



# BIOC\*2580 Introduction to Biochemistry

Winter 2024

Section(s): 01

Department of Molecular and Cellular Biology

Credit Weight: 0.50

Version 1.00 - December 21, 2023

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## 1 Course Details

### 1.1 Calendar Description

This course introduces students to the evolution, chemical structure, and biological roles of the major molecular components of the cell: including proteins, nucleic acids, lipids, and carbohydrates. Topics and processes integrated through understanding biological macromolecules include enzymology and intermediary metabolism, with emphasis on catabolic processes. Students will gain basic investigative skills through hands-on experiences in a laboratory setting.

**Pre-Requisites:** CHEM\*1050

### 1.2 Course Description

**Please contact an instructor regarding any issues (medical, technical, accessibility, personal/compassion) you are having with the course.**

### 1.3 Timetable

#### Lectures

Mon, Wed, Fri 1:30-2:20 PM ROZH 104 or online via Zoom.

Lectures will be in-person and streamed live via Zoom. Lectures for the first six weeks will be recorded using Zoom and available later for viewing. Students assigned to the in-person lecture who are ill or need to commute during poor weather are strongly encouraged to attend remotely.

Students will need to login to their UoG Zoom account to gain access to the live-streamed

lectures.

All material covered in lectures is the responsibility of the student, including announcements regarding quizzes, midterms, labs, and exams.

## 1.4 Final Exam

Final Exam will be held on April 22, 2024, 7-9 pm. Location will be announced later.

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# 2 Instructional Support

## 2.1 Instructional Support Team

**Instructor:** Steffen Graether  
**Email:** bioc2580@uoguelph.ca  
**Telephone:** 519-824-4120 x56457  
**Office Hours:** **Instructor for Weeks 1 - 6**

**Office Hours:** Tuesdays, 2:00 - 3:00 pm

**Office Hours:** Fridays, 3:00 pm - 4:00 pm

Office hours will be held via MS Teams and do not require an appointment. See Courselink for the link.

If these times conflict with your academic schedule, we can arrange office hours by appointment. Please contact me by email

**Instructor:** Muhammad Zaman  
**Email:** mzaman02@uoguelph.ca  
**Office:** SSC 4252  
**Office Hours:** **Instructor for Weeks 7-12**

**Office hours:** Tuesdays 10am-12pm; Thursdays 2pm - 4pm

Walk-ins welcome if I am in the office.

**Lab Co-ordinator:** Jaspreet Kaur  
**Email:** bioc2580@uoguelph.ca  
**Office:** SC1 3521  
**Office Hours:** For any lab related issues , when you send an email to

bioc2580@uoguelph.ca , always put your Lab section number and your TA's name in the subject line.

## 2.2 2.2 Online Behaviour

Inappropriate online behaviour will not be tolerated. Examples of inappropriate online behaviour include:

- Posting inflammatory messages about your instructor or fellow students
  - Using obscene or offensive language online
  - Copying or presenting someone else's work as your own
  - Adapting information from the Internet without using proper citations or references
  - Buying or selling term papers or assignments
  - Posting or selling course materials to course notes websites
  - Having someone else complete your quiz or completing a quiz for/with another student
  - Stating false claims about lost quiz answers or other assignment submissions
  - Threatening or harassing a student or instructor online
  - Discriminating against fellow students, instructors and/or TAs
  - Using the course website to promote profit-driven products or services
  - Attempting to compromise the security or functionality of the learning management system
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- Sharing your user name and password
  - Recording lectures without the permission of the instructor

## 2.3 2.3 Recording of Lecture Materials

By enrolling in a course, unless explicitly stated and brought forward to their instructor, it is assumed that students agree to the possibility of being recorded during lecture, seminar or other "live" course activities, whether delivery is in-class or online/remote.

If a student prefers not to be distinguishable during a recording, they may:

1. Turn off their camera
2. Mute their microphone
3. Edit their name (e.g., initials only) upon entry to each session

## 3 Learning Resources

### 3.1 Required Resources

#### Introduction to Biochemistry e-textbook (Website)

<https://ecampusontario.pressbooks.pub/bioc2580/>

The Introduction to Biochemistry e-textbook is a **FREE** text companion to the lectures for BIOC\*2580, containing all of the important information you need to cover for the course. It's free and contains alerts for content that is related to the labs and chapter-ending example questions for you to test yourself.

The e-textbook can be access through a link found on CourseLink.

#### Zoom (Software)

<https://zoom.us>

We will be using Zoom to stream live and record lectures. The application is more stable than the web-based version of the program.

### 3.2 Recommended Resources

#### High Speed Internet (Equipment)

A high speed connection to the internet is required for those students attending the lectures remotely.

Although high speed connection to the internet is not required for student attending the lectures in person, it is highly recommended so that a better online experience with the tools, videos, and other materials used in the course can be achieved.

#### Lehninger Principles of Biochemistry (Textbook)

The following text is **recommended**, especially if you also intend to take the second biochemistry course, BIOC\*3560 Structure and Function in Biochemistry. It is also used in several other senior biochemistry courses:

Lehninger Principles of Biochemistry; D.L. Nelson and M.M. Cox, **8<sup>th</sup>** ed. (2021) **OR** **7<sup>th</sup>** ed. (2017) W.H. Freeman, NY.

Multiple copies of this text book are on Reserve in the library. An ebook is also available to be borrowed on a single user basis.

There are multiple options, each containing the same information, but in slightly different formats:

1. The loose-leaf textbook bundled with Achieve\*

## 2. Achieve for Lehninger Principles of Biochemistry (gives access to ebook)

\*Achieve gives access to all online resources associated with the text book and the ebook. Use it for self study. It will NOT be used in the course to assign homework or for evaluation purposes. With Achieve access (by itself or freely bundled with a physical text), you will have access to the eBook for the duration of your education or 4-years.

Loose leaf versions cannot be resold as a used textbook at the Bookstore. **BE AWARE: With the eBook, you are purchasing access to the electronic version for a specific period of time; once this is over, you will not be able to access the eBook.**

### 3.3 Getting Help in BIOC\*2580

There are several ways to get help in BIOC\*2580

#### 1. Course Discussion Board

Check the Class Discussion Board for your questions. If it is not there, post your content-related question to the discussion board. Classmates can help and we will try to clarify questions, too!

#### Why use the Discussion Board?

It's good for you and for everyone in the class! It's not uncommon that we get the same or very similar questions over email. By posting to the Discussion Board, we save time and energy answering the same question multiple times. In addition, we can help each other by following the Discussion Board and helping each other out! Subscribe to the Discussion Board and sign up for notifications.

#### 2. Course Email: [bioc2580@uoguelph.ca](mailto:bioc2580@uoguelph.ca)

You can make use of the course e-mail address to ask questions. Only use your @uoguelph account when sending messages to this address. Enquiries regarding the laboratory should have the word LAB in the subject line. **E-mail may not be answered outside of regular business hours.**

#### 3. Supported Learning Groups (SLG)

SLGs are free study sessions led by students. These trained SLG Leaders sit in on lectures and run sessions that are informal, flexible, and fun. Students who make regular use of the SLG have a higher average grade on this course than those who do not. SLG information and schedules are available in CourseLink.

## 4 Learning Outcomes

### 4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Describe the structures and the chemical properties of the 20 amino acids.
2. Describe the methods used in the separation of amino acids and proteins based on their chemical properties.
3. Describe the first three levels of protein structure and explain how protein structure is influenced by the amino acid sequence.
4. Explain how enzymes catalyze reactions and how enzyme activity is affected by inactivators and inhibitors.
5. Describe the structure and the chemical properties of carbohydrates (monosaccharides and disaccharides), lipids (fatty acids, triglycerides and glycerophospholipids) and nucleic acids (RNA and DNA).
6. Describe the chemical reactions involved in the generation of ATP through the oxidation of glucose and fatty acids.
7. Apply several of the knowledge outcomes in 1-6 by effectively carrying out laboratory procedures to collect, properly record and analyse experimental data.
8. Manage time effectively and follow instructions to meet deadlines for course requirements.

## 5 Teaching and Learning Activities

### 5.1 Lecture Schedule

**NOTE:** Schedule is only approximate and is intended to guide students. Some material may be covered earlier or later depending on progress during the lecture.

\* Textbook Section

Class	Date	Topic	E-Textbook	Lehninger (7th ed)	Lehninger (8th ed)
1	Jan 8	Biological polymers; building blocks and hydrolyzable bonds. Amino acids, peptides and proteins.	Chapters 1 and 2	12-16; 75-76; 85-86	(1.2)* 10-14; (3.1) 70-71; (3.2) 80-81

2	Jan 10	Amino acids; polarity and ionization.		75-85	(Ch 3;3.1) 70-80
3	Jan 12	Properties of aqueous solutions; dissociation of weak electrolytes		47-50; 58-65	(Ch 2; 2.1) 43-46; (2.2; part of 2.3) 53-61
4	Jan 15	Analytical methods and separation by chromatography	Chapters 3 and 4	89-96	(3.3) 83-90
5	Jan 17	More analytical methods		89-96	(3.3) 83-90
6	Jan 19	Polypeptides and proteins: structural hierarchy, sequence. Basis of reactivity and hydrolysis		96-102	90-95
	<b>Jan 20-26</b>	<b>Quiz 1 (Lectures 1-6)</b>			
7	Jan 22	Sequence determination	Chapters 5 and 6	96-102	90-95
8	Jan 24	Secondary structure I: $\alpha$ -helix, $\beta$ -sheet		115-125	(Ch 4; 4.1;4.2) 106-116
9	Jan 26	Secondary structure II: $\alpha$ -helix, $\beta$ -sheet		115-125	106-116
10	Jan 29	Principles of tertiary structure	Chapters 7 and 8	125-141	(4.3) 106-128
11	Jan 31	Binding and recognition of substrates and specificity of enzymes		187-198	(Ch 6; 6.1; 6.2) 177-288
12	Feb 2	The basis of chemical and enzymatic catalysis		187-198	177-188
	<b>Feb 3-9</b>	<b>Quiz 2 (lectures 7-12)</b>			
13	Feb 5	Mechanism of action of chymotrypsin	Chapters 9 and 10	213-217	(6.4) 203-208
14	Feb 7	Enzyme assay and detection		95-96; 203	(3.3) 89-90; (6.3) 192-193
15	Feb 9	Enzyme kinetics		198-213	(6.3; 6.4) 188-203
16	Feb 12	Enzyme kinetics: linear plots; Enzyme Inhibition and regulation	Chapter 11	198-213	(6.3; 6.4) 188-203
17	Feb 14	Enzyme Inhibition and regulation contd		198-213	(6.3; 6.4) 188-203
18	Feb 16	Review			

<b>Feb 19-23 Winter Break - No Classes</b>					
19	Feb 26	Lipids: fatty acids; TAG	Chapters	361-366	(Ch 10; 10.1) 341-344
20	Feb 28	Lipids: Phospholipids; Analysis of lipids	12 and 13	366-369; 381-383	(10.1; 10.2) 344-348; (10.4) 361-362
21	Mar 1	Carbohydrate chemistry: simple sugars		241-243	(Ch 7; 7.1) 229-233
	<b>Mar 2</b>	<b>Midterm Examination 10:00-11:30</b>			
22	Mar 4	Carbohydrate chemistry: rings; reducing sugars	Chapters 13 and 14	243-247; 249	(7.1) 233-235; 237
23	Mar 6	Carbohydrate chemistry: glycosides and disaccharides		250-252	(7.1) 237-241
24	Mar 8	Chemistry of nucleic acid bases, nucleosides and polynucleotides		279-285	(Ch 8; 8.1) 263-269
	<b>March 9-15</b>	<b>Quiz 3 (Lectures 19-24)</b>			
25	Mar 11	The DNA double helix	Chapters 15 to 19	285-287	(8.2) 269-272
26	Mar 13	ATP as cellular energy currency		507-514	(13.3) 479-485
27	Mar 15	Introduction to Metabolism: Redox reactions		491-494; 517-522	(Part II) 461-464; (13.4) 488-492
28	Mar 18	Adenosine containing cofactors; Catabolism of fats	Chapters 20 and 21	621; 522- 526; 649- 650	576; (13.4) 492-496; (8.10) 294-295
29	Mar 20	Fatty acid $\beta$ -oxidation		652-659	(Ch 17) 601; (17.1) 603-611
30	Mar 22	Glycolysis: anaerobic energy generation		533-545	(Ch 14) 510-521
	<b>Mar 23-29</b>	<b>Quiz 4 (Lectures 25-30)</b>			
31	Mar 25	Fates of pyruvate and cytosolic NADH; fermentation	Chapters 21 and 22	619-624; 739-740; 553-558	(14.3) 525-526; 530- 533; (Ch 16) 574-578; (Ch 19) 683-686
32	Mar 27	Acetate to CO <sub>2</sub> : the citric acid cycle		619; 624-636	(Ch 16) 574-575; (16.2) 578-589
33	Apr 1	The electron transport chain	Chapter	711-724	(Ch 19) 659-672



			23		
34	Apr 3	Chemiosmotic energy transduction	Chapter 24	724-728	672-674
35	Apr 5	ATP Synthase	Chapter 25	728-739	674-683
36	Apr 8	Efficiency of Oxidative Phosphorylation	Chapter 26	657-659	609-611
	Apr 22	<b>Final Examination 19:00-21:00</b>			

### 5.2 Lab Schedule (Subject to Change)

<b>LAB SCHEDULE-BIOC*2580 W'24</b>		
<b>Group A: Odd Numbered Sections- 103,105,107,109,111,113,115,117,119,121,123,125, 227</b>		
<b>Group B: Even Numbered Sections- 102,104,106,108,110,112,116,118,120,122,124, 226, 228</b>		
WEEK #	Dates	Activity
1	Jan 8-12	Lab Safety and Micropipetting video and Quizzes on Courselink-Group A and B
2	Jan 15-18	Lab 1- Separation and Identification of Amino Acids- Group A
3	Jan 22-25	Lab 1- Separation and Identification of Amino Acids- Group B
4	Jan 29-Feb 1	Lab 2- Separation and Quantification of Proteins- Group A
5	Feb 5-8	Lab 2- Separation and Quantification of Proteins- Group B
6	Feb12-15	Lab 3: LDH Enzyme Kinetics- Group A
7	Feb 19-23	Reading Week
8	Feb 26-29	Lab 3: LDH Enzyme Kinetics- Group B
9	Mar 4-7	Lab 4- Determination of Iodine number of Lipids-Group A
10	Mar 11-14	Lab 4- Determination of Iodine number of Lipids-Group B

<b>LAB SCHEDULE-BIOC*2580 W'24</b>		
<b>Group A: Odd Numbered Sections- 103,105,107,109,111,113,115,117,119,121,123,125, 227</b>		
<b>Group B: Even Numbered Sections- 102,104,106,108,110,112,116,118,120,122,124, 226, 228</b>		
11	Mar18-21	Lab 5- Determination of Reducing sugars in Carbohydrates-Group A
12	Mar 25-28	Lab 5- Determination of Reducing sugars in Carbohydrates-Group B

## 6 Assessments

### 6.1 Grade Assessments

<b>Form of Assessment</b>	<b>Weight of Assessment (% of final)</b>	<b>Due Date of Assessment</b>	<b>Course Content /Activity</b>	<b>Learning Outcome Addressed</b>
Online Quiz #1	2.5%	January 20-26, 2024	Lectures 1-6	#1, 2, 8
Online Quiz #2	2.5%	February 3-9, 2024	Lectures 7-12	#2, 3, 8
Midterm	25%	March 2, 2024	Lectures 1-18	#1, 2, 3, 4, 8
Online Quiz #3	2.5%	March 9-15, 2024	Lectures 19-24	#5, 8
Online Quiz #4	2.5%	March 23-29, 2024	Lectures 25-30	#5, 6, 8
Final Exam	40%	April 22, 2024	Cumulative, with emphasis on lectures 19-36	#1-6, 8

Form of Assessment	Weight of Assessment (%) (% of final)	Due Date of Assessment	Course Content /Activity	Learning Outcome Addressed
Laboratories	25%	See Lab Schedule	Laboratory experiments and write-up	#7, 8

Lecture Component: 75%

Laboratory Component: 25%

Total: 100%

## 6.2 Note

Students must pass the Lecture component on its own AND the Laboratory component on its own to pass the course as a whole (i.e. students need to achieve an overall grade of at least 37.5/75 for the 4 quizzes and the 2 exams and a minimum of 12.5/25 for the laboratory). This means that a high laboratory mark cannot be used to secure a pass if the lecture component is failed or vice versa. In cases where this standard is not achieved, the final grades assigned will either be the calculated grade or 47%, whichever is less.

## 6.3 Lecture Component

### LECTURE COMPONENT

#### ONLINE QUIZZES:

The online quizzes are meant to ensure that students keep up with and have a chance to assess their understanding of the lecture material. Although these assignments are online, **STUDENTS ARE EXPECTED TO ANSWER THE QUESTIONS BY THEMSELVES**. The goal of the quizzes is to have students review and reflect on the material, and facilitate studying for the midterm and final exam in a lower-stakes format. As such, students will be given **three attempts** at the quiz over a period of one week. For each attempt, you will see your overall grade and the mark you received for each question (from which you can determine which questions you answered correctly and which you answered incorrectly) immediately after submitting the quiz. The highest attempt out of the 3 will be used in the overall grade calculation. The allocated time limit for each attempt is 1 hr\*. Since the questions are randomly selected, **each attempt will have different questions** but on the same theme.

\*The time limit of 1 hr is given due to the formative nature of these quizzes. It does not reflect the amount of time that would be required to complete the ~15 questions that each quiz contains. Midterm and final exams will consist of a larger number of questions with a much shorter time limit.

**Access to grades, answers and feedback:** Students will be granted access to the feedback and answers to the quiz questions on the day following the closing of the quiz. Questions about the grades must be made to the instructor within a period of one-week following that. **Please note that feedback, explanations or answers cannot be provided while the quiz is open.** Please email your questions regarding specific quiz questions **ONLY** after reviewing the marking scheme once it has been released.

**Deferrals policy: The quiz cannot be extended beyond the one week period it is open as answers are set to be released immediately following the closure of each quiz.** Students with medical or compassionate issues that **cover the entire one-week period the quiz is open** will be granted a changed mark weighting. The value of quizzes missed will be added to the value of the final exam. Please inform the instructor within **one week** of the end of the assignment deadline. Be sure you have access to a working computer with a stable Internet connection. **Technical problems are not grounds for a deferral.**

#### **MIDTERM EXAM :**

**MARCH 2, 2024, 10-11:15 am in ROZH 102 and ROZH 104**

**STUDENTS MUST NOTIFY THE INSTRUCTOR OF ANY ACADEMIC OR EXTRA-CURRICULAR (UNIVERSITY RELATED) CONFLICTS BY Friday, January, 19.** Academic conflicts are courses, labs or exams that are scheduled at the exact same time. For extra-curricular activities, **ONLY** university related activities will be accommodated. Work commitments are **NOT** grounds for deferrals.

**Access to grades, answers and feedback:** Students will be granted access to their grades and answers to the midterm once all exams have been graded. Questions about the grades must be made to the instructor within one week of the midterm being available for return.

**Deferrals policy:** Only medical or compassionate accommodations will be granted a missed midterm. There will be no alternate midterm dates. Please inform the instructor within **one week** of the midterm date. If a missed midterm is granted the final exam will be reweighted to 65%.

#### **FINAL EXAM:**

**APRIL 22, 2024, 7-9 pm. Location TBD**

This exam will **cover the entire course (lectures 1-36)**, with strong emphasis on the material covered after the midterm examination. A **metabolic chart** will be posted on Courselink and

provided at the final examination. The chart shows chemical structures organized into metabolic pathways, but it does not show compound or enzyme names, reaction stoichiometries and mechanisms, etc. Students are expected to be familiar with these, as outlined in the Learning Outcomes for the course.

**Technology in all exams:** Students may use a numerical calculator with ln and log functions for exams. Advanced calculators, computers, tablets or smart phones may **not** be used.

## 6.4 What to do if you experience internet problems during a test!

### 1. **If you experience internet problems** or CourseLink problems during a Quiz:

- Contact CourseLink Support immediately:  
Phone: 519-824-4120 ext. 56939  
Toll Free: 1-866-275-1478  
Email: [courselink@uoguelph.ca](mailto:courselink@uoguelph.ca)
- Email your instructor explaining the difficulty and how long it took to resolve the problem. We may extend the quiz by the amount of time it took to get the problem solved with CourseLink.

### 2. **For Short System Problems:**

- We may extend the deadline / access for the whole class

### 1. **For Longer System Problem:**

- We may reschedule a make-up test / exam for another time

## 6.5 Laboratory Component

### LABORATORY COMPONENT

Laboratory sessions are designed to relate to the lecture content and to introduce students to proper scientific recording of data and analysis of results. The Labs will be conducted in-person (unless directed otherwise by the University, in which case we will switch to virtual Labs).

**Laboratory sessions begin the week of January 15 (see Laboratory Schedule)**

Any Lab related information will be posted under the LABS tab on the Courselink, so, make sure to check it regularly.

**Lab write-up submissions in the Dropbox:**

The Lab Write-up will be done on the template provided in the Lab Manual. Complete the write-up and submit it in the Dropbox on Courselink within 24 hours of completion of your lab.

Students missing **more than one lab submission without documentation** will not earn credit for the lab component of the course. Students missing **more than 2 laboratories, even with valid documentation (medical or compassionate), cannot pass the course**, and will earn a grade of 47% for the entire course.

**Lab Quizzes:**

During the week of Jan 8-12, you have to take the two lab quizzes on Courselink based on the safety video and the Micropipetting video posted under the labs folder on Courselink. Additionally, there will be a small lab quiz during the first 10 min. of each Lab period (So be on time for each lab), which will include the questions from the theory of the day's lab. You will not be quizzed on the procedure or the results.

**Location:**

Rooms SSC3110, and SSC3111

**Lab exemptions:**

If you have earned a passing lab grade in a previous attempt at BIOC\*2580 within the last 12 months, you may apply for a lab exemption. Send your request to [bioc2580@uoguelph.ca](mailto:bioc2580@uoguelph.ca) (put *Lab exemption* on the Subject line). **You do not have a valid lab exemption unless you have received confirmation that it has been granted.**

**Lab section number:**

The last 3 digits on your class schedule on **WEBADVISOR** are your section number; e.g. for BIOC\*2580\*0110, the section number is 110. If you have an odd section number, you belong to Group A, and if you have an even section number you belong to Group B.

Always put your section number and your TA's name in the subject line when you send and email regarding any lab issue to [bioc2580@uoguelph.ca](mailto:bioc2580@uoguelph.ca).

**Lab Manual:**

The Lab Manual can be purchased from the Bookstore. Make sure to buy it before your first lab, and read the Intro chapter, it will answer many of your questions. Also read the Chapter on the first lab and do the homework you are required to do before you come to do the Lab 1 experiments.

**Lab TA:**

Each section will be assigned a TA and her/his email ID will be posted under the LABS tab on the CourseLink. You can also email your TA regarding any questions you have about the Lab write-up.

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## 7 Course Statements

### 7.1 Themes

There are three main themes that run throughout this foundational course in biochemistry:

1. The principles of Physics and Chemistry can explain Biology.
2. The Structure and Function of biological molecules are inextricably connected.
3. Biochemistry is the link between biological Metabolism and its underlying Chemistry

### 7.2 Honour Code of Conduct

In this course, you agree to abide by the following code of conduct:

1. I will not engage in any other activities that will dishonestly improve my results or dishonestly improve or hurt the results of others.
2. On quizzes, midterms and final exam:
  1. **my answers will be my own**
  2. **I will not communicate with anyone else**
  3. **I will not consult outside resources or look up answers**
  4. **I will not share responses or questions with anyone during or after the quiz.**  
This includes any official answer keys provided by the course instructors or Teaching Assistants.

It's simple; it's straightforward: please behave **honourably, appropriately**, and with academic **integrity**.

By enrolling and participating in this course, you agree to follow the above honour code of conduct.

### 7.3 Online Behaviour - Netiquette

When you are meeting together in a live online session, there are things to do and things not

to do:

**Things to do.** These are good things to do in a remote class:

- Show up early. You can use the time to test your tech, chat with people, etc.
- Set a good tone with comments. Tone is more difficult to read online, so making an extra effort helps communicate effectively
- Turn **ON** your video (optional but encouraged) to help us remember that we are real people in the class!
- Stay on **mute**, except when speaking. Feedback is a challenge when there's background noise.
- Raise your hand in Zoom when you want to say something or ask a question and wait until others have finished their thought. That way, everyone is heard.
- Say your name when you speak. This is especially helpful in bigger groups or if people are joining on the phone.
- You can use the chat function to ask questions. Participants can answer each other. Remember that the session is being recorded.
- The classes will be recorded and posted on CourseLink so that people can participate asynchronously.

**Things NOT to do.** Examples of inappropriate online behaviour include:

- Posting inflammatory messages about your instructor or fellow students
- Using obscene or offensive language online
- Copying or presenting someone else's work as your own
- Adapting information from the Internet without using proper citations or references
- Buying or selling term papers or assignments
- Posting or selling course materials to course notes websites
- Having someone else complete your quiz or completing a quiz for/with another student
- Stating false claims about lost quiz answers or other assignment submissions
- Threatening or harassing a student or instructor online
- Discriminating against fellow students, instructors and/or TAs
- Using the course website to promote profit-driven products or services
- Attempting to compromise the security or functionality of the learning management system
- Sharing your user name and password
- Recording lectures without the permission of the instructor

## 7.4 Recording of Classes

Recordings of classes are solely for the use of the authorized student, and may not be



**reproduced, edited** in whole or part, or **transmitted** to others, without the express written consent of the instructor.

Since some sessions are run synchronously on Zoom, students may be recorded during these sessions.

By enrolling in the course, unless explicitly stated and brought forward to their instructor, it is assumed that students agree to the possibility of being recorded during “live” (synchronous) course activities.

If a student prefers not to be distinguishable during a recording, they may:

1. turn off their camera
2. mute their microphone
3. edit their name (e.g., initials only) upon entry to each session
4. use the chat function to pose questions.

Students who express to their instructor that they, or a reference to their name or person, do not wish to be recorded may discuss possible alternatives or accommodations with their instructor.

## 7.5 In Case of a Zoom Interruption

If our live-streaming session goes down during class, stay in the session and check your email within 10 minutes for instructions. If you do not hear from us in 10 minutes, the internet is likely not working and the rest of that session will be **cancelled**.

We will be in touch through email and an announcement about how we will make up the session.

## 7.6 Statement on the use of animals:

No animals are used directly in the laboratory exercises for BIOC\*2580. However it is in the nature of biochemistry that some enzymes or biochemical substances may be derived from animal sources. Efforts have been made to reduce the use of animal related products by using equivalent enzymes or substances derived from microbial or plant sources, but in some cases it may be necessary to use these products

# 8 Department of Molecular and Cellular Biology

## Statements

### 8.1 Academic Advisors

If you are concerned about any aspect of your academic program:

- Make an appointment with a program counsellor in your degree program. [B.Sc.](#)

[Academic Advising](#) or [Program Counsellors](#)

## 8.2 Academic Support

If you are struggling to succeed academically:

- Learning Commons: There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist.  
<http://www.learningcommons.uoguelph.ca/>
- Science Commons: Located in the library, the Science Commons provides support for physics, mathematic/statistics, and chemistry. Details on their hours of operations can be found at: <http://www.lib.uoguelph.ca/get-assistance/studying/chemistry-physics-help> and <http://www.lib.uoguelph.ca/get-assistance/studying/math-stats-help>

## 8.3 Wellness

If you are struggling with personal or health issues:

- Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance.  
<https://www.uoguelph.ca/counselling/>
- Student Health Services is located on campus and is available to provide medical attention. <https://www.uoguelph.ca/studenthealthservices/clinic>
- For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to stress management and high performance situations.  
<http://www.selfregulationskills.ca/>

## 8.4 Personal information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) <http://www.e-laws.gov.on.ca/index.html>. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes.

For more information regarding the Collection, Use and Disclosure of Personal Information policies please see the Undergraduate Calendar.  
(<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/intro/index.shtml>)

## 8.5 Course Offering Information Disclaimer

Please note that course delivery format (face-to-face vs online) is subject to change up to the first-class day depending on requirements placed on the University and its employees by public health bodies, and local, provincial and federal governments. Any changes to course format prior to the first class will be posted on WebAdvisor/Student Planning as they become available.

## 9 University Statements

### 9.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

### 9.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

### 9.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

## 9.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

## 9.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

For Guelph students, information can be found on the SAS website  
<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website  
<https://www.ridgetownc.com/services/accessibilityservices.cfm>

## 9.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community—faculty, staff, and students—to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct  
<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

## 9.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

## 9.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>

## 9.9 Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).

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