DALHOUSIE UNIVERSITY

Biochemistry Laboratory Methods & Techniques*
Course Syllabus
Department of Biochemistry & Molecular Biology
BIOC 2610.03 Winter 2025

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.

We recognize that African Nova Scotians are a distinct people whose histories, legacies, and contributions have enriched that part of Mi'kma'ki, currently known as Nova Scotia, for over 400 years.

Instructors:	H. MacKinnon (Instructor)		Tupper 8-J4	
	S. Xiong (Coordinator)		Tupper 8-J3	
Laboratories:	Sec 01	Wednesday	2:35 – 5:25 p.m.	Tupper 8-J1
	Sec 02	Thursday	2:35 – 5:25 p.m.	Tupper 8-J1
	Sec 03	Friday	2:35 – 5:25 p.m.	Tupper 8-J1
Course Contact:	**Direct all course inquiries to BIOC2610@dal.ca**			

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* New course name "Biochemistry Laboratory Methods & Techniques" adapted from a previous BIOC 2610 student, Caitlin Ross, in March 2023.

Course Description

An introduction to fundamental techniques in Biochemistry through the exploration of the properties of essential biomolecules.

Course Prerequisites

BIOL 1010.03 and 1011.03 (or equivalent), CHEM 1011.03 and 1012.03 (or equivalent), all with grades of B- or higher; or instructor's consent. CHEM 2201.03 is recommended but not required.

Course Corequisites

BIOC 2300.03 and CHEM 2401.03 and CHEM 2402.03 or instructor's consent.

Course Objectives

General objectives:

- Analyze and manipulate raw experimental data by applying theory, mathematical relationships, and graphical analysis.
- Interpret experimental results and present in scientific format (tables, graphs, diagrams, and written reports). Compare with expected results and draw conclusions.
- Develop a formal scientific writing style and compose multiple formal lab reports. Reports are written in scientific journal submission format.
- Relate research literature to laboratory experiments. Discover and identify primary sources. Incorporate relevant citations in formal lab reports.
- Apply and extend conceptual knowledge consistent with the practical aspects of biochemistry and molecular biology lab work.

Specific biochemical lab techniques include:

- Precise volume handling using a micropipette and serological pipette controller
- Titration curves of amino acids
- Proton NMR spectroscopy of amino acids
- Protein properties: solubility, buffering capacity, and Bradford assay
- Spectrophotometry: using Spectronic 20D/20D+ and UV-Vis spectrophotometers
- DNA properties: hyperchromic effect, quantification, and isolation
- Separation of biomolecules by column chromatography
- Investigation of the dialysis technique
- Paper electrophoresis of amino acids
- Reversibility of an enzyme reaction, cofactor specificity, and thermodynamic values
- Separating materials using thin layer chromatography
- Coupled enzyme assays and quantifying enzyme activity
- Enzymes: mechanisms, kinetic assays, kinetic constants, and inhibition

Course Materials

Brightspace

Online course material (https://dal.brightspace.com)

Required

- Briggs, P., MacKinnon, H., and Xiong, S. (2025) *BIOC2610 Biochemistry Laboratory Methods & Techniques Lab Manual*, Dalhousie University, Halifax, Nova Scotia (Purchase in Dal Bookstore before first lab)

Other Recommended

- Pratt, C. W., and Cornley, K. (2021) *Essential Biochemistry*, 5th Ed., John Wiley & Sons Inc., Hoboken, NJ (RECOMMENDED, other introductory textbooks may also be suitable)
- Segel, I. H. (1976) *Biochemical Calculations*, John Wiley & Sons Inc., New York, NY
- Ahern, K. (2018) *Biochemistry Free For All*, Oregon State University, Corvallis, OR https://biochem.oregonstate.edu/content/biochemistry-free-and-easy
- Northey, M., and von Aderkas, P. (2019) *Making Sense, Life Sciences: A Student's Guide to Research and Writing*, 3rd Ed. Oxford University Press Canada, Don Mills, ON

Course Assessment

Component	Weight (% of final grade)		Date
Assignments	8%	(3% & 5%)	(dates in Brightspace)
Pre-labs	8%	(1% each)	(dates in Brightspace)
Lab Reports	42%	(6% each)	(dates in Brightspace)
Extended Learning	14%	(2% each)	(dates in Brightspace)
Final Exam (3 hours)	28%		(scheduled exam period)

Conversion of numerical grades to final letter grades follows the Dalhousie Grade Scale

A+	(90-100)	**B+**	(77-79)	**C+**	(65-69)	**D**	(50-54)
A	(85-89)	**B**	(73-76)	**C**	(60-64)	**F**	(0-49)
A-	(80-84)	**B-**	(70-72)	**C-**	(55-59)		

Laboratory Reports (General Scheme)

One of the objectives of this course is to help you develop as a writer in science. A formal lab report template is available in Brightspace.

Presentation

Markers will evaluate such areas as title, formatting, organization, neatness, spelling, grammar, and file format. Use template provided in Brightspace.

Abstract

The abstract is a comprehensive summary of the entire paper. Include the main objectives, general methods used, key results, and conclusions. (< 250 words, < 1 page)

Introduction

Present background information relevant to the lab. You must include in text citations (see *References* on the next page). State the main objectives and hypotheses. (1-2 pages)

Methods

Start the methods section by citing the lab manual. Continue to write out methods for a scientific audience. The reader should be able to replicate the experiment. For all reports in this course, do not include lists or tables. (< 1 page)

Results & Discussion

Report all raw data such as absorbance readings and any other observations. Before leaving the lab, verify the integrity of your raw data during the lab to ensure it is consistent with expectations. Some results may not be perfect, but an overall conclusion can still be drawn, you likely will not need to repeat the experiment (especially if time is limited). A TA/instructor may facilitate the acquisition of raw data gathered by others. If so, include both sets of data, report where you acquired the "good" data from, and perform your own analyses. Attempt to explain potential errors with your experiment and why your data was insufficient. Results are preferably tabulated and graphed and referred to in this section (see *Tables & Figures* on next page). Always show sample calculations and use the appropriate significant figures. Analyze your results and compare with those expected from published data, class results, and/or expectations. Discuss the significance of your results, any implications, or other points to consider. Describe any drawn conclusions. (1-2 pages)

Acknowledgments
Credit all individuals who contributed to the report, this includes your lab partner(s) and sources of any acquired data you did not measure yourself (i.e., class data or raw data provided due to unsuccessful experiments). For group submissions, compose an additional independent statement describing each author's contributions to the written report.

References
You must include the full citation list of references used in the text of the lab report. Include 2-5 references with each submission, one of which will always be the lab manual. Only list primary sources that are directly cited in text. Format in-text citations and corresponding reference list conforming to the provided template. (< 1 page)

Tables & Figures
After the *References* section include the following items in order:

a) Tables – Use a computer to tabulate experimental data (i.e., masses, volumes, absorption values, etc.); transcribe raw data as required. Include table number, title, and note. Present one table per page.
b) Figures – All graphs (on graph paper) and diagrams must be prepared by hand and included as figures (scan and import as required). Sample calculations should be typed and included as a figure. Include figure number, title, and note. Present one figure per page.

For R1, R2, R5, and R6, you will have one week turnaround time to write a scaffolded partial report, in which you will only need to complete a few sections of the lab report. See the corresponding labs for detailed expectations.

For R3, R4, and R7, you will have two weeks turnaround time to write a complete lab report (if there is a change to the original schedule, this may be adjusted).

Use Microsoft Word and the provided report template (in Brightspace) to prepare the formal lab report; scan and include any handwritten components within the same document (graphs, figures, etc.). Export/save file in *.pdf* format. **Your file name should conform to the structure *Lastname_B00#_R#.pdf*.** Upload the single pdf file to the appropriate folder in Brightspace before the posted deadline (refer to Brightspace for current due dates/times). You may upload multiple versions; only the most recent submission will be marked.

Report and Assignment Submissions

Lab reports follow strict formatting guidelines, while assignments are less stringent in their format (handwritten is preferred). Every student will submit an electronic version of their lab reports and assignments to Brightspace for assessment; upload the pdf files to the appropriate folders in Brightspace before the posted deadline (refer to Brightspace for current due dates/times). All electronic submissions will be screened for plagiarism using the Turnitin tool integrated within Brightspace. Suspected academic integrity offenses will be investigated and could result in a loss of all value for that component or further penalty in the course.

Students work in groups in the lab. **Independent submissions** are evaluated individually and therefore are to be an individual effort; do your own calculations, prepare your own tables/graphs, and draw your own conclusions. Independent assessments apply to lab reports, assignments, pre-labs, and extended learning questions. Students are given the option to work together with their lab partner to submit a single lab report (same data set). One student from the group needs to upload the lab report into Brightspace before the posted due date. **Group submissions** are permitted for a maximum of two formal lab reports. Assignments, pre-labs, and extended learning questions do not qualify for group submission; these must be completed and submitted individually.

Once an assessment is graded, there will be no reconsideration of a returned marked report beyond one week. Any possible errors with marking must be reconciled within this timeframe.

Written Final Exam

A comprehensive final exam (3 hours) will be written in person as scheduled by the Registrar's Office during the exam period at the end of the term. The final exam consists of multiple-choice questions and short-answer/calculation questions.

You are responsible for understanding the concepts and details mentioned throughout the lab manual, in Brightspace, and in class. Be critical of experimental details; consistently ask yourself why I used this chemical or reagent, why I performed this step in the lab, and how I analyzed my raw data for this experiment. Extended learning questions, assignments, and data analysis in your reports are great sources and realistic examples of the final exam questions. You should be able to interpret raw data, diagrams, tables, and graphs that demonstrate and build on what you have seen in the lab, in addition to constructing diagrams and graphs to illustrate your understanding.

For missed final exam, please see student absence policy on the following page.

Other Course Requirements

Review relevant sections in an introductory biochemistry course textbook to extend your knowledge of the work being considered and provide a suitable background for understanding the results you obtain. Many of you may be familiar with other sources of information that you would prefer to use; please do so.

Course Policies

Accessibility to the laboratory space

Our class is committed to foster an inclusive and accessible learning environment, where everyone feels belonged. Unfamiliar to many students, accessibility to the laboratory space can be challenging especially for people with visible and/or invisible, long-term or short-term disabilities. To ensure equitable access, we welcome students to visit the laboratory space before the scheduled class time as well as discuss potential accessibility and accommodation concerns with the instructors and advisors at the Student Accessibility Centre prior to the class.

Use of Animals in Biochemistry

Although no exercise involves live animals, experiments may use materials derived from animal sources, as well as from plants and micro-organisms.

Scent-Free

Dalhousie University's scent-free program will be strictly enforced in the lab. As it relates to you, "staff, faculty, students and visitors are requested to refrain from using scented personal care products" such as soap, perfume, hairspray, cologne, aftershave, and deodorants. Non-compliant individuals will be asked to leave the lab. To the extent practical, Dalhousie University will provide a scent-free indoor environment.

University Closure

The lab schedule may be adjusted due to university closure, any alterations will be communicated through Brightspace. In the event of closure on a day that something is due, electronic submissions are still due by the original deadline (unless explicitly communicated otherwise). Alterations to course assessments may also be necessary in the event of unforeseen situations.

Attendance

Attendance in the lab is mandatory. Students are required to attend the section they are registered for, and experimental work must be completed within the scheduled time. Be prepared and stay on task, review all relevant materials prior to each lab module. Bring your lab manual and a calculator with you to each lab. Graph paper and rulers are available in lab.

There are no makeup labs, and no additional assessments will be given for extra credit. Please refer to the course policy regarding student absences on the next page.

Policy on the Use of Large Language Models (LLMs)

You may use AI-driven tools to assist you in learning but remember that your objective is to understand, achieve, and apply the course competencies and outcomes. While you may use tools for learning, assessments in this course will disallow the use of AI-driven tools to assert that you have attained course learning outcomes. This is because a graduate must be able to analyse, assess and produce work unassisted by AI technology.

Since writing, analytical, and critical thinking skills are part of the learning outcomes of this course, all writing assignments should be prepared by the student. Therefore, AI-generated submissions are not permitted and will be treated as plagiarism.

Late Policy

Refer to Brightspace for current due dates/times. Plan for the unexpected; work ahead and backup your files in OneDrive. MS Word also usually allows the options to browse version history and track changes, these are useful tools during the editing and proofreading process. Verify your work, and confirm uploaded submissions are accurate. Submit work early to Brightspace (you can upload updated versions up until the deadline).

A submission may qualify for a small extension, with no reason required and no questions asked. Each student is given four independent opportunities for a single 24 hr extension; these only apply to post-lab lab reports (R#) and extended learning questions (E#). Each student may only use one extension per assessment. You do not need to contact us beforehand; extensions will be tracked automatically by the instructors/TAs. Pre-labs (P#), assignments (A#), and submissions during the last two weeks of classes (to ensure enough time for grading) are excluded from an extension; these assessments must be submitted by the original deadline.

Late examples with outcomes:

- Pre-lab #2 submitted after 2:35 p.m. Late not accepted, given a grade of zero.
- Two students submitted a group lab report 1 hour past the deadline. Counts as one extension for each of the two students.
- Lab report submitted 2 minutes past the deadline and extended learning questions submitted 20 hours past the deadline (both due same time). Counts as two extensions.
- Lab report submitted 24 hours beyond the deadline. Extension exhausted. Late not accepted, given a grade of zero.
- Last assignment (A2) submitted after 2:35 p.m. on the designated due date. Late not accepted, given a grade of zero.

Extensions to deadlines beyond the conditions above will not be granted. Late submissions, and those exceeding the extension conditions, will not be accepted and will result in a mark of zero for that component.

Policy on Missed Academic Requirements due to Student Absence

You must email both course instructors (bioc2610@dal.ca) **prior to any absence** (before the scheduled class time). Accommodations resulting from an absence must be arranged with the course instructors in advance. Absence for a non-medical reason is not generally acceptable except in extenuating circumstances. Elective arrangements such as travel plans will not be accommodated. A missed evaluation component for which no satisfactory arrangement has been made will be given a mark of zero. Alternate arrangements, if offered, are at the discretion of the course instructors.

Short-term Absence

Students experiencing **short-term absences of three consecutive days or less** must notify both course instructors by email (bioc2610@dal.ca) prior to the absence and submit a completed SDA form within 48 hours.

Student Declaration of Absence (SDA) Forms

Upload your completed SDA form to the designated submission folder in Brightspace for the course within 48 hours of the day of absence to meet the requirements for a prearranged accommodation. The SDA is only valid for the date of absence. A student may submit a maximum of two separate SDA forms per course during a term. Students who exceed this limit are strongly encouraged to meet with a Declared Major Advisor or Faculty Program Coordinator. The submission of the form does not provide an automatic exemption from any academic requirements that were missed or late during an absence. Any alternate coursework arrangements for missed or late academic requirements are at the discretion of course instructor(s).

An **SDA form cannot be used for extending submission deadlines** (refer to *Late Policy*). In cases of an absence on a deadline day, electronic submissions are still due by the original deadline.

Missing Final Exam

In response to the recent changes in the provincial health care regulation – *Nova Scotia employers can no longer request a sick note unless an employee is absent for more than five working days or has already had two absences of five or fewer working days in the previous 12-month period*, Dalhousie University no longer requires a doctor's note for missing final exams. Instead, an additional SDA is accepted for missing the final exam. Students must notify both course instructors (bioc2610@dal.ca) prior to the absence and submit the completed SDA form for the final exam no later than 24 hours after scheduled exam to be considered for a make-up exam. The date and time of the make-up exam will be available to qualified individuals within 72 hours after the scheduled exam. Unless for extreme circumstances (such as unforeseen medium to long term disabilities), there will be no additional or alternative make-up final exams.

Long-term Absence

If you are **absent for four consecutive days** or more, a SDA form is no longer applicable for your absence. Instead, you should contact your instructors (bioc2610@dal.ca) and refer to the long-term absence section of Dalhousie University's academic regulation for Missed or Late Academic Requirements Due to Student Absence: https://www.dal.ca/content/dam/www/about/leadership-and-governance/university-policies/student-absence-regulation.pdf

Policy on Plagiarism – Department of Biochemistry & Molecular Biology

What is plagiarism?

"Dalhousie University defines plagiarism as the presentation of the work of another as if it were one's own" †. Plagiarism is a form of academic fraud. The Department is committed to protecting honest students against the devaluation of their work by students who resort to plagiarism.

Some examples of plagiarism include (but are not restricted to):

- Submitting as your own work any material created, in whole or in part, by someone else, including material created in collaboration with other students, unless specifically allowed by the course instructor and credited appropriately.
- Paraphrasing extensively or copying from sources such as the Internet, journal articles, or books (including textbooks) without crediting the original author or source.
- Using another student's laboratory data, unless specifically allowed by the course instructor and credited appropriately.
- Submitting, in whole or in part, any work that has been submitted in another course, or re-submitting the same work in different years of the same course.

How can plagiarism be detected?

Work assessed for credit must be submitted in electronic format. Submissions may be screened by a third-party computer-based assessment system that compares submissions against a large database including previous submissions and Internet sources.

What are the consequences of plagiarism?

"Plagiarism is a serious academic offence which may lead to loss of credit ['F' in a course], suspension or expulsion from the University, or even the revocation of a degree."† At Dalhousie University, the Department is obligated to refer any cases of suspected plagiarism to the Senate Discipline Committee, which will then conduct a hearing to evaluate the innocence or guilt of students alleged to have committed an act of plagiarism.

How can accusations of plagiarism be avoided?

You can avoid accusations of plagiarism by:

- Preparing all submissions independently and ensuring that they are expressed in your own unique writing style.
- Never sharing any written or electronic material with other students. You may discuss ideas with other students, but you may not work with another student while preparing materials you are planning to hand in.
- Acknowledging any material paraphrased extensively or copied from sources such as the Internet, journal articles or textbooks. Paraphrasing of short phrases from the course textbook need not be acknowledged.
- Guarding all your work, both drafts and final submissions, to ensure that no one else can copy it. If you provide access to your work and someone copies it, then you may have to appear before the Senate Discipline Committee to establish that you are the original creator of the work. If you suspect that someone has taken any of your work, notify your course instructor immediately.
- Using only laboratory data that you actually collected in the lab. Altering laboratory data is not permitted. If your data are unusable, you must still report your own data along with any explanation as to why the data are unusable. You may then use data supplied by the lab instructor for analysis, but you must acknowledge such use.

† Dalhousie University Undergraduate Calendar, 2022/2023, p. 57 Adopted May 1st, 2006

Faculty of Science
University Policies and Statements

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 at 1321 Edward St or elders@dal.ca. Additional information regarding the Indigenous Student Centre can be found at: https://www.dal.ca/campus_life/communities/indigenous.html

Internationalization

At Dalhousie, 'thinking and acting globally' enhances the quality and impact of education, supporting learning that is "interdisciplinary, cross-cultural, global in reach, and orientated toward solving problems that extend across national borders." Additional internationalization information can be found at: https://www.dal.ca/about-dal/internationalization.html

Academic Integrity

At Dalhousie University, we are guided in all 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 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. Additional academic integrity information can be found at: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

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 (https://www.dal.ca/campus_life/academic-support/accessibility.html) for all courses offered by Dalhousie with the exception of Truro. For courses offered by the Faculty of Agriculture, please contact the Student Success Centre in Truro (https://www.dal.ca/about-dal/agricultural-campus/student-success-centre.html)

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). Additional diversity and inclusion information can be found at: http://www.dal.ca/cultureofrespect.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. The full Code of Student Conduct can be found at:
https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

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. Additional information regarding the Fair Dealing Policy can be found at:
https://www.dal.ca/dept/university_secretariat/policies/academic/fair-dealing-policy-.html

Originality Checking Software

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. Additional information regarding Originality Checking Software can be found at: https://www.dal.ca/about/leadership-governance/academic-integrity/faculty-resources/ouriginal-plagiarism-detection.html

Student Use of Course Materials

Course materials are designed for use as part of this course 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.

Faculty of Science
Student Resources and Support

University Policies and Programs

Important Dates in the Academic Year (including add/drop dates): https://www.dal.ca/academics/important_dates.html

Classroom Recording Protocol: https://www.dal.ca/dept/university_secretariat/policies/academic/classroom-recording-protocol.html

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

Grade Appeal Process: https://www.dal.ca/campus_life/academic-support/grades-and-student-records/appealing-a-grade.html

Sexualized Violence Policy: https://www.dal.ca/dept/university_secretariat/policies/health-and-safety/sexualized-violence-policy.html

Scent-Free Program: https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html

Learning and Support Resources

General Academic Support – Advising (Halifax): https://www.dal.ca/campus_life/academic-support/advising.html

General Academic Support – Advising (Truro): https://www.dal.ca/about-dal/agricultural-campus/ssc/academic-support/advising.html

Student Health & Wellness Centre: https://www.dal.ca/campus_life/health-and-wellness.html

On Track (helps you transition into university, and supports you through your first year at Dalhousie and beyond): https://www.dal.ca/campus_life/academic-support/On-track.html

Indigenous Student Centre: https://www.dal.ca/campus_life/communities/indigenous.html

Indigenous Connection: https://www.dal.ca/about-dal/indigenous-connection.html

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: https://cdn.dal.ca/content/dam/dalhousie/pdf/academics/UG/indigenous-studies/Elder-Protocol-July2018.pdf

Black Student Advising Centre: https://www.dal.ca/campus_life/communities/black-student-advising.html

International Centre: https://www.dal.ca/campus_life/international-centre.html

LGBTQ2SIA+ Collaborative: https://www.dal.ca/dept/vpei/edia/education/community-specific-spaces/LGBTQ2SIA-collaborative.html

Dalhousie Libraries: https://libraries.dal.ca/

Copyright Office: https://libraries.dal.ca/services/copyright-office.html

Dalhousie Student Advocacy Services: https://www.dsu.ca/dsas?rq=student%20advocacy

Dalhousie Ombudsperson: https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html

Human Rights and Equity Services: https://www.dal.ca/dept/hres.html

Writing Centre: https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html

Study Skills/Tutoring: https://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html

Faculty of Science Advising Support: https://www.dal.ca/faculty/science/current-students/undergrad-students/degree-planning.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: http://www.dal.ca/dept/safety/programs-services/radiation-safety.html

Laser Safety: https://www.dal.ca/dept/safety/programs-services/radiation-safety/laser-safety.html