Faculty of Science Course Syllabus
Department of Biochemistry & Molecular Biology
BIOC 2300 (CRN 20157)
Introduction to Biochemistry
Winter term 2020

Instructors: E-mail Office location
Dr. Andrew Roger andrew.roger@dal.ca Tupper 8-C1
Dr. David Langelaan (coordinator) dlangela@dal.ca Tupper 8-F2

Tutor: BIOC2300@dal.ca
Aaron Woblistin

Course Description
BIOC 2300 (CREDIT HOURS: 3). This course surveys basic topics and concepts of Biochemistry. The structures, properties and metabolic inter-relations of proteins, carbohydrates and lipids are considered together with an introduction to nutrition and metabolic control. Although mammalian examples predominate some consideration of special aspects of biochemistry of microbes and plants is included.
FORMAT: Lecture 3 hours per week (MWF 11:35-12:25 in Rowe 1028)

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. Students are advised to also take CHEM 2401.03 and CHEM 2402.03.

Key knowledge expected prior to the course - chemical calculations (concentration, units and significant figures), chemical bonding and intermolecular interactions, properties of aqueous solutions, pH, dissociation of weak acids and bases, equilibrium constants, buffers (CHEM 1011); basic thermodynamics (enthalpy, entropy and Gibbs free energy), organic functional groups, chirality, chemical reactions and rate equations (CHEM 1012); eukaryotic cell structure, membranes and organelles, genes, DNA and RNA, the central dogma of molecular biology (replication, transcription and translation), simple Mendelian inheritance, fundamentals of biological evolution and animal biology (BIOL 1010/1011).
Course Objectives / Learning Outcomes

Welcome to Introduction to Biochemistry, where you will begin to learn how life works at the molecular level. Biochemistry is at the nexus of the physical, natural and medical sciences, yet has developed its own language and culture that are distinct from those disciplines. The knowledge and tools of biochemistry (along with the closely related discipline of molecular biology) will continue to be at the forefront of discoveries in medicine and biotechnology, driving advances in such areas as molecular and personalized medicine, nanotechnology, agriculture, environmental remediation and evolution. The concepts and skills obtained in this course will prepare you for more advanced training in biochemistry & molecular biology for careers in biotechnology and biomedical research, as well as in medicine and other health professions.

At the end of this course, you will be able to:

1. Use your knowledge of fundamental principles of chemistry and physics (e.g. molecular bonding, thermodynamics, kinetics) to explain important concepts in biochemistry.

2. Describe and interrelate the hierarchical levels of protein structure (1˚ to 4˚) and provide examples of how this structure relates to the function (or dysfunction) of various classes of proteins.

3. Explain how enzymes can increase the rates of biochemical reactions at the molecular level, and how enzymes may be inhibited and regulated.

4. Outline the major pathways by which precursor biomolecules (carbohydrates, lipids, amino acids) are synthesized and degraded, and the key points at which these pathways are regulated.

5. Describe how organisms obtain, store, and utilize energy through metabolic interconversion of biomolecules.

6. Understand how metabolic pathways are controlled to maintain homeostasis of organisms under normal physiological conditions, and how this may be disrupted by certain pathological states.

7. Place biochemical events within a genomic and cellular context.

Course Delivery and Communications

Students registered in the class will be able to access all course materials via Brightspace at https://dal.brightspace.com/; you can access this site using your Dal NetID and Password. If you need assistance using Brightspace, please contact the Help Desk at 902-494-2376 or helpdesk@dal.ca.

There are 34 lectures or review sessions, which will take place in the KC Rowe Building, Rm 1028 (Potter Auditorium) on Monday, Wednesday, and Friday at 11:35 am – 12:25 pm. A tentative lecture schedule with titles is attached to this handout, and will also be posted on the Brightspace Course Schedule. Any announcements or other important information will be posted on the course page.
Lecture notes (e.g. PowerPoint slide PDFs) will be available from the Lecture Notes folder, accessible from the Content tab, while other materials (e.g. Quizzes, videos, practice questions) will be posted in other folders, as appropriate. Links to information pertaining to a specific class may also appear in the Course Schedule entry for that date.

Student Response System: We will be using the Top Hat (www.tophat.com) classroom response system in class. You will be able to submit answers to in-class questions using Apple or Android smartphones and tablets, laptops, or through text message. No grade or participation mark will be associated with these questions; answering the questions through TopHat is purely for practice (see below for grading scheme). To register and sign up for an account, go to the Content section in the Brightspace course website, and click on the registration link in the Top Hat module. More information pertaining to subscriptions and pricing will be explained there. You can also visit the Top Hat Overview at (https://success.tophat.com/s/article/Student-Top-Hat-Overview-and-Getting-Started-Guide) or register by simply visiting our TopHat course website: https://app-ca.tophat.com/e/716556. Our Course Join Code is 716556. Top Hat requires a paid subscription, and a full breakdown of all subscription options available can be found here: www.tophat.com/pricing. Should you require assistance with Top Hat at any time, please contact their Support Team directly by way of email (support@tophat.com), the in-app support button, or by calling 1-888-663-5491.

Office hours and contact details:

Instructors will hold weekly office hours Tuesday mornings from 10 am – 12 pm. Additionally, a tutor will be available in person to answer questions and go over practice problems for 1 h each week. The tutor will also be available to answer questions by email (responding within 48 hours) at BIOC2300@dal.ca. Tutor hours will be announced at the beginning of the course.

Questions regarding lecture content should be addressed to the tutor or to the appropriate instructor by email. Questions will be answered, if possible, within two days, excluding the weekend.

Questions related to general course organization and management, class policies, exam schedules, medical issues, should be addressed to the coordinator (D. Langelaan).

Students should check their Dalhousie email frequently for news, updates, and replies to student questions that are relevant to the entire class (e.g. lecture content).

Course Textbook and Resources

The recommended textbook is ‘Essential Biochemistry’ (4th edition, 2017) by Pratt & Cornely (Wiley). The textbook can be purchased as a digital version only, or as a digital + print book. The digital version, which is available in WileyPLUS, also includes resources such as additional practice questions, exercises, and animated figures, and is accessible only for the duration of the term. You can log into WileyPLUS and test the digital textbook and resources for two weeks free of charge. Access to WileyPLUS is integrated into the Brightspace site of the course – look for the WileyPLUS icon to register. Access codes for WileyPLUS can be purchased through the
bookstore or online through the Brightspace course site; digital and print versions can be purchased through the bookstore.


The purchase of the textbook is recommended, but not mandatory. The weekly quizzes (see assessment) do not require access to the online version of the textbook, and we will post non-graded practice questions on Brightspace with access to all students in the course.

Other useful textbooks for the course are listed below, or on the Biochemistry Library Guide website at [http://dal.ca.libguides.com/c.php?g=257047](http://dal.ca.libguides.com/c.php?g=257047).

“Lippincott’s Illustrated Reviews: Biochemistry” by Ferrier (2014)
“Biochemistry: Essential Concepts” by Hardin and Knopp (2013) available online

A variety of free resources on biochemistry, cell and molecular biology are also available on the Internet, including:

Khan Academy videos: searchable YouTube videos on many topics ([https://www.khanacademy.org/](https://www.khanacademy.org/))
Ahern K, Rajagopal I “Biochemistry Free and Easy” (full service biochemistry textbook with bonus songbook; downloadable for iPad or as PDF)
[http://biochem.science.oregonstate.edu/biochemistry-free-and-easy](http://biochem.science.oregonstate.edu/biochemistry-free-and-easy)

### Course Assessment

<table>
<thead>
<tr>
<th>Component</th>
<th>Date</th>
<th>Weight (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online quizzes</td>
<td>Weekly</td>
<td>15</td>
</tr>
<tr>
<td>Midterm test 1</td>
<td>February 12</td>
<td>15</td>
</tr>
<tr>
<td>Midterm test 2</td>
<td>March 25</td>
<td>15</td>
</tr>
<tr>
<td>Final exam</td>
<td>Scheduled by registrar</td>
<td>55</td>
</tr>
</tbody>
</table>

There will be **two mid-term tests** held in class during the term: February 12 (covering lectures 1-14) and March 25 (lectures 15-27). Each mid-term test will be worth 15% of the final mark in the course and will consist of approximately 30 multiple-choice questions (MCQs). If a mid-term test is cancelled due to weather, it will take place during the next class.

The **final exam** (3 hours) will be scheduled during the April exam period and will be worth 55% of the final mark. The **final exam will cover the entire content of the course**, and will consist of approximately 90 multiple choice questions, some of which will include calculations and interpretation of diagrams. Neither the mid-term tests nor the final exam will be returned to students, but viewing may be arranged during office hours or by appointment.

**Weekly online quizzes** will be posted every Friday on Brightspace and will be collectively worth 15% of the final mark. These will consist of 10-15 MCQs based on the week’s material, and will be available for a one-week period until the following Friday at midnight. Some of the questions will be of similar style and difficulty as those used in the tests/exam, while some
question will be more difficult to test the comprehension of the material. Answers will be made available after the quiz has closed online. Online quizzes will be graded automatically, and instructors will not intervene for any reason to extend deadlines or provide exemptions for individual students!

*Please note that response to questions from students will not be guaranteed after 6 PM on the day before a test or exam.*

**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)

**Note:** Numeric grades will be rounded to the nearest whole number before being converted to a letter grade. **No exceptions will be made.**

**Missed midterms:**

A student who misses a midterm test due to illness should notify the instructor and the course coordinator as soon as possible, and **must submit a Student Declaration of Absence Form** through the course Brightspace page within three (3) calendar days following the last day of absence. There will be **no make-up mid-term tests**! If one midterm test is missed, the weighting of the other midterm and final exam will be increased in proportion to their value to 20%, and 65%, respectively. If both midterm tests are missed, the marks from the final exam will be worth 85% of the final grade. All quizzes together will be worth 15% in any case. Absence for non-medical reasons is not ordinarily acceptable unless prearranged with the instructor. A missed evaluation component for which no satisfactory arrangement has been made will be given a mark of zero. The Student Declaration of Absence form can only be submitted up to two (2) separate times per course during a term and only for absences of 3 days or shorter. Students who exceed one or both of these limits must inform their course instructor and course coordinator and will be required to register with an Advisor at Student Academic Success (SAS). If students have recurring short-term absences and do not register with SAS, it is at the instructors’ discretion to disallow any further Student Declarations and deny alternate coursework arrangements. **Please refer to the link below for further information on the University policy regarding Long-term absence:**

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

**Missed Final exam:**

A student who misses the final examination due to illness must notify the course coordinator or department office within 48 hours to provide a medical certificate (see Dalhousie Calendar, section 16.8). Absence for non-medical reasons is not acceptable. If necessary, a make-up final examination will be held shortly after the end of the official exam period, and typically before May 1. Students who need to write a makeup exam for medical or other reasons are expected to be available during this period.
## Course schedule 2020

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture Number &amp; Topic</th>
<th>Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 6 M 1</td>
<td>What is Biochemistry?</td>
<td>Langelaan</td>
</tr>
<tr>
<td>8 W 2</td>
<td>Aqueous Chemistry</td>
<td>Langelaan</td>
</tr>
<tr>
<td>10 F 3</td>
<td>Acid-base Chemistry and Buffers</td>
<td>Langelaan</td>
</tr>
<tr>
<td>13 M 4</td>
<td>Nucleic Acids, Genomics, and DNA Technology</td>
<td>Langelaan</td>
</tr>
<tr>
<td>15 W 5</td>
<td>Amino Acids and Proteins: Primary Structure</td>
<td>Langelaan</td>
</tr>
<tr>
<td>17 F 6</td>
<td>Secondary, Tertiary and Quaternary Protein Structure</td>
<td>Langelaan</td>
</tr>
<tr>
<td>20 M 7</td>
<td>Isolating and Analyzing Proteins</td>
<td>Langelaan</td>
</tr>
<tr>
<td>22 W 8</td>
<td>Protein Function I: Hemoglobin, Antibodies</td>
<td>Langelaan</td>
</tr>
<tr>
<td>24 F 9</td>
<td>Protein Function II: Structural Proteins</td>
<td>Langelaan</td>
</tr>
<tr>
<td>27 M 10</td>
<td>Protein Function III: Molecular Motors</td>
<td>Langelaan</td>
</tr>
<tr>
<td>29 W 11</td>
<td>How Enzymes Work</td>
<td>Langelaan</td>
</tr>
<tr>
<td>31 F 12</td>
<td>Enzyme Kinetics and Inhibition</td>
<td>Langelaan</td>
</tr>
<tr>
<td>Feb 3 M 13</td>
<td>Lipids and Membranes</td>
<td>Langelaan</td>
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<tr>
<td>5 W 14</td>
<td>Membrane Transport</td>
<td>Langelaan</td>
</tr>
<tr>
<td>7 F 15</td>
<td>Signal Transduction</td>
<td>Langelaan</td>
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<tr>
<td></td>
<td><strong>Munro Day</strong></td>
<td></td>
</tr>
<tr>
<td>10 M 16</td>
<td>Review</td>
<td>Langelaan</td>
</tr>
<tr>
<td>12 W 17</td>
<td>Test Lectures 1-14 (Storm day Feb. 14)</td>
<td>Langelaan</td>
</tr>
<tr>
<td>14 F 18</td>
<td>Review</td>
<td>Langelaan</td>
</tr>
<tr>
<td></td>
<td><strong>STUDY BREAK FEB 17 - Feb 21</strong></td>
<td></td>
</tr>
<tr>
<td>24 M 19</td>
<td>Carbohydrates</td>
<td>Langelaan</td>
</tr>
<tr>
<td>26 W 20</td>
<td>Introduction to Metabolism</td>
<td>Roger</td>
</tr>
<tr>
<td>28 F 21</td>
<td>Thermodynamic Control of Metabolism</td>
<td>Roger</td>
</tr>
<tr>
<td>Mar 2 M 22</td>
<td>Metabolic Pathways and Flux</td>
<td>Roger</td>
</tr>
<tr>
<td>4 W 23</td>
<td>Glycolysis and Gluconeogenesis</td>
<td>Roger</td>
</tr>
<tr>
<td>6 F 24</td>
<td>Regulation of Glycolysis</td>
<td>Roger</td>
</tr>
<tr>
<td>9 M 25</td>
<td>Other Pathways of Carbohydrate Metabolism</td>
<td>Roger</td>
</tr>
<tr>
<td>11 W 26</td>
<td>Citric Acid Cycle</td>
<td>Roger</td>
</tr>
<tr>
<td>13 F 27</td>
<td>Oxidative Phosphorylation 1: Electron Transport Chain</td>
<td>Roger</td>
</tr>
<tr>
<td>16 M 28</td>
<td>Oxidative Phosphorylation 2: ATP Synthase</td>
<td>Roger</td>
</tr>
<tr>
<td>18 W 29</td>
<td>Triglyceride Metabolism; Fatty Acid Oxidation</td>
<td>Roger</td>
</tr>
<tr>
<td>20 F 30</td>
<td>Fatty Acid Synthesis; Cholesterol Metabolism</td>
<td>Roger</td>
</tr>
<tr>
<td>23 M 31</td>
<td>Review</td>
<td>Roger</td>
</tr>
<tr>
<td>25 W 32</td>
<td>Test Lectures 15-28 (Storm day Mar. 27)</td>
<td>Roger</td>
</tr>
<tr>
<td>27 F 33</td>
<td>Proteins and Amino Acids in Energy Metabolism</td>
<td>Roger</td>
</tr>
<tr>
<td>Apr 30 M 34</td>
<td>Other Reactions of Amino Acid Metabolism</td>
<td>Roger</td>
</tr>
<tr>
<td>1 W 35</td>
<td>Integration &amp; Regulation of Metabolism 1</td>
<td>Roger</td>
</tr>
<tr>
<td>3 F 36</td>
<td>Integration &amp; Regulation of Metabolism 2</td>
<td>Roger</td>
</tr>
<tr>
<td>6 M 37</td>
<td>Review</td>
<td>Roger</td>
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<tr>
<td></td>
<td><strong>Final exams Apr 8-24</strong></td>
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</tbody>
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University Policies and Statements

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

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](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](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.


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](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).


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

University Grading Practices
[https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html](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](https://www.dal.ca/campus_life/academic-support/advising.html)

Science Program Advisors: [https://www.dal.ca/faculty/science/current-students/academic-advising.html](https://www.dal.ca/faculty/science/current-students/academic-advising.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


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


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

Copyright

All members of the Dalhousie community are expected to comply with their obligations under Canadian copyright law. Dalhousie copyright policies and guidelines, including our Fair Dealing Guidelines, are available at http://www.dal.ca/dept/copyrightoffice.html.
SERVICES AVAILABLE TO STUDENTS

The following campus services are available to all Dalhousie students. Unless noted otherwise, the services are free.

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<tr>
<th>Service</th>
<th>Support Provided</th>
<th>Location</th>
<th>Contact</th>
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</thead>
<tbody>
<tr>
<td>General Academic Advising</td>
<td>Help with - understanding degree requirements and academic regulations - choosing your major - achieving your educational or career goals - dealing with academic or other difficulties</td>
<td>Killam Library Ground floor Rm G28 Bissett Centre for Academic Success</td>
<td>In person: Killam Library Rm G28 By appointment: - e-mail: <a href="mailto:advising@dal.ca">advising@dal.ca</a> - Phone: (902) 494-3077 - Book online through MyDal</td>
</tr>
<tr>
<td>Dalhousie Libraries</td>
<td>Help to find books and articles for assignments Help with citing sources in the text of your paper and preparation of bibliography</td>
<td>Killam Library Ground floor Librarian offices</td>
<td>In person: Service Point (Ground floor) By appointment: Identify your subject librarian (URL below) and contact by email or phone to arrange a time: <a href="http://dal.beta.libguides.com/sb.php?subject_id=34328">http://dal.beta.libguides.com/sb.php?subject_id=34328</a></td>
</tr>
<tr>
<td>Studying for Success (SFS)</td>
<td>Help to develop essential study skills through small group workshops or one-on-one coaching sessions Match to a tutor for help in course-specific content (for a reasonable fee)</td>
<td>Killam Library 3rd floor Coordinator Rm 3104 Study Coaches Rm 3103</td>
<td>To make an appointment: - Visit main office (Killam Library main floor, Rm G28) - Call (902) 494-3077 - e-mail Coordinator at: <a href="mailto:sfs@dal.ca">sfs@dal.ca</a> or - Drop in to see us during posted office hours All information can be found on our website: <a href="http://www.dal.ca/sfs">www.dal.ca/sfs</a></td>
</tr>
<tr>
<td>Writing Centre</td>
<td>Meet with a tutor to discuss writing assignments (lab report, research paper, thesis, poster) - Learn to integrate source material into your own work appropriately - Learn about disciplinary writing from a peer or staff member in your field</td>
<td>Killam Library Ground floor Learning Commons &amp; Rm G25</td>
<td>To make an appointment: - Visit the Writing Centre in the Killam Learning Commons (Rm G40) and book an appointment - Call (902) 494-1963 - e-mail <a href="mailto:writingcentre@dal.ca">writingcentre@dal.ca</a> - Book online through MyDal We are open six days a week See our website: writingcentre.dal.ca</td>
</tr>
<tr>
<td>Mental Health Peer Support</td>
<td>The Campus Peer Support Program is a collaborative initiative of the Stay Connected Mental Health Project, Dalhousie University and four other universities in Halifax. There are two on-campus peer support workers who provide free, non-judgmental, confidential, and safe mental health support to students.</td>
<td>DSU Wellness Room SUB basement</td>
<td>Drop-in Monday to Thursday 4 – 6 pm <a href="https://www.dal.ca/campus_life/health-and-wellness/services-support/stay-connected-peer-support.html">https://www.dal.ca/campus_life/health-and-wellness/services-support/stay-connected-peer-support.html</a></td>
</tr>
</tbody>
</table>
Policy on Plagiarism – Dept. of Biochemistry & Molecular Biology

What is plagiarism?
The Dalhousie University Undergraduate Calendar 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?
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?
“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.