

BIOC299 A01 (CRN 20304)
Biochemistry for Non-Majors
Spring 2023

Instructor: Dr. Doug Briant (he/him)
e-mail: dbriant@uvic.ca

Territorial Acknowledgement:

We acknowledge and respect the lək'wəŋən peoples on whose traditional territory the university stands and the Songhees, Esquimalt and WSÁNEĆ peoples whose historical relationships with the land continue to this day.

Lecture time and location: TWF 9:30 – 10:20, MacLaurin Building A144

Office Hours and Extra Help: I will **NOT** be holding face-to-face meetings in my office. I will be available online via Zoom (link on Brightspace) on Wednesdays from 2pm – 3pm and Thursdays from 9am – 10am. Outside of these times I can be reached via email.

Brightspace site: a Brightspace site will be maintained for this course. Some, but not all, lecture notes will be made available. It contains the following sections:

General Information: course outline, discussion forum, contact information, zoom links etc.

Lecture notes: here you will find the pdf notes.

Lecture Recordings: audio recordings of each lecture will be posted here. Occasionally, due to technical failures, no recording will be available.

Participation Quizzes: six participation quizzes. Each is worth 0.25% of your final grade. You must get one answer correct to receive your mark.

Exit Competency Quiz: this is a short online quiz that you must complete before you will be allowed to write the final exam. It will open during the final week of class. It is not open book, and you should not study. It is just to assess the overall cell biology knowledge students have by the end of the course. These exams will not be used in any manner to assess students individually. I will use overall class data to improve my teaching methods. It is worth 0.5% participation mark

Textbook Problem Sets: these are end-of-chapter questions from the textbook.

Midterm / Final exam material: reviews, old exams and the actual exams will be here.

Textbook: Biochemistry, 9th Edition by Campbell, Farrell and McDougal.

Top Hat: this will be required for lectures starting the week of January 23. Participation grades will be awarded as follows: **≥80% class participation, 3%; ≥70% class participation, 2%; ≥60% class participation, 1%. Below 60% will not receive any participation marks.**

Prerequisites and expectations:

BIOC 299 introduces students to the various areas encompassed by the discipline. BIOC 299 requires a familiarization with organic chemistry and students should review functional group chemistry of organic molecules at the beginning of the course. Students must complete 2nd year organic chemistry before taking BIOC 299. Students should also review basic cell biology in preparation for this course.

Learning Outcomes:

Students will obtain a comprehensive overview of the major concepts and principles of biochemistry through lecture presentations, assigned questions, and tests. Students will be able to define and describe the properties, and metabolism of the major classes of biomolecules: DNA, RNA, protein, carbohydrates, and lipids. Specific learning outcomes include:

Structure-function relationships of biomolecules. Through a variety of examples, students will be able to relate the chemical structures of biomolecules to their biological functions and demonstrate how they interact to accomplish fundamental metabolic processes.

Metabolism and regulation of biomolecules. For each class of molecule, students should be able to describe the fundamentals of biomolecule synthesis and breakdown, the role of biomolecule interactions, how a cellular signal is transduced to a biological outcome, and how gene expression accomplished through specific examples. A demonstrated knowledge of how biochemical pathways are controlled is also expected.

Experimental biochemistry and disease. Students should be familiar with basic experimental concepts and approaches used in biochemistry with classic experiments used as examples. Students should be able to identify the consequences of a variety of metabolic and genetic diseases and indicate what insight these diseases give on biochemical pathway function.

Important dates and evaluation:

Date	EVALUATION	Notes
week of Friday, January 20	Participation Quiz 1, 0.25%	<i>open from Monday to Friday via Brightspace, must be completed by 4pm on Friday.</i> Must get at least one question correct to receive participation grade
Friday, January 27	20% midterm 1 exam	<i>in class. There are no deferrals. You must write at least 2 midterms. For a missed exam, grade will be added to final exam.</i>
week of Friday, February 03	Participation Quiz 2, 0.25%	<i>open from Monday to Friday via Brightspace, must be completed by 4pm on Friday.</i> Must get at least one question correct to receive participation grade

week of Friday, February 10	Participation Quiz 3, 0.25%	open from Monday to Friday via Brightspace, must be completed by 4pm on Friday. Must get at least one question correct to receive participation grade
Friday, February 17	20% midterm 2 exam	in class. There are no deferrals. You must write at least 2 midterms. For a missed exam, grade will be added to final exam.
February 20 – 24	Reading Break	there are no classes this week!
week of Friday, March 10	Participation Quiz 4, 0.25%	open from Monday to Friday via Brightspace, must be completed by 4pm on Friday. Must get at least one question correct to receive participation grade
Friday, March 17	20% midterm 3 exam	in class. There are no deferrals. You must write at least 2 midterms. For a missed exam, grade will be added to final exam.
week of Friday, March 24	Participation Quiz 5, 0.25%	open from Monday to Friday via Brightspace, must be completed by 4pm on Friday. Must get at least one question correct to receive participation grade
week of Friday, March 31	Participation Quiz 6, 0.5%	open from Monday to Friday via Brightspace, must be completed by 4pm on Friday. Must get at least one question correct to receive participation grade
starting Jan. 23	TopHat in class participation, 3%	≥80% class participation, 3% ≥70% class participation, 2% ≥60% class participation, 1% <60% class participation, 0%
open April 3 - 7	Exit Competency Quiz, 0.5%	closes Friday, April 7 at 4pm, 0.5% mark for participating
TBD	35% final exam	2 hours, set by registrar. In person, CUMULATIVE exam.

- Students are responsible for ensuring that they are properly registered in the course.

Tentative Class Schedule:

Topic	Text
Introduction to biomolecules	Ch.1
Aqueous environment and pH	Ch.2
Amino acids	Ch.3
Protein structure	Ch.4
Enzyme action	Ch.6
Enzyme kinetics and regulation	Ch.6/7
(continued)	
Enzyme mechanisms	Ch.7
(continued)	
Lipids	
Biological membranes	Ch.8
(continued)	
Signal transduction pathways	Ch.24
(continued)	
Metabolism overview and bioenergetics	Ch.15
Carbohydrates	Ch.16
Glycolysis	Ch.17
Gluconeogenesis	Ch.18
Citric acid cycle	Ch.19
Citric acid cycle (continued)	
Oxidative phosphorylation	Ch.20
(continued)	Ch.20
Nucleotides and nucleic acids	Ch.9
DNA packaging and genome organization	
DNA replication	Ch.10
DNA repair	Ch.10
Transcription in prokaryotes	Ch.11
Transcription in eukaryotes	Ch.11
RNA processing in eukaryotes	Ch.11
The genetic code	Ch.12
Protein synthesis	Ch.12

Grading:

A ⁺	90 -100	B ⁺	77 - 79	C ⁺	65 - 69	F	< 50
A	85 - 89	B	73 - 76	C	60 - 64	N **	< 50
A ⁻	80 - 84	B ⁻	70 - 72	D	50 - 59		

** N grades

Students who have completed the following elements will be considered to have completed the course and will be assigned a final grade:

- **At least two midterm exams and the final exam must be written to complete the course. There are no deferrals for midterms, and weighting for up to one missed exam will shift to the FINAL EXAM.**
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Failure to complete one or more of these elements will result in a grade of “N” regardless of the cumulative percentage on other elements of the course. An N is a failing grade, and it factors into a student’s GPA as 0. The maximum percentage that can accompany an N on a student’s transcript is 49

DEPARTMENT INFORMATION AND POLICIES

1. The Department of Biochemistry and Microbiology upholds and enforces the University’s policies on academic integrity. These policies are described in the current University Calendar. All students are advised to read this section.
2. Cell phones, computers, and other electronic devices must be turned off at all times during live class sessions unless being used for the purpose of connecting and engaging with the class.
3. No recordings of live lectures are permitted without permission of the instructor. However, many courses will be recorded by the instructor for accessibility for students unable to attend. If you do not wish to be recorded, contact your instructor to determine if alternative arrangements can be made.
4. Students and instructors are expected to assess their health daily and avoid campus if they are ill.
5. Course materials, such as notes, problem sheets, quizzes, examinations, example sheets, or review sheets, may not be redistributed without the explicit written permission of the instructor.
6. Students are expected to be available for all exams. There will be NO deferred midterms. Up to one midterm may be missed, and the weight (20%) will shift to the final exam.
7. The Department of Biochemistry and Microbiology considers it a breach of academic integrity for a student taking a deferred examination to discuss the exam with classmates. Similarly, students who reveal the contents of an examination to students taking an examination are considered to be in violation of the University of Victoria policy on academic integrity (see current University Calendar). Students must abide by UVic academic regulations and observe standards of scholarly integrity (no plagiarism or cheating). Online exams must be taken individually and not with a friend, classmate, or group, nor can you access notes, course materials, the internet, or other resources without the permission of the instructor. You are prohibited from sharing any information about the exam with others. Use of unauthorized electronic devices and accessing the internet and class material during exams is prohibited unless permission is granted by the instructor. Instructors may use Browser Lockdown Software to block access during classes and exams.
8. Deferral of a final exam must be requested with an Academic Concession form and submitted directly to Undergraduate Records. Deferred final exams for fall term courses will be arranged by the instructor. Deferred final exams or spring term courses will be arranged through Undergraduate Records and must be written before the end of the summer term as stipulated in the University Calendar.
9. Requests for review/remark of a midterm exam must be made within one week of the exam being returned.
10. The instructor reserves the right to use plagiarism detection software or other platforms to assess the integrity of student work.
11. Supplemental exams or assignments will not be offered to students wishing to upgrade their final mark.

Important note about COVID-related stress

The current pandemic is placing added stressors- financial, mental, and physical- on everyone. Your wellbeing is of foremost importance. If you are experiencing difficulties coping, the University has resources to help. Please reach out to Counselling Services, the Centre for Academic Communication, or Learning Assistance Program for assistance.

Centre for Accessible Learning

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, approach the Centre for Accessible Learning (CAL) as soon as possible in order to assess your specific needs.

<https://www.uvic.ca/services/cal/index.php>

Course Experience Survey (CES)

We value your feedback on this course. Towards the end of term you will have the opportunity to complete a confidential course experience survey (CES) regarding your learning experience. The survey is vital to providing feedback to us regarding the course and our teaching, as well as to help the department improve the overall program for students in the future. When it is time for you to complete the survey, you will receive an email inviting you to do so. If you do not receive an email invitation, you can go directly to your [CES dashboard](#). You will need to use your UVic NetLink ID to access the survey, which can be done on your laptop, tablet or mobile device. We will remind you nearer the time but please be thinking about this important activity.