LAND ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəy̓əm (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 302.102	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 Tue and Thu 8-9:30AM	LSK 200
Tutorial Online Mon 3-4PM or in-person Tue 11-noon	CHEM D200

COURSE CHAIR

Course Chair	Contact Details
Dr. Eden Fussner-Dupas (Pronouns: she/her/hers)	eden.fussner@ubc.ca

COURSE INSTRUCTOR(S)

Course Instructor(s)	Contact Details	Office Location	Office Hours

Dr. Warren Williams (Pronouns: he/him/his)	wwarren@ubc.ca	Biological Science Building Rm 3047	M/W/F 2-3 Face to face or zoom **ZOOM**
Dr. Alice Mui (Pronouns:she/her/hers)	alice.mui@ubc.ca	Jack Bell Research Centre, VGH	By appointment **ZOOM**

Teaching Assistants	**Contact Details**
Felix Hong (Pronouns: he/him/his)	felix04@dentistry.ubc.ca
Loulou Cai (Pronouns: she/her/hers)	loulouc@student.ubc.ca

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 and nucleic acids
- Understand the chemical bases of fundamental metabolic processes
- 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 **Tuesdays and Thursdays 8-9:30AM**, **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 September 12 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	Instructor
Unit 1: Lipids			
Sept 8th	1	Introduction to Lipids	W. Williams
Sept 13th	2	Membranes	W. Williams
Sept 15th	3	Fatty Acid Synthesis	W. Williams
Sept 20th	4	Fatty Acid Catabolism	W. Williams
Sept 22nd	5	Regulation of Fatty Acid catabolism	W. Williams
Sept 27th	6	Cholesterol Metabolism	W. Williams
Sept 29th	7	Integration of lipid metabolism	W. Williams
Unit 2: Amino Acids			
Oct 4th	8	Amino Acid Catabolism: Protein Digestion and Degradation	A. Mui
Oct 6th	9	Amino Acid Catabolism: Urea Cycle	A. Mui
Oct 11th	10	Amino Acid Catabolism: Degradation of Carbon Skeletons	A. Mui
Oct 13th	11	Amino Acid Catabolism: Diseases due to defective AA catabolism	A. Mui
Oct 18th	12	Amino Acid Anabolism: Incorporating nitrogen into biomolecules	A. Mui

Oct 20th	13	Amino Acid Anabolism: Synthesis of carbon skeletons	A. Mui
Unit 3: Nucleic Acids			
Oct 25th	14	Nucleotides: structure and chemistry	E. Fussner
Oct 27th	15	Nucleotides: synthesis and degradation	E. Fussner
Nov 1st	16	DNA and RNA: structure and chemistry	E. Fussner
Nov 3rd	17	DNA packaging and chromosomes	E. Fussner
Nov 8th	18	DNA Replication: Prokaryotes	E. Fussner
Nov 9th – 11th	Reading break		
Nov 15th	19	DNA Replication: Eukaryotes	E. Fussner
Nov 17th	20	DNA Transcription: Prokaryotes	E. Fussner
Nov 22nd	21	DNA Transcription: Eukaryotes	E. Fussner
Nov 24th	22	Genetic Code	E. Fussner
Nov 29th	23	Translation: Prokaryotes	E. Fussner
Dec 1st	24	Translation: Eukaryotes	E. Fussner
Dec 6th	25	Regulation of Gene Expression	E. Fussner

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 (Units 1 and 2)	40 %	Oct 27th 7-9PM
Participation	5%	Assessed weekly
Assignment	15%	Graded Reading: Nov 10th Graphical Abstract: Dec 1st
Exam (Unit 3)	40 %	TBA

GRADING AND COURSE POLICY

The midterm will be scheduled at night, to enable a longer available writing period for this assessment. Check your schedule to ensure that you are able to write at this time. Students who have a scheduling conflict should contact the course chair to make arrangements to write in the make-up session. Students who miss the midterm due to illness or scheduling conflict must submit a request for an academic concession within 48 hours of the missed midterm. Those eligible, will write the makeup midterm (to be scheduled just after the midterm to ensure all eligible students are available to write at this alternate date/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 will have two deadlines, one for the graded reading portion of the assignment and one for the final submission of a graphical abstract. 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 midterm date 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 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 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 and instructor 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

In case 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. 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.

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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