

BIOCHEMISTRY 300B
General Biochemistry II
Course Outline: Spring 2022

Place: Fraser Building Room 159
Time: Tuesday, Wednesday, Friday: 12:30 - 1:20 pm*
Textbook: Biochemistry by Berg, Tymoczko, and Stryer, 9th edition
Web site: UVic BrightSpace

Instructors: **Dr. J Ausió (Jan 12 – Feb 26).**
Office hours: Wednesdays 12:30 to 1:20 pm
email: jausio@uvic.ca

Dr. Alisdair “Al” Boraston (Mar 2 – Apr 9)
Course coordinator
Office hours: Wednesdays 1:30 to 2:20 pm by Zoom (a link will be provided on Brightspace) or by Zoom via appointment.
email: boraston@uvic.ca

We acknowledge and respect the lək'wəjən 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.

The BIOC 300B classroom and online environments are ones where everyone will be treated with respect, and we welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability-and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class.

BIOC 300B in conjunction with BIOC300A provides detailed coverage of foundation topics for students majoring in biochemistry or microbiology. In this course, the structures and functions of DNA, RNA and genes are discussed along with the regulation of gene expression in prokaryotes and eukaryotes. Also discussed are metabolic processes and their control. Students need to have a good understanding of the principles of cell biology and organic chemistry before taking this course.

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 <https://www.uvic.ca/services/cal/> in order to assess your specific needs.

Biochemistry 300B 2022. Lecture Schedule and Topics

| Lecture # | Date | Topic | Text Reference |
|--------------------------------|-------------|---|--|
| Dr. Ausio's Material | | | |
| 1 | Jan 11 | DNA/RNA Structure | Ch. 4: 113-127 |
| 2 | 12 | Recognition of DNA by Proteins | handout |
| 3 | 14 | Topological properties of DNA | Ch. 29: pp. 956-961 |
| 4 | 18 | Replication | Ch. 29 |
| 5 | 19 | DNA Replication <i>in vivo</i> | Ch. 29 |
| 6 | 21 | Fidelity of DNA Replication | Ch. 29 |
| 7 | 25 | <i>Problem solving in class</i> | |
| 8 | 26 | RNA Synthesis | Ch. 30 |
| 9 | 28 | Midterm 1: in-class on lectures 1-8 (25%) | |
| 10 | Feb 1 | RNA Processing I | Ch. 30 |
| 11 | 2 | RNA Processing II | Ch. 30 |
| 12 | 4 | Protein Synthesis I | Ch. 31 |
| 13 | 8 | Protein Synthesis II | Ch. 31 |
| 14 | 9 | Protein Synthesis III | Ch. 32 |
| 15 | 11 | Regulation of Gene Expression in Prokaryotes I | Ch. 32 |
| 16 | 15 | Regulation of Gene Expression in Prokaryotes/ Eukaryotes I | Ch. 33 |
| 17 | 16 | Regulation of Gene Expression in Eukaryotes II | Ch. 33 |
| 18 | 18 21-25 | Midterm 2: in-class exam on lectures 10-17 Reading Break | |
| Lecture # | Date | Topic | Text Reference |
| Dr. Boraston's Material | | | |
| 19 | Mar 1 | Metabolism preamble | Ch. 15 |
| 20 | 2 | Bioenergetics (continued) | |
| 21 | 4 | Bioenergetics (continued) | |
| 22 | 8 | Intermediary Metabolism: Glycolysis | Ch. 16: pp. 491-516 |
| 23 | 9 | Intermediary Metabolism: Glycolysis (continued) | |
| 24 | 11 | Gluconeogenesis | Ch. 16: pp. 519-531 |
| 25 | 15 | Citric Acid Cycle | Ch. 17 (omit 17.5) |
| 26 | 16 | Citric Acid Cycle (continued) | |
| 27 | 18 | Midterm 3: Take-home assignment on lectures 19-26 (25%) | |
| 28 | 22 | Chemiosmosis and ATP synthesis | Ch. 18 |
| 29 | 23 | Chemiosmosis and ATP synthesis (continued) | |
| 30 | 25 | Glycogen metabolism | Ch. 21: pp 679-686 |
| 31 | 29 | Fatty acid degradation and synthesis | Ch. 12: pp 373-378 Ch. 22: pp 709-735 |
| 32 | 30 | Fatty acid degradation and synthesis (continued) | |
| 33 | Apr 1 | Protein and Amino Acid Catabolism | Ch. 23: pp. 751-769 |
| 34 | 5 | Protein and Amino Acid Catabolism (continued) | |
| 35 | 6 | Take-home assignment on lectures 28-34 (25%) | |

Lecture Content: Each lecture will conform approximately to the organization used in the text. Additional material and examples may be added by the lecturer and will be posted on Brightspace. Readings from the text for each lecture have been assigned and should be read *prior to* the lecture. Information designed to guide students with the readings is available on Brightspace. **There is no final exam in this course.**

Evaluations:

| Date | Evaluation type | Percentage final mark |
|-------------|---|------------------------------|
| Jan 28 | 1 st midterm (closed book) <ul style="list-style-type: none"> This will be written through Brightspace. The evaluation will be open for 12 hours and students will have 90 minutes to complete the evaluation | 25% |
| Feb 18 | 2 nd midterm (closed book) <ul style="list-style-type: none"> This will be written through Brightspace The evaluation will be open for 12 hours and students will have 90 minutes to complete the evaluation | 25% |
| Mar 18 | 1 st take-home midterm-style assignment <ul style="list-style-type: none"> This will be written through Brightspace. Students may use the textbook and notes. The evaluation will be open for 24 hours and students will have the entire time to complete the evaluation. | 25% |
| Apr 6 | 2 nd take-home midterm-style assignment <ul style="list-style-type: none"> This will be written through Brightspace. Students may use the textbook and notes. The evaluation will be open for 7 days and students will have the entire time to complete the evaluation. | 25% |

UVic Grading Scheme

| | | | | | | | |
|----------------------|---------|----------------------|---------|----------------------|---------|-------------|------|
| 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:

All assignments and tests

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. Instructors may grant deferrals for midterm examinations for illness, accident, or family affliction. Although students do not require documentation, students must contact their instructor and BCMB office (biocmicr@uvic.ca) with the reason for their absence within 48 hours after the midterm exam. The Department will keep a record of the absences. It is the responsibility of the student to ensure all required components are complete, and to arrange deferred exams/assignments with the instructor, which normally should occur within one week of the original exam date.
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.
12. Anonymous participation in online classes is not permitted without permission of the instructor.

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.

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.