

Department of Biology Course Outline

SC/BIOL 2020 (Section A) 3.00 Biochemistry Fall 2020

Course Description

A study of the cell biology and biochemistry of biomolecules. Topics include intermediary metabolism related to bioenergetics, including the biology of mitochondria and chloroplasts, protein structure and function, nucleic acid replication, gene expression, chromosome organization and recombinant DNA technology. Not open to Chemistry majors. Three lecture hours. One term. Three credits.

Prerequisites

(1) Both SC/BIOL 1000 3.00 and SC/BIOL 1001 3.00, or SC/ISCI 1110 6.00, or both SC/ISCI 1101 3.00 and SC/ISCI 1102 3.00; and (2) both SC/CHEM 1000 3.00 and SC/CHEM 1001 3.00, or SC/CHEM 1000 6.00, or both SC/ISCI 1201 3.00 and SC/ISCI 1202 3.00, or SC/ISCI 1210 6.00. Course credit exclusion: SC/CHEM 2050 4.00.

Course Instructors and Contact Information

Instructor: Dr. Kyle Belozarov

Contact: Chemistry Building (CB216)
vbelozar@yorku.ca (**communication by e-mail is HIGHLY preferred**)
Phone: 416-736-2100 x77188

Office hours: TBA (will take place via Zoom)

Schedule

Lectures: Tuesdays and Thursdays 8:30 am – 10:00 am (delivered fully online)
All lectures will be recorded and the recordings will be available on Moodle.

Evaluation

Midterm 1 (October 20, during lecture)	15%
Midterm 2 (November 17, during lecture)	15%
Weekly take-home quiz (10 total)	20%
Peer-assessed writing project	10%
Lecture participation credit	5%
Final exam (cumulative, date TBD)	35%

Midterm information: Midterms will be conducted during lectures (8:30 – 10:00 am) through eClass. Midterms will consist of both multiple-choice and short-answer questions. If you miss the midterm (for any reason, including Internet connectivity problems), its weight will be automatically moved to the final exam. No need to submit any documentation. There will be no make-up midterms.

Weekly take-home quiz: The quizzes will be offered through eClass starting with second week of classes. Quizzes will open at the end of each week and will close a week later. You will be given two attempts for each quiz. Only eight completed quizzes will count towards your grade, and you can miss any two quizzes for any reason, including illness. You will earn a zero for every missed quiz beyond the allowed two, no exceptions.

Lecture participation credit: This credit can be earned by answering iClicker questions during lectures, or answering the same questions by watching lecture recordings (within one week after the

date of the lecture). You will earn participation credit regardless of whether your answers are correct or not, however, it is in your best interests to approach these questions seriously as they provide a reliable indicator of whether you understand lecture material.

Final exam information: The exam will be cumulative and will cover all the course material evenly. Proctortrack monitoring system will be used during the exam. More information about the exam will be provided towards the end of the semester.

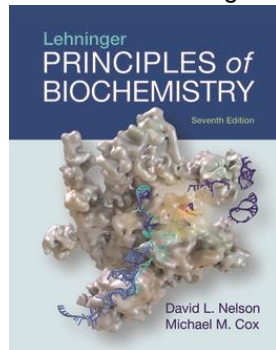
Important Dates

Classes start:	September 9
Fall Reading Week	October 10 - 16
Drop Deadline:	November 6 (Last day to drop the course without receiving a grade)
Course withdrawal:	November 7 - December 8 (Course still appears on transcript, but no grade will be shown)
End of classes:	December 8
Final Exam:	TBA, during the December exam period (Dec 9 – 23)

For additional important dates such as holidays, refer to the ["Important Dates"](#) section of the Registrar's Website.

Resources

Textbook: Lehninger Principles of Biochemistry, 7th edition (ISBN-13: 978-1-4641-2611-6). The textbook is available from the York University Bookstore as hard-cover, loose-leaf and e-text versions. Reserve copies will not be available from the Steacie Science library due to pandemic-related library closure. Earlier editions of the text could be used for readings but page numbers and problem numbers will correspond to the 7th edition. There will be weekly assigned readings and assigned end-of-chapter problems from the textbook.



eClass: All lecture slides, lecture recordings, online homework, and other materials will be posted regularly to the eClass website.

Learning Outcomes

By the end of the course you should:

- 1) become familiar with the major classes of biomolecules,
- 2) know the mechanisms by which cells express genetic information,
- 3) know how organisms utilize and store energy,
- 4) understand the pathways involved in the biosynthesis and degradation of selected biomolecules.
- 5) be able to apply concepts covered in the course to problem sets related to current biochemical methods and research.

Course Content

This second-year course will focus on a wide range of topics within Biochemistry. In order to fully understand the material presented during lecture, a basic understanding of chemical principles and cellular molecular biology (i.e. BIOL 1000 and CHEM 1000 & 1001) will be expected of enrolled students. Although most of the curriculum can be found in the course recommended text, certain topics, such as the practical application of several biochemical techniques, will NOT be found in the text. Thus, in order to be as successful as possible, each student should study both the material presented in lectures and in the assigned textbook readings.

Lecture Topics will Include:

- Introduction to chemical bonds
- Water and Buffers

- Amino Acids and Protein Structure
- Enzyme Kinetics and Inhibition
- Carbohydrates
- DNA and RNA structure
- DNA replication and Repair
- Transcription and Translation
- Regulation of Gene Transcription
- Metabolism and Energy Transfer
- Glycolysis and Gluconeogenesis
- NADH production
- Oxidative Phosphorylation
- Coordination of Metabolism

A detailed Lecture Outline will be provided on eClass.

Experiential Education and E-Learning

E-Learning components:

- eClass Website, synchronous lectures and office hours via Zoom
- Weekly online homework

Course Policies

1. **Missed evaluation policy:** If you miss the midterm (for any reason), its weight will also be automatically moved to the final exam. No need to submit any documentation. There will be no make-up midterms.

2. If you request that I re-mark an evaluation, please keep in mind that re-marking can result in your score being raised, confirmed, or lowered. Second round of re-marking will not be offered.

3. Standard accommodation policies as set by the university will be followed in the course.

4. All students in the course must be familiar with York University's policies on academic integrity. Please consult the following website for more detail:

<http://www.yorku.ca/academicintegrity/students/index.htm>

5. This course requires the use of online proctoring for examinations. The instructor may use an online proctoring service to deliver the exam(s), which would be administered through the Learning Management System (e.g. Moodle, Canvas, etc.). Students are required to have access to minimum technology requirements to complete examinations. If an online proctoring service is used, students will need to become familiar with it at least five days before exam(s). For technology requirements, Frequently Asked Questions (FAQs) and details about the online proctoring service visit [<https://registrar.yorku.ca/proctortrack-faq>]. Technology requirements are described within. Students are required to share any IT accommodation needs with the instructor as soon as they are able.

University Policies

Academic Honesty and Integrity

York students are required to maintain the highest standards of academic honesty and they are subject to the Senate Policy on Academic Honesty (<http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/>). The Policy affirms the responsibility of faculty members to foster acceptable standards of academic conduct and of the student to abide by such standards.

There is also an academic integrity website with comprehensive information about academic honesty and how to find resources at York to help improve students' research and writing skills, and cope with University life. Students are expected to review the materials on the Academic Integrity website at - <http://www.yorku.ca/academicintegrity/>

Access/Disability

York University is committed to principles of respect, inclusion and equality of all persons with disabilities across campus. The University provides services for students with disabilities (including physical, medical, learning and psychiatric disabilities) needing accommodation related to teaching and evaluation methods/materials. These services are made available to students in all Faculties and

programs at York University.

Students in need of these services are asked to register with disability services as early as possible to ensure that appropriate academic accommodation can be provided with advance notice. You are encouraged to schedule a time early in the term to meet with each professor to discuss your accommodation needs. Please note that registering with disabilities services and discussing your needs with your professors is necessary to avoid any impediment to receiving the necessary academic accommodations to meet your needs.

Additional information is available at the following websites:

Counselling & Disability Services - <http://cds.info.yorku.ca/>

Counselling & Disability Services at Glendon - <http://www.glendon.yorku.ca/counselling/personal.html>

York Accessibility Hub - <http://accessibilityhub.info.yorku.ca/>

Ethics Review Process

York students are subject to the York University *Policy for the Ethics Review Process for Research Involving Human Participants*. In particular, students proposing to undertake research involving human participants (e.g., interviewing the director of a company or government agency, having students complete a questionnaire, etc.) are required to submit an *Application for Ethical Approval of Research Involving Human Participants* at least one month before you plan to begin the research. If you are in doubt as to whether this requirement applies to you, contact your Course Director immediately.

Religious Observance Accommodation

York University is committed to respecting the religious beliefs and practices of all members of the community, and making accommodations for observances of special significance to adherents. Should any of the dates specified in this syllabus for an in-class test or examination pose such a conflict for you, contact the Course Director within the first three weeks of class. Similarly, should an assignment to be completed in a lab, practicum placement, workshop, etc., scheduled later in the term pose such a conflict, contact the Course director immediately. Please note that to arrange an alternative date or time for an examination scheduled in the formal examination periods (December and April/May), students must complete an Examination Accommodation Form, which can be obtained from Student Client Services, Student Services Centre or online at

http://www.registrar.yorku.ca/pdf/exam_accommodation.pdf (PDF)

Student Conduct in Academic Situations

Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and other academic settings, and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. The policy and procedures governing disruptive and/or harassing behaviour by students in academic situations is available at - <http://secretariat-policies.info.yorku.ca/policies/disruptive-and-or-harassing-behaviour-in-academic-situations-senate-policy/>