
2	20 Jan	1x Journal Article Presentation	BK
3	27 Jan	Presentations of Experimental Proposal	BK
4	3 Feb	Presentations of Experimental Proposal	BK
5	10 Feb	1x Journal Article Presentation	BK
		<i>Study Break</i>	
6	24 Feb	2x Journal Article Presentation	Faculty Expert
7	3 Mar	2x Journal Article Presentation	Faculty Expert
8	10 Mar	2x Journal Article Presentation	Faculty Expert
9	17 Mar	1x Journal Article Presentation Introduction to Peer Review	BK
10	24 Mar	1x Journal Article BioRxiv Presentation + Review	BK
11	31 Mar	1x Journal Article BioRxiv Presentation + Review	BK/ Faculty Expert
12	7 Apr	1x Journal Article BioRxiv Presentation + Review	BK/ Faculty Expert

Course Policies related to Academic Integrity

Students are expected to compose the written assignment themselves without help from their supervisor or other faculty members.

Collaboration among students in the course or fellow students in the research lab in form of exchanging ideas, editing, proofreading, or commenting on each other's writing is highly encouraged.

Use of generative AI and large language models: Generative AI and large language models should assist human creativity and critical thinking, not replace them. The use of AI must be transparent and not circumvent the learning objectives.

Students are not allowed to use AI for summarizing journal articles or drafting discussion questions. Reading, summarizing, and developing questions are important skills that need to be mastered first before relying on outside assistance. Moreover, the use of AI carries the risk of bias and IP/privacy violations.

Students are allowed to use AI to support searching and gathering of information; however, overreliance on AI for literature searches or writing is strongly discouraged. All use of AI must be disclosed with a description of its role, including AI model, types of prompts, extent of use, learning from the tool.

Students are responsible for verifying accuracy, avoiding bias, and avoiding IP or privacy violations.

Section B: University Statements

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. 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.

Accessibility

The Student Accessibility Centre is Dalhousie's centre of expertise for matters related to student accessibility and accommodation.

If there are aspects of the design, instruction, and/or experiences within this course (online or in-person) that result in barriers to your inclusion please contact:

- the [Student Accessibility Centre](#) (for all courses offered by Dalhousie with the exception of Truro)

Your classrooms may contain accessible furniture and equipment. It is important that these items remain in place, undisturbed, so that students who require their use will be able to fully participate.

Conduct in the Classroom – [Culture of Respect](#)

Substantial and constructive dialogue on challenging issues is an important part of academic inquiry and exchange. It requires willingness to listen and tolerance of opposing points of view. Consideration of individual differences and alternative viewpoints is required of all class members, towards each other, towards instructors, and towards guest speakers. While expressions of differing perspectives are welcome and encouraged, the words and language used should remain within acceptable bounds of civility and respect.

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 (Strategic Priority 5.2).

Code of Student 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.

Fair Dealing policy

The Dalhousie University [Fair Dealing Policy](#) provides guidance for the limited use of copyright protected material without the risk of infringement and without having to seek the permission of copyright owners. It

is intended to provide a balance between the rights of creators and the rights of users at Dalhousie.

Originality Checking Software (Mandatory to include if being used)

The course instructor may use Dalhousie's approved originality checking software and Google to check the originality of any work submitted for credit, in accordance with the [Student Submission of Assignments and Use of Originality Checking Software Policy](#). Students are free, without penalty of grade, to choose an alternative method of attesting to the authenticity of their work, and must inform the instructor no later than the last day to add/drop classes of their intent to choose an alternate method.

Student Use of Course Materials

These course materials are designed for use as part of the Course Code at Dalhousie University and are the property of the instructor unless otherwise stated. Third party copyrighted materials (such as books, journal articles, music, videos, etc.) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law. Copying this course material for distribution (e.g. uploading to a commercial third-party website) may lead to a violation of Copyright law.

Section C: University Policies, Guidelines, and Resources for Support

Instructors may choose to include Section C with their Syllabus or may instead refer to it, providing a link, in their Syllabus. The University Policies, Guidelines and Resources for Support for Section C and their respective links will be made available on the [Centre for Learning and Teaching \(CLT\) website](#), on the homepage of the [Learning Management System \(LMS\)](#) and on the [Dalhousie Academic Support website](#).

Dalhousie courses are governed by the academic rules and regulations set forth in the [Academic Calendar](#) and the [Senate](#).

Important student information, services and resources are available as follows:

Provide list of links as below OR use links above to direct students to these resources:

University Policies and Programs

- [Important Dates in the Academic Year](#) (including add/drop dates)
- [Classroom Recording Protocol](#)
- [Grading Practices Policy](#)
- [Grade Appeal Process](#)
- [Sexualized Violence Policy](#)
- [Scent-Free Program](#)

Learning and Support Resources

- General Academic Support – Advising [Halifax, Truro](#)
- [Student Health & Wellness Centre](#)
- [On Track](#) (helps you transition into university, and supports you through your first year at Dalhousie and beyond)
- [Indigenous Student Centre](#). See also: [Mi'kmaq and Indigenous Relations](#)
- Elders-in-Residence (The [Elders in Residence program](#) provides students with access to First

Nations elders for guidance, counsel and support. Visit the office in the [Indigenous Student Centre](#) or contact the program at elders@dal.ca or 902-494-6803.)

- [Black Student Advising Centre](#)
- [International Centre](#)
- [South House Sexual and Gender Resource Centre](#)
- [LGBTQ2SIA+ Collaborative](#)
- [Dalhousie Libraries](#)
- [Copyright Office](#)
- [Dalhousie Student Advocacy Services](#)
- [Dalhousie Ombudsperson](#)
- [Human Rights and Equity Services](#)
- [Writing Centre](#)
- [Study Skills/Tutoring](#)