

**Faculty of Science Course Syllabus
Department of Biology**

BIOL 4806.03, BIOL 4807.03, BIOL 4809.03
MARI 4806.03, MARI 4807.03, MARI 4809.03

**Independent Research I, II, and III
2021-2022**

Course Coordinator & Chair of the Biology Undergraduate Curriculum Committee

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Course Description

Students conduct supervised, independent research in Biology. The student and faculty supervisor together develop a course outline, with a proposal for original research and the method of evaluation, including a formal research paper. Outline must be approved by the department before the student is permitted to register.

Notes: This course is intended for Biology or Marine Biology students in their fourth year of study. The signature required to register can only be given by the Chair of the Biology Undergraduate Curriculum Committee or their designate. The course outline must be submitted for approval no later than one week after the start of the term in which the student wishes to register. For forms and more information see <https://www.dal.ca/faculty/science/biology/programs/undergraduate.html>

Information for Independent Research Courses

These courses provide unique opportunities outside the regular classroom for upper-level students to engage in independent research. The student should do some initial exploration of a research area or question, find a supervisor, and together prepare a draft proposal of the project. Supervisors are usually professors at Dalhousie who conduct research in an area related to the research question. A professor may or may not agree to supervise such a course. The finalized proposal and the completed registration form (signed by both the supervisor and the student) are then submitted to the Chair of the Biology Undergraduate Curriculum Committee. The proposal is then reviewed and approved or not, or approved after modification. Common Formats of the course include; (i) an original research project, similar to that involved in Honours research; and (ii) directed reading and writing of an original review paper.

Regulations:

- The student(s) should normally be in their 4th year of study or equivalent and have a minimum of 75 Earned Credit Hours including at least 36 credit hours in Biology or Marine Biology courses.
- The supervisor is usually a faculty member at Dalhousie University and usually holds a PhD in a Biological discipline.
- Proposed supervisors that are not from Dalhousie must hold a PhD, MD or equivalent and must be a faculty member in an accredited university (a C.V. will be required).
- Material prepared for an Independent Research course cannot be used in an Honours thesis.
- Material prepared for an Independent Research course cannot be derived from work performed

as a routine expectation of employment.

Application Deadline:

- The proposal and registration form signed and dated by both the student and the supervising Professor must be received by the Chair of the Biology Undergraduate Curriculum Committee NO LATER THAN ONE WEEK AFTER THE START OF CLASSES for the term in which the course is to begin. The student is responsible for ensuring that these materials reach the Chair of the Curriculum Committee by the appropriate deadline.
- Once the proposal is approved, the Curriculum Committee Chair will set up through the Banner system, permission to register in the course and notify the student that he or she may now register in the course.

Completion Deadline:

- **STUDENT:** A copy of the final report of the project should be submitted by email by the student to the Chair of the Biology Undergraduate Curriculum Committee by the END OF THE FINAL WEEK OF CLASSES for the term in which the student is enrolled.
- **SUPERVISOR:** The final letter grade for the student should be submitted by the supervisor to the Chair of the Biology Undergraduate Curriculum Committee NO LATER THAN TWO WEEKS AFTER THE END OF CLASSES for the term in which the student is enrolled.
- An Incomplete Grade (INC) will be assigned to students for whom no grade is received by the deadline specified in the Academic Regulations.

The Course Numbers:

BIOL/MARI 4806.03 - the first Independent Research course taken (any semester)

BIOL/MARI 4807.03 - the second Independent Research course taken (any semester)

BIOL/MARI 4809.03 - the third Independent Research course taken (any semester)

How to apply for an Independent Research course in the Biology Department:

The student, with approval from their supervisor must submit the following separate documents.

1) Completed registration form (last page of this syllabus).

2) Proposal – Written by the student, this should be approximately two or more pages long and include the (i) title of your project (ii) background information about the subject including in text citations and end references (iii) objective(s) of your research project (iv) methods used (v) and why this research is significant.

3) Details of Assessment – this is a description of how the student will be evaluated, including deadlines for submission of course assignments and the value for each part being assessed. At least one deadline should be met by mid-term.

The assessment page should also include a statement of how the student and professor will interact, (e.g. one or two-hour meetings held biweekly).

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)	

Expectations for Undergraduate Research

Our **philosophy** regarding Independent Research is that – as the course name suggests – students should have a high degree of independence and autonomy with respect to their research projects. To that end, we stress that the key to success in Independent Research is the relationship that the student develops with his or her supervisor. With the supervisor’s guidance, the student is responsible for pursuing all aspects of their research project. Students learn how to formulate hypotheses and predictions and how to prepare a project proposal. They also learn how to conduct laboratory or field research, how to collect and analyse data, and how to write a structured final report. These skills are all learned directly from their research experience, which means that the supervisor is responsible for mentoring the student. The student is expected to take command of their experience and seeks out answers, but of course under the wing of a supervising professor. The course coordinator, Patrice Côté, is available to advise the student too, or they can suggest additional or alternate avenues that the student might explore to find answers. We believe that this kind of **independent but supervised** approach to research fosters critical independent thought, problem solving, autonomy and is the best way to prepare students for a career involving research or further studies.

Because the student-supervisor relationship is fundamental to the research process, the department feels it is important to outline certain expectations for undergraduate research. If, at any time, either the student or supervisor(s) do not feel the below expectations are being met, they are encouraged to contact the Chair of the Biology Undergraduate Curriculum Committee, Patrice Côté.

- Students can expect to work closely with their supervisors in defining a project proposal that is appropriate given the time and resource constraints.
- Students can expect to work closely with their supervisors in defining assessment components that will fairly evaluate progress at various stages of the project.
- Students can expect to have regular communication with their supervisors to receive help with problem solving, and to receive regular feedback on assessment components and as the final report is being written.
- Students can expect to have a clear understanding of what is expected in delivering the assessment components, including the final report (e.g. expected length and format, acceptable methodology, validity of topic) and to receive a thorough and fair assessment of their work, with explanations of any criticism.
- Students are expected to give serious and considered attention to the advice from their supervisor(s) concerning what they regard as essential changes in the research and/or final report.
- Students are expected to produce a final report that is essentially their own work and to acknowledge direct assistance or borrowed material from other scholars or researchers.
- Students can expect their efforts to be focused on their research project. While students may choose to participate in other projects within the research lab, they should not be diverted from the timely completion of their thesis and other course obligations.

**Faculty of Science Course Syllabus (Section B) (revised June-2020)
2021 - 2022**

*BIOL 4806.03, BIOL 4807.03, BIOL 4809.03
MARI 4806.03, MARI 807.03, MARI 4809.03
Independent Research I, II, and III*

University Policies and Statements

This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate

Missed or Late Academic Requirements due to Student Absence

As per Senate decision instructors may not require medical notes of students who must miss an academic requirement for courses offered during fall or winter 2020-21 (until April 30, 2021).

Information on regular policy, including the use of the Student Declaration of Absence can be found here:

https://www.dal.ca/dept/university_secretariat/policies/academic/missed-or-late-academic-requirements-due-to-student-absence.html.

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

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>

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>

Independent Research I, II, and III REGISTRATION FORM

Semester: Fall 2021 Winter 2022 Summer 2022 (section: _____)

For the Student:

- I have read the information and regulations for the Independent Research courses.
- I agree to abide by the regulations for Independent Research courses including the requirement that I submit a copy of my final report to the Chair of the Biology Undergraduate Curriculum Committee by the end of classes through the Brightspace course site.
- I have read and agree to the provisions of the '**Expectations for Undergraduate Research**' statement.
- I understand that failure to follow the regulations will result in an INC grade being awarded for the Independent Research course, and that such grades are assigned a grade point value of 0.0.

Student Name and Banner Number: _____

Student's Signature: _____ Date: _____

Student's e-mail address: _____

For the Supervisor:

- I have read the information and regulations for Independent Research course.
- I have read and agree to the provisions of the '**Expectations for Undergraduate Research**' statement.
- I agree to submit the details of the assessments and a final letter grade to the Chair of the Biology Undergraduate Curriculum Committee no later than two weeks after the end of classes.

Please register the student in:

- | | |
|--|--|
| <input type="checkbox"/> BIOL 4806.03 Independent Research I | <input type="checkbox"/> MARI 4806.03 Independent Research I |
| <input type="checkbox"/> BIOL 4807.03 Independent Research II | <input type="checkbox"/> MARI 4807.03 Independent Research II |
| <input type="checkbox"/> BIOL 4809.03 Independent Research III | <input type="checkbox"/> MARI 4809.03 Independent Research III |

Supervisor's Name: _____ Department: _____

University: _____ e-mail address: _____

Supervisor's Signature: _____ Date: _____

Biology Department Signature (Curriculum Chair): _____ Date: _____