

LAND ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəyəm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on their culture, history, and traditions from one generation to the next on this site.

COURSE INFORMATION

Course Title	Course Code Number	Credit Value
General Biochemistry	BIOC 302.202	3

PREREQUISITES

One of BIOL 201, BIOC 202, BIOC 203 and one of CHEM 203, CHEM 223, CHEM 233

COREQUISITES

None

COURSE LOCATION AND TIME

Time (Day(s), Hour)	Room
Lecture Monday, Wednesday and Friday 8-9:00AM	WESB 100
Tutorial Online Mon 3-4PM and Wed 2:30-3:30 and in-person Tue 10-11AM	Centre for Interactive Research on Sustainability Rm 1250

COURSE CHAIR

Course Chair	Contact Details
Dr. Eden Fussner-Dupas (Pronouns: she/her/hers)	eden.fussner@ubc.ca
Office Location	Office Hours (Group drop-in)
Rm 3119 Biological Sciences Building, north wing 604-822-8260	Wed 9-10PM (ZOOM) Friday 9:30-11AM (in-person)



TEACHING TEAM

Teaching Assistants	Contact Details
Felix Hong (Pronouns: he/him/his)	felix04@dentistry.ubc.ca
Al Rohet Hossain (Pronouns: he/him/his)	alrohet.hossain@ubc.ca
Gina McNeill (Pronouns: she/her/hers)	mcneillg@student.ubc.ca

COURSE COMMUNICATION

For general questions and inquiries that relate to the syllabus or course content, use the discussion boards or piazza. These two forums are monitored regularly (piazza more than once a day M-F). For private issues that impact your progress or success in the course please email the course chair eden.fussner@ubc.ca and for issues arising from the tutorial please contact your TA, emails above.

LEARNING OUTCOMES

At the end of this course students will be able to:

- Know and recognize the structures of key intermediates related to metabolism of fatty acids, amino acids
- Understand the chemical bases of fundamental metabolic processes
- Understand the processes involved in biological information storage and transfer
- Develop capacity to analyze and interpret problems relating to metabolism and information transfer
- Synthesize and apply knowledge of biochemistry to answer questions related to human health and biotechnology
- Communicate key findings of primary scientific literature relating to metabolism and/or information transfer

COURSE OUTLINE

Students will explore themes relating to metabolism of lipids, amino acids and nucleotides. We will cover the process of information transfer and discuss how DNA is transcribed, processed and translated. Lectures will be delivered live **Monday, Wednesday and Fridays 8-9:00AM**, **live streamed** and recorded for students unable or uncomfortable attending in-person lectures. Course materials and problem sets



will be posted to Canvas. Weekly tutorials will begin the week of January 16th and will review material and cover practice problems for upcoming assessments, you have signed up for a virtual or live session (but may attend either). All students are expected to help create an environment conducive to effective teaching and learning for all participants. We will ask questions, listen and learn from one another in a way that respects all individuals in our community of Biochemistry.

COURSE SCHEDULE (tentative)

Date	Lecture	Topic
Unit 1: Lipids		
Jan 9 th – 13 th	1-3	Introduction, Lipid and membrane properties
Jan 16 th – 20 th	4-6	Fatty Acid Synthesis and Catabolism
Jan 23 rd – 27 th	7-9	Lipid transport, Cholesterol metabolism and review
Unit 2: Amino Acids		
Jan 30 th – Feb 3 rd	1-3	Amino Acid Catabolism: Protein Digestion and Degradation, Urea Cycle
Feb 6 th – 10 th	4,5	Amino Acid Catabolism: Degradation of Carbon Skeletons and related diseases
Feb 13 th – 17 th	6-8	Amino Acid Anabolism: Incorporating nitrogen into biomolecules and synthesis of carbon skeletons
Feb 20 th – 24 th	Reading break	
Unit 3: Nucleic Acids		
Feb 27 th – Mar 3 rd	1-3	Intro to molecular biology and nucleic acid structure and biophysical properties
Mar 6 th – 10 th	4,5	Chromatin structure and nuclear organization, DNA polymerase



Mar 13 th – 17 th	6-8	DNA replication, DNA damage and repair
Mar 20 th – 24 th	9-11	Genome editing, RNA transcription, RNA processing
Mar 27 th – April 1 st	12-14	The genomic code
April 3 rd – 7 th	15,16	Protein translation
April 12 th	17	Molecular Biology review and Last Class Bash

COURSE MATERIALS

Lehninger, Principles of Biochemistry (8th edition). Nelson, D. L., Cox, M. M., Freeman and Company 2021. Readings and problem sets will be highlighted in Canvas

Graded reading(s) will be made available in Perusall.

GRADING SCHEME

Assignment	Grade Weight	Date
Midterm I (Unit 1)	20%	February 6 th 8-9AM
Midterm II (Unit 2)	20%	March 10 th 8-9AM
Participation	5%	Assessed weekly
Assignment	15%	Structural Model: Mar 3 rd Group Video: April 6 th
Exam (Unit 3)	40 %	TBA

GRADING AND COURSE POLICY

The midterms will be scheduled during class time. Plan to come a bit earlier on these days so we can maximize the available time. Students who miss a midterm due to illness or extreme personal distress must submit a request for an academic concession within 48 hours of the missed midterm (form is available in Canvas). Those eligible, will write the makeup midterm to be scheduled the following week during class time.



Participation will be assessed weekly, based on participation in the tutorials and in a last class review. Students may earn up to 0.5% per week to a maximum of 5%. The assignment is split into group and individual components and has two deadlines, one for the structural model, and one for the final group submission of a five-minute talk. Late assignments will be subject to a 5% late penalty per day, and after a week may not be considered for grading, if specific arrangements with the course chair have not been made.

All learners are welcomed in this course. Students with disabilities and ongoing medical conditions have the option to request an accommodation for the course assessments after registering with the Centre for Accessibility. If you are eligible for exam accommodations, you will need to write your exams with the Centre for Accessibility. To book an exam, notify the course chair or instructor by email and register with the Centre for Accessibility at least one week in advance of the midterms or summer final, or at least 7 days before the start of the examination period for a final in April and December.

If you are ill, please do not attend class. If you do miss class/assessments because of illness: If you are well enough to attend the virtual tutorial for participation marks, please do so, no need to email to confirm your virtual attendance. Lectures will be streamed and made available as a video recording, so if you are ill please plan to attend class from your study space. If you miss one of the midterms, see above in course policies for procedure to be eligible for a makeup midterm sitting.

If you do miss a final exam because of illness: Students who miss a final exam due to illness or extreme personal distress and would like to apply for a deferred exam must submit a request for an academic concession to your program faculty within 48 hours of the missed exam. All appropriate documentation must be submitted within 14 calendar days of the missed exam. In addition the course chair should also be notified by email within 48 hours to coordinate the deferred exam.

If the instructor is sick: We will all do our best to stay well, but if one of the instructors falls ill then they will not come to class. If that happens, all efforts will be made to communicate that to students in a timely manner prior to class time, usually via an announcement in Canvas. Depending on the situation a substitute lecturer will take over, the lecture may take place over zoom, or the class may be cancelled.

ACADEMIC MISCONDUCT

UBC and the Department of Biochemistry and Molecular Biology take the issue of academic misconduct very seriously; the honest assessment of student learning is key to both the success of the university and success for individual students. Cheating, in any form, undermines the value of a degree and can have serious consequences for your continued academic success. As such it is important to know what your responsibilities are, what constitutes misconduct and how you can avoid it. With some effort and forethought no student should ever have to find themselves facing discipline for academic misconduct; inform yourself as to the expectations placed on you and what your responsibilities are. UBC definition of academic misconduct can be found in the UBC Calendar and additional information is available in this UBC resource link.

What consequences can arise from academic misconduct?



The severity of the discipline can range from a letter of reprimand or a zero on the assignment in question all the way to expulsion from the University. Perhaps the most common outcome in these cases are grades of zero in the course in which the misconduct occurred.

EQUITY DIVERSITY AND INCLUSION (EDI) POLICIES

It is our goal that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and diversity that the students bring to this class be viewed as a resource, strength and benefit. We make a commitment to present materials and activities that are respectful of diversity: gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture. We will foster a climate within the classroom where students of diverse backgrounds and identities feel comfortable sharing their opinions and experience with varied topics throughout the class. We (like many people) are learning about diverse perspectives and identities. If something was said in class (by anyone) that made you feel uncomfortable or if you observe a situation where someone else is made to feel uncomfortable, please talk to us about it. This includes concerns about any class-related interactions that lead to feelings of exclusion or marginalization. We welcome and encourage your feedback on how we can better cultivate a sense of inclusion in our course. This can be done through meetings, email or anonymous feedback through canvas. We aim to do our best to address each situation as it arises and effect meaningful changes moving forward. For more information visit our [departmental EDI webpage](#).

STUDENT RESOURCES

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available on the [UBC Senate website](#).

MENTAL HEALTH RESOURCES

If you find you are struggling with mental health, or are feeling stressed or anxious, [UBC Counselling services](#) provides information about a number of resources for students to use. You may also find the support offered by the [UBC Student Assistance Program \(SAP\)](#) to be helpful with a wide range of issues and they offer 24/7 support. Additionally, UBC students receive [mental health coverage of up to \\$1500](#) under the AMS Health & Dental Plan (more information about coverage [here](#)).

[Here2Talk](#) is available for BC post-secondary students to talk with trained counsellors 24/7 (via voice call or text messages). If you are a student living in UBC residence, [Counsellors in Residence](#) can also be a valuable resource to provide mental health support. If you have a UBC email address, [Therapy Assistance Online \(TAO\)](#) is a free online resource that provides tools to manage stress, relationship problems, substance use, etc. We encourage you to seek support if you need it, and to air on the side of conservative when it comes to your health and wellness.



COVID RELATED POLICIES

For UBC's latest response to COVID-19, please visit covid19.ubc.ca. For our in-person meetings in this class, it is important that all of us feel as comfortable as possible engaging in class activities while sharing an indoor space. Non-medical masks that cover our noses and mouths are a primary tool to make it harder for COVID-19 to find a new host. The higher the rate of vaccination is in our community overall, the lower the chance of spreading this virus. You are an important part of the UBC community. Please arrange to get vaccinated if you have not already done so. **If you're sick, it's important that you stay home – no matter what you think you may be sick with (e.g., cold, flu, other).**

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