

Honours Research Manual

**BIOC 4604/4605
2024 – 2025**

Information for Students *and* Supervisors

Department of Biochemistry & Molecular Biology



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CONTENTS

	Page
I. OVERVIEW	3
A. Purpose	3
B. The Honours Supervisor	3
C. Honours Research <i>Outside</i> the Department	4
D. Expectations	4
E. Budgeting time	5
F. Attendance at Departmental Seminars	5
G. Research During the Summer	6
H. Co-op Students	6
I. Use of Artificial Intelligence (AI) Tools	7
J. Pandemic Options	7
II. SAFETY REQUIREMENTS	9
III. FALL TERM REPORT	10
IV. FINAL REPORT	10
V. PRESENTATION	11
VI. EVALUATION	13
VII. ACADEMIC RESPONSIBILITIES & PLAGIARISM	14
VIII. IMPORTANT DATES	16
IX. APPENDICES	
A. Form used for Early Evaluation	17
B. Form used for Fall Term Report Evaluation	18
C. Form used for Final Report Evaluation	19
D. Form used for Presentation Evaluation	20
E. Sources of Summer Undergraduate Research Funding	21
F. Style for the Honours Report	21

I. OVERVIEW

A. PURPOSE

The goals of the Biochemistry & Molecular Biology (B&MB) Honours Research course BIOC 4604/4605 are three-fold. The primary goal is to provide a meaningful research experience in an academic setting and an opportunity to learn how knowledge-creation research is conducted (in contrast to the controlled environment of the student laboratory, where experiments have been rigorously tested and results are already known). Equally important, this research experience is an opportunity for students to learn whether they has the interest and skills needed for a research-based career. Finally, this course includes training in reviewing and reporting scientific findings.

Note: registration in BIOC 4604/4605 is permitted *only* with permission of the B&MB Honours Coordinator, who is the administrator of the course. Permission will only be granted once the student has completed their **Honours Program Form**, has the Form signed by an **Academic Advisor** within the Department (this is not necessarily your Honours project supervisor), and has submitted this information to the Departmental Office.

B. THE HONOURS SUPERVISOR

The supervisor of a B&MB Honours student is a Biochemistry & Molecular Biology faculty member in whose lab that student carries out research. In addition to overseeing the research, the supervisor:

- (a) receives copies of e-mail communications sent to the student;
- (b) evaluates lab performance and seminar presentation;
- (c) evaluates Fall Term and Final Reports;
- (d) provides proof-reading of student reports and feedback on scientific writing;
- (e) provides guidance in research activities and seminar preparation;
- (f) ensures a clear delineation (by the student) between research conducted prior to *vs.* during the Honours year (Section G).

Note: an Honours supervisor is to alert the Honours Coordinator, in timely fashion, regarding student problems or concerns (work ethic, personality issues, etc.) or problematical research progress.

IDENTIFICATION OF AN HONOURS SUPERVISOR

Choice of supervisor may be based on research area or an interest in experimental techniques. Therefore, a student should become familiar with the research interests of B&MB faculty. B&MB research encompasses three broad areas: **(A)** Molecular Cell Biology and Molecular Genetics; **(B)** Comparative Genomics, Proteomics and Molecular Evolution; and **(C)** Structure, Function and Metabolism of Biomolecules. For up-to-date information on faculty research, see the B&MB webpage (<http://www.biochem.dal.ca/>).

Information on the research interests of faculty members is also available at a *reception* held for B&MB students in the fall term; at this reception, students can talk with faculty members in an informal environment.

An Honours student benefits from *interviewing* potential supervisors. These interviews clarify features of the research that each potential supervisor has available for an Honours student. A good research question has a reasonable probability of success in the limited research time available using techniques well established in the lab (avoiding difficulties with an approach that has not yet been ‘proven’ in the hands of a more experienced researcher). The research should also have a ‘back-up’ plan. (For example, if PCR reactions are planned and the products of these reactions are needed for the rest of the study, what if the initial PCR does not work?) Perhaps more importantly, an interview indicates whether supervisor and student personalities are compatible.

SUGGESTED TIMELINE FOR CHOOSING AN HONOURS SUPERVISOR

March 1 Final decision on Honours Supervisor

March 15 (a) Submission of signed Honours Program Form to B&MB Office
(b) Honours Coordinator is notified of this decision

March 31 Registration for Honours Research Course (BIOC 4604, 4605) will require an override from the Honours Coordinator and will only be granted once the supervisor has been identified and the signed Honours Program Form submitted to the B&MB Office

C. HONOURS RESEARCH *OUTSIDE* THE DEPARTMENT

In general, conducting Honours research projects with supervisors outside the Department of Biochemistry & Molecular Biology is not permitted.

D. EXPECTATIONS

Except in special cases determined by the Honours Coordinator, a formal Honours Research proposal is not necessary. The time and effort devoted to Honours research is at least equivalent to that expected for a full-credit (two-term) course (3 h of lecture, 3 h of lab, and 3 h of out-of-class learning per week): that is, at least 9 h (3 or more afternoons) per week. While more time may be needed for certain experiments, both student and supervisor should recognize the time constraints associated with conducting research during the academic year. In this light, *study breaks have proven to be an excellent time* for research.

At the beginning, student and supervisor have a discussion to clarify what the research involves, and come to a clear understanding of each other’s expectations. During the academic year, student and supervisor usually meet at least weekly to evaluate progress and discuss further experiments.

During the academic year, the Honours Coordinator schedules meetings with the Honours students. These meetings allow the Honours Coordinator to present information on scientific writing, lecture on seminar presentations, distribute marked Fall Term Reports and evaluations, and engage in other tasks related to the Honours program. Honours students (*including* Co-op students) are *required* to attend these meetings.

Note: a BIOC 4604/4605 student may TA for no more than 45 hours per term.

E. BUDGETING TIME

It is important to manage time effectively, with research started as soon as possible and pursued consistently throughout the academic year.

By mid-March, research should be winding up, even if some planned experiments have not been completed. It is best to limit further experimentation at this point and start writing. Spending a few more weeks gathering data is always tempting, but usually leaves too little time, at the busy end of term, to produce a high-quality Final Report. Begin writing early: an efficient plan is to write the Materials and Methods and the Results sections while experiments are still ongoing. This approach allows time to organize thoughts and clarify the expression and interpretation of data.

The supervisor needs to be given adequate time to read and comment on drafts of the Fall Term Report and the Final Report. Therefore, both student and supervisor benefit by setting deadlines for the delivery of Report drafts to the supervisor for critical appraisal. Training in scientific writing is an integral part of the Honours Research course. Therefore, even though the supervisor evaluates the two Reports, it is completely acceptable, and highly recommended, that s/he provide feedback on several drafts.

F. ATTENDANCE AT DEPARTMENTAL SEMINARS

B&MB holds weekly research seminars (see [schedule](#)). These seminars feature scientists from other institutions, as well as from B&MB and other units of Dalhousie University. In addition, graduate students are required to present their own research findings in the Departmental Seminar Program. Hence, B&MB seminars are excellent opportunities to learn about a variety of research areas and to observe different presentation styles. Attendance at these seminars is **mandatory** for every B&MB Honours student, and is, in part, a requirement for the '21st' credit of the Honours program.

Each Honours student keeps a *Seminar Diary* comprising one-paragraph summaries and *evaluations* of at least **six (6)** seminars (preferably those from the B&MB seminar series) **per term**. The Seminar Diary is supplied to the Honours Coordinator at the end of each term, along with the Fall Report or Final Report, on the *last day of classes*.

Do seminars in *other departments* count? **Yes**, as long as they are related to thinking about biomolecules at a molecular level. Pharmacology, chemistry, and microbiology seminars are often appropriate.

Do *lab/group meetings* count? **No** (as a lab member, you are expect to attend)

Do *journal clubs* (ARC/Yeast/Protein) count? **Yes**

Does the *grad student symposium* count? **Yes** (3 grad student talks = 1 seminar)

G. RESEARCH DURING THE SUMMER

Summer research in your Honours research lab is not mandatory. However, many advantages are associated with summer research. Spending the summer after your third year working in your Honours research laboratory provides familiarity with the research area and the lab itself, and experience with some of the techniques commonly used in the lab; all of this facilitates Honours research during the fourth year. Some research supervisors have funds available that permit them to hire summer students. Also, there are several granting agencies that support summer research (**Appendix E**).

Continuity of research: Honours research is not intended to interrupt ongoing research in a laboratory. Indeed, it is best if a student experiences the normal flow of experiments and development of lines of investigation. Hence it is not necessary to adjust a summer research experience in an attempt to separate that summer work from the research conducted during the academic terms and therefore featured in the Final Report. However, the onus is on the *supervisor and student* to ensure that only research conducted during the academic terms is highlighted in the Final Report; ‘background’ experimental results obtained during the summer may be presented, but should be *clearly indicated as such*.

Note: summer research need not be conducted in the same lab as the Honours research. Indeed, it is beneficial to conduct research in *any* lab, to provide exposure to a research environment and stimulate thinking in ‘research mode.’

H. CO-OP STUDENTS

Usually a Co-op student initiates Honours research in January rather than September, and thus out of the regular sequence of events during the academic year. A Co-op student intending to start Honours research in January should identify a research supervisor *before April* of the preceding year. Searching for a supervisor in the autumn term is usually too late, since by that time supervisory resources have usually been committed to Honours students in the ‘regular’ cycle.

A Co-op student who starts Honours research in January passes in the *Fall Term Report* on the last day of classes in the *winter* term and the *Final Report* on the last day of classes in the *autumn* term, and gives the *Honours Presentation* late in the fall term, usually in one of the B&MB seminar slots.

Although the topics of Honours meetings are usually focused on subjects relevant to the Honours students who are in the ‘regular’ cycle (September start date), subjects of interest to a Co-op student who started in January are also discussed. Moreover, certain events occur only once during the academic year; for example, the Honours Coordinator discusses the *Art of Seminar Presentation* early in the winter term. Also, Honours students have the opportunity in the winter term to observe graduate students present short seminars as part of the Graduate Seminar course. Co-op Honours students therefore attend the presentation and seminars in the winter term.

I. USE OF ARTIFICIAL INTELLIGENCE (AI) TOOLS

While it is expected that the Honours Research Report is the student's own work and ideas (with contributions from the supervisor), those contributions arising from all other sources must be clearly delineated, including AI tools. If AI tools are utilized, they must be **reported in the Methods section** of the Honours Report. This reporting should include:

- (a) disclosure of the use of the AI tool
- (b) the name of the AI tool and the version number
- (c) an clear explanation of how the tool was used (*e.g.*, to reword a draft or to generate content *de novo*)

Failure to acknowledge the use of AI may be considered as plagiarism and will be treated as such (see section VII).

J. PANDEMIC OPTIONS

In the event of a pandemic, the university will be obliged to follow public health directives, which could affect the evaluation components of this course and alter the methods of delivery of the Honours Presentations. In addition, specific health directives could also limit your access to laboratory facilities and in-person laboratory instruction.

REPORTS & SEMINAR DIARIES

PDF files are required for the Fall Report, the Final Report, and seminar diaries.

HONOURS PRESENTATIONS

An in-person delivery of the Honours Presentation is a valuable learning experience and is, therefore, the preferred mode of delivery. However, in the event of a health directive that does not permit in-person presentations, the Honours Seminars will be delivered via an online mode (*e.g.*, *MS Teams*). Alternatively, if this latter mode of delivery is not possible, submission of a narrated slide presentation (*e.g.*, *PowerPoint*) may be required.

WORKING IN THE LABORATORY

As outlined in **Section D**, the time and effort devoted to your Honours research is at least equivalent to that expected for a full-credit (two-term) course (3 h of lecture, 3 h of lab, and 3 h of out-of-class learning per week): that is, at least 9 h (3 or more afternoons) per week. In the event of a pandemic, public health directives may limit your access to laboratory facilities or require specific operating protocols to minimize the chance of contracting and/or spreading infections. As such, your hours in the lab may be reduced and your supervisor may have to re-configure your project so that it may be conducted remotely. ***Typical pandemic protocols that could be in effect include:***

- (a) maintaining physical distancing between people of at least 2 m

- (b) frequent handwashing and avoiding touching your face
- (c) wearing a mask while in common spaces and/or while working in the lab
- (d) adhering to specific occupancy guidelines (e.g., only 2 people on an elevator, limited numbers in a lab at a given time)
- (e) no access or limited access to some common spaces (e.g., lunch rooms, seminar rooms)
- (f) reduced hours in the lab or working full-time at home

Maintaining a safe working environment will be a priority for all!

II. SAFETY REQUIREMENTS

Before students are able to enter labs to conduct research, they must complete the following two modules:

WHMIS Training Module Laboratory Safety Training Module

WHMIS

The Workplace Hazardous Materials Information System (WHMIS), is a global harmonized system used to classify and label hazards and regulate handling procedures within industry and academic fields, especially those in science. **ALL** Honours Research Project students must complete WHMIS 2015 training provided by the Environmental Health and Safety Office or have completed the course within the last two years. This training course is provided through the Dalhousie College of Continuing Education. Upon completion of your WHMIS 2015 course you will receive a Letter of Completion (as a PDF document), which **you must upload** to the course BrightSpace page by **Friday, September 13, 2024**.

Note: A WHMIS certificate is valid for three years.

LABORATORY SAFETY TRAINING MODULE

All Honours Research Project students are required to complete the Laboratory Safety Training module developed by the Environmental Health and Safety Office, which is also provided through the Dalhousie College of Continuing Education. This online course was designed for all students, staff and faculty at Dalhousie working in laboratories that can potentially be exposed to a variety of hazardous products and processes. It covers the major elements of laboratory safety giving you a strong general foundation to understand the risks associated with working in a laboratory, including recognition and mitigation of laboratory hazards; working safely with chemicals; the use of engineering controls, administrative controls, use of personal protective equipment; and emergency procedures.

As with the WHMIS Training Module, upon completion of the module, you will receive a Letter of Completion (as a PDF document), which **you must upload** to the course BrightSpace page by **Friday, September 13, 2024**.

These online modules may be accessed online via the Dalhousie Environmental Health & Safety website followed by navigation to MyDal.

<https://www.dal.ca/dept/safety.html>

BIOSAFETY & RADIATION SAFETY

When required, supervisors should insure that students have obtained the appropriate biosafety training or radiation training (or other courses where required):

<https://www.dal.ca/dept/safety/programs-services/biosafety/biosafety-training.html>

<https://www.dal.ca/dept/safety/programs-services/radiation-safety.html>

III. FALL TERM REPORT

The Fall Term Report and Fall Seminar Diaries are due on the *last day of classes* of the *fall* term. PDF files are submitted to the Honours Coordinator via e-mail and labelled as:

Last name_first name_Fall_report.pfd
Last name_first name_seminars1.pfd

The main purpose of this Report is to demonstrate an understanding of the scientific literature related to the Honours research. While certain experimental results may have been obtained by the end of November, it is likely that these are not yet sufficient to make a complete story or reach significant conclusions. Thus the Fall Term Report usually emphasizes background knowledge rather than actual experimental results and discussion. Indeed, the Fall Term Report is usually like a miniature literature review, and serves as the basis for the Introduction section of the Final Report.

Despite the usual emphasis on background knowledge, the Fall Term Report is written in the format of a scientific paper (Section III and **Appendix F**). Attempted experiments and any preliminary results are described, and at least one Figure highlighting experimental results so far is expected. Although the Results (from the autumn term) and Discussion sections are usually brief, writing these sections indicates what other experiments are needed, and their content permits the supervisor and Honours Coordinator to determine if the research is proceeding as expected. These sections are then expanded in the Final Report. A Fall Term Report is usually **12-15 pages**, not including references, tables, and figures.

When reviewing the literature, it is important to read and cite the *primary literature*. Although citing reviews is often appropriate, citing textbooks almost never is.

The Fall Term Report is marked by the *supervisor* and by a *reader* from B&MB who is familiar with the subject area. These marks serve as a *guide* for the Honours Coordinator, who ultimately assigns the grade.

Note: it is customary for the supervisor to read several drafts of the Fall Term Report and provide constructive criticism (see also Section III).

IV. FINAL REPORT

The Final Report and the Winter Seminar Diaries are due on the *last day of classes* of the *winter* term. PDF files are submitted to the Honours Coordinator via e-mail and labelled as:

Last name_first name_final_report.pfd
Last name_first name_seminars2.pfd

The Final Report is written in the format of a scientific manuscript to be submitted to a journal for publication. The various styles used by scientific journals are usually described on each journal's webpage (Instructions for Authors). The Final Report follows the format of the *Journal of Biological Chemistry*, with one modification: the Materials and Methods (or Experimental Procedures) section is to follow the Introduction and precede the Results section. **Appendix F** summarizes the Instructions to Authors for *J. Biol. Chem.*

Reference style:

Northrop, D. B. (1981) Limits on the expression of enzyme-mediated solvent isotope effects. *J. Am. Chem. Soc.* **103**, 1208–1212 .

The Introduction is relatively brief and focused, and is not expected to present a truly comprehensive review of the literature. Following the Introduction, the Final Report (a) describes the materials and methods that were used so that others can repeat the experiments, (b) presents experimental results in a clear and concise fashion with appropriate figures and tables that present and/or illustrate the results, and (c) provides a detailed discussion explaining the significance of these results. The Final Report is usually **20-25 pages** plus references, figures and tables. (*Ignore* the page, figure, and table limitations specified by *J. Biol. Chem.*)

Attention to detail and style is important for good scientific writing; *details matter*.

As noted above, the supervisor is provided, in timely fashion, with an early draft of the Final Report for constructive criticism. It is common for several drafts of a Report to be commented on by the supervisor. A supervisor's comments facilitate better 'scientific style' in the writing and a sharper focus for the Report, so that it reads clearly and concisely, like most papers in respected scientific journals. It is *not* the supervisor's job to write the Report, or to 'polish' a sloppy initial draft. Although most reports do wind up nicely polished in the end, too much supervisor time getting a Report to its final elegant form may well be reflected in the final grade.

Note: a reader does not comment on drafts of a Final Report; this is the supervisor's job.

The Final Report is marked by the *supervisor* and by a *reader* from B&MB who is familiar with the subject area. These marks serve as a *guide* for the Honours Coordinator, who assigns the final grade using the criteria outlined below in Section V.

V. PRESENTATION

Near the end of March, an Honours student presents a short seminar describing their research findings. Each student presents for *10 min* (only), followed by *5 min* for questions; these time limits are adhered to rigidly.

A 10-min period is unusually brief for any presentation. Therefore, a student should think carefully, in advance, about how to phrase the ideas and information presented, and focus on providing (a) enough background information to indicate why the research issue is significant, (b) a description of what was done and how it was done, (c) major findings, and (d) conclusions. *Practice*. Expectations are:

1. Ample results;
2. A good understanding of conceptual and experimental aspects of the research;
3. An ability to answer questions related to the research (much like a thesis defense).

The supervisor listens to practice talk(s) and offers constructive criticism well in advance, including useful suggestions for improving the Honours research presentation. *Supervisors and readers* are encouraged to *attend all presentations* so that they are able to accurately evaluate students relative to their peers. A sample evaluation form for the seminars is in **Appendix C**.

For visual information (slides), PowerPoint (with projection) is the presentation medium, which allows last-minute edits. A computer and projector are provided for the presentations. Both Mac and PC formats may be used, although the former is preferred. Each PowerPoint presentation is loaded (usually from a USB drive) onto the computer the day before the presentation itself. *No funds are provided by the Department* to help cover the costs of the presentation.

Slides: the brevity of an Honours presentation puts a premium on both clarity and relevance of the accompanying slides. Indeed, clarity and relevance are important characteristics of *any* effective slide. Fuzzy, low-resolution images are always unsuitable. Images found on internet pages are of low resolution (only 72 dpi), and therefore unsuitable for use on slides. High-resolution images are present in *pdf* versions of published research papers and reviews. However, often such hi-res images copied from *pdf* pages are not entirely suitable for slides, because of the presence of extraneous material and/or a mismatch between *pdf* image content and what is needed for a good slide. Image content that is not directly relevant is distracting, especially in a brief Honours presentation. Therefore, images prepared by others (including slides from a supervisor's lab) are suitable only if the entire content is specifically relevant to the Honours presentation. A student should learn to use drawing software to *prepare (draw) slides* that are exactly what is needed to illustrate the presentation.

Note: clarity on a computer screen does not always indicate clarity from the back of the seminar room; slides should be tested before use to ensure they project as intended.

Note: presentation marks are adjusted down, 4% (1/25) per slide, for poor slides with low-res or extraneous, distracting information.

VI. EVALUATION

Honours research is meant to be a true research experience. Each student is graded on *productivity* and *performance* relative to peers (both current year and past years). The Honours Coordinator is responsible for assigning final grades. Evaluations are solicited from the supervisor and from a knowledgeable reader in the B&MB Department. The marking scheme for these evaluations is:

- (1) Early Evaluation by the supervisor, before the term drop date **(2%) (Appendix A)**
- (2) Fall Term evaluation **(30%) (Appendix B)**
 - (a) Fall Term Report, marked by supervisor, reader, and Honours Coordinator **(10%)**
 - (b) Fall term Research Evaluation, evaluated by supervisor **(18%)**
- (3) Overall Evaluation **(70%)** (see Appendices C and D)
 - (a) Final Report, marked by supervisor, reader, and Honours Coordinator **(25%)**
 - (b) Winter term Research Evaluation, evaluated by supervisor **(20%)**
 - (c) Presentation, marked by supervisor, reader(s), and Honours Coordinator **(25%)**

The evaluation forms used by supervisors and readers are in the Appendices. In general, the *supervisor's mark* is based on the student's *intellectual input* to the project, demonstrated *commitment* and *participation* in laboratory work, experimental skill, *productivity*, and interpretive ability and *originality*. The Final Report is evaluated on its organization, quality of writing (including freedom from jargon), clarity of expression of the rationale and background, research productivity, clarity and quality of exposition of the results (including graphics), and depth and breadth of the Discussion. All of these factors contribute to a final grade.

Grades & Percentage Range			
A+	90–100	C+	65–69
A	85–89	C	60–64
A–	80–84	C–	55–59
B+	77–79	D	50–54
B	73–76	F	< 50
B–	70–72		

Note: The above marking scheme is used as a *guide* only, and may not always reflect how a final mark is derived. The Honours Coordinator reserves the right to serve as an additional evaluator and adjust a mark to reflect productivity and performance relative to the peer group. This flexibility permits the Honours Coordinator to *increase* a mark in a case where a supervisor has been excessively harsh in evaluations, and to *decrease* an overinflated mark given by a supervisor. (Such situations do occasionally arise.)

A mark for BIOC 4604 itself is not sent to the Registrar in December because of the difficulty in adequately assessing research progress at that stage. The final mark, determined as outlined above, is submitted to the Registrar in April for both BIOC 4604 and 4605.

The submission of a grade for *either* BIOC 4604 *or* BIOC 4605 alone is highly unusual, since the Honours Research course comprises two half-credits (BIOC 4604 + 4605) and a student is evaluated on the total work (including written and experimental components). As noted above, often most of the experimental results are obtained in the second term. However, in the rare situation in which an Honours student leaves the program after conducting only a single term of Honours research, a mark is issued for that half-credit according to the following formula:

- (1) Early Evaluation by the supervisor, before the term drop date (**2%**)
- (2) Fall Term Report (**20%**)
- (3) Research effort as evaluated by supervisor (**78%**)

VII. ACADEMIC RESPONSIBILITIES & PLAGARISM

POLICY ON MISSED EXAMINATIONS AND ASSIGNMENTS

Fall Term and Final Reports are submitted to the Honours Coordinator via e-mail no later than **5:00 PM** on the designated due date.

Extension of the Early Evaluation, Fall Term Report, Research Presentation, and Final Report due dates is possible only in a case of medical illness; in this situation, the student should if possible notify the Course Coordinator or department office prior to or within 48 h of the Final Report due date. The student must also submit a Student Declaration of Absence Form to the Course Coordinator via e-mail within three (3) calendar days following the last day of absence. Other non-medical reasons, such as excessive workload, are not normally acceptable unless prearranged with the Course Coordinator. Extension of the due date does not normally exceed 7 calendar days. The grade for a late Report is reduced by an absolute value of 10% for each day after the due date (including weekend and holiday days). A missed evaluation item for which no satisfactory arrangement is made is assigned a mark of 0%.

The Student Declaration of Absence form can be submitted no more than two (2) separate times per course during a term. A student who exceeds this limit must inform the course instructor(s) and will be required to register with an Advisor at Student Academic Success (SAS). If a student has recurring short-term absences and does not register with SAS, it is at the instructor(s)' discretion to disallow any further Student Declarations and deny alternative coursework arrangements.

PLAGIARISM. The University's policy on **plagiarism** is described under "Intellectual Honesty" in the University Calendar. To avoid accusations of plagiarism, consider the following information provided by Dr. M. Dobson (used with permission).

What is plagiarism? The Dalhousie University Academic Calendar supplies the following definition: *Dalhousie University defines plagiarism as the submission or*

presentation of the work of another as if it were one's own. The Department of Biochemistry & Molecular Biology 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 class 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 lab instructor and credited appropriately.
- Submitting, in whole or in part, any work that has been submitted in another class, or re-submitting the same work in different years of the same class.

How can plagiarism be detected? If required by the instructor, work submitted for credit must be submitted in electronic as well as hard-copy form. Submissions may be screened by one or both of the following methods:

- A pattern recognition program that compares all submissions with one another as well as submissions from previous years. Every individual has a unique pattern of writing. This program will detect submissions that are derived from a common source, even if words or phrases have been changed.
- 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? As delineated in the Dalhousie University Academic Calendar, *Plagiarism is considered a serious academic offense which may lead to the assignment of a failing grade, suspension or expulsion from the University... [or] the University may rescind [a previously awarded] degree.* At Dalhousie University, the Department is obligated to refer any cases of suspected plagiarism to an Academic Integrity Officer, who 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?

- Prepare all submissions independently and ensure that they are expressed in your own unique writing style.
- Never share any written or electronic material with other students. Do not work with another student while preparing materials you are planning to hand in.
- Acknowledge material paraphrased extensively or copied from sources such as the Internet, journal articles or textbooks. Paraphrased short passages from a class textbook need not be acknowledged.
- Guard 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 (including a student taking the same class in a future year) copies it, then you may be aiding in the commission of an academic offence. If you suspect that someone has taken any of your work, notify your class instructor immediately.

- Use 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.

VIII. IMPORTANT DATES

Date	Significance
September 27, 2024	Early Evaluation
November 19, 2024	Presentations*
December 4, 2024	Fall Term Report + Seminar Diary (PDFs) (or <i>Final Report*</i>)
January 31, 2025	Early Evaluation*
March 18 & 19, 2025	Presentations (exact dates TBD)
April 7, 2025	Final Report + Seminar Diary (PDFs) (or <i>'Fall Term' Report*</i>)

* if research began in the winter term (usually Co-op)

Several *meetings* are held during the year at which various aspects of BIOC 4604/4605 are discussed (scientific writing, seminar preparation and style, etc.). E-mail notifications are sent from the B&MB departmental office (Tupper 9B) regarding these meetings.

If you have questions, please see the Honours Coordinator:

Dr. Stephen L. Bearne
Rm. 9J, Tupper Medical Building
902-494-1974
sbearne@dal.ca

Enjoy your research

B&MB HONOURS EARLY EVALUATION Appendix A

This Early Evaluation is to provide timely feedback to the student, allowing an opportunity to drop the course without academic penalty before the October 1 deadline. **Please discuss your Early Evaluation directly with the student and submit this form by September 27, 2024.** Both student and supervisor should then sign this form, which should be returned to the Honours Coordinator by the same date. — *SLB*

Student Name: _____ **Grade:** ____/4

Laboratory performance *so far*: work ethic, originality, intellectual contribution, independent reading and experimentation, etc.

Signature of Student _____ **Date** _____

Signature of Supervisor _____ **Date** _____

B&MB HONOURS FALL TERM EVALUATION Appendix B

Please fill out this form and return it to me by **Monday, January 13, 2025**, or send me an e-mail (sbearne@dal.ca) containing the same information. — *SLB*

Student Name: _____

FALL TERM REPORT (winter for most Co-op students): The purpose of the Fall Term report is to permit assessment of a student's understanding of the literature relevant to his/her research. While some experimental data should have been obtained by the end of November, it is unlikely that these would yield significant conclusions. Thus the Fall Term Report is more about background information than experimental results, with a focused literature review that can be the basis for the Introduction section in the Final Report. Nonetheless, the Fall Term Report should be structured like a paper (Introduction, Materials and Methods, Results, Discussion); Results (obtained during the autumn term) and Discussion should be brief. Drafts of this Report should have been read over by the supervisor at least once.

Comments: (Grasp of the relevant literature? Style consistent with a journal style? Feel free to edit the student's writing on the report itself.)

Report grade: _____ / 10

Laboratory performance so far: work ethic, originality, intellectual contribution, independent reading and experimentation, amount of effort needed to assist student with writing, etc. (*supervisors only*)

FYI: Grades & Percentages			
A+	90-100	C+	65-69
A	85-89	C	60-64
A-	80-84	C-	55-59
B+	77-79	D	50-54
B	73-76	F	< 50
B-	70-72		

Supervisor's grade: _____ / 18

Name of Reader / Supervisor _____ **Date** _____

B&MB HONOURS FINAL EVALUATION Appendix C

Please fill out this form and return it to me by **Friday, April 18, 2025**, or send me an e-mail (sbearne@dal.ca) containing the same information. Use additional pages as necessary. — *SLB*

Student Name: _____

Comments on Final Report:

Report grade: _____ / 25 (Reader) _____ / 25 (Supervisor)

Comments on laboratory performance: work ethic, originality, intellectual contribution, independent reading and experimentation, amount of effort needed to assist student with writing, etc. (*supervisors only*)

FYI: Grades & Percentages			
A+	90–100	C+	65–69
A	85–89	C	60–64
A–	80–84	C–	55–59
B+	77–79	D	50–54
B	73–76	F	< 50
B–	70–72		

Supervisor's Grade: _____ / 20 (Supervisor)

Name of Reader / Supervisor _____ **Date** _____

B&MB HONOURS PRESENTATION EVALUATION Appendix D

Please fill out this form and return it to the Honours Coordinator immediately after the presentations. Provide thoughtful comments that will benefit the student. — *SLB*

Student Name: _____

1. Content: (Was the presented material appropriate? Level of detail?)

2. Understanding & Questions: (Did the student appear to understand the material? How well were questions answered? Was the student prepared?)

3. Organization: (Was the talk well organized, with the data logically analyzed and a clear concluding message conveyed? **Note: image clarity and relevance has been a major point of emphasis; deduct 1 point for each slide with low-resolution images or extraneous information**)

4. Presentation Style:

(a) **audiovisual** (appropriate number of slides, effective use, pointer skills)

(b) **voice** (e.g., clarity, speed)

(c) **manner** (relaxed, eye contact, enthusiasm, nervous, distracting mannerisms)

5. General Comments and Suggestions for Improvement:

FYI: Grades & Percentages			
A+	90–100	C+	65–69
A	85–89	C	60–64
A–	80–84	C–	55–59
B+	77–79	D	50–54
B	73–76	F	< 50
B–	70–72		

Seminar grade: ____/25

Name of Reader / Supervisor _____ **Date** _____

SOURCES OF SUMMER RESEARCH FUNDING ^{Appendix E}

<u>AGENCY</u>	<u>APPLICATION DEADLINE</u>
Natural Sciences & Engineering Research Council (NSERC)	January
Beatrice Hunter Cancer Research Institute	February

Ask your research supervisor or the Department of Biochemistry & Molecular Biology Office for details.

FORMAT FOR THE HONOURS REPORT ^{Appendix F}

A **Final Report** is written in clear, concise English, is usually 20-25 pages in length (not counting references, tables, figure legends, and figures), and contains the following sections:

Title Page

Abstract

Introduction

Experimental Procedures (or Materials and Methods)

Results

Discussion

Acknowledgments

References

Tables

Structures, Charts, Schemes

Figure Legends

Figures

The **references** format for both the Fall Term Report and Final Report is that prescribed by the *Journal of Biological Chemistry*. Additional information may be found at:

<https://www.elsevier.com/journals/journal-of-biological-chemistry/0021-9258/guide-for-authors>