

Biochem 2EE3: Metabolism and Physiological Chemistry

Winter 2019

On-line

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TA: TBD

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Materials & Fees: Please see Course Materials Requirements and Access codes below

Introduction:

Welcome to Biochemistry 2EE3! Biochemistry provides the foundation for understanding all biological processes and this course will reveal how biochemistry touches nearly every aspect of our lives from diseases, biotechnology, food, even emotions! Throughout the term we will explore fundamental concepts related to nucleic acids, carbohydrates, lipids, enzymes, and cells. Additionally, we will investigate metabolism and key pathways such as glycolysis, gluconeogenesis, and the citric acid cycle.

Learning Outcomes: The primary objective of this course is to provide an introduction to the field of biochemistry. Students will learn about the structure and function of key biomolecules and gain an understanding of basic metabolic principles.

By the end of this course, students will be able to:

- Explain how structure relates to function
- Apply biochemical knowledge to the underlying mechanisms of systems function
- Describe the central pathways that provide an organism with energy
- Identify the applications of biochemical principles to health and society
- Execute the principles of laboratory-based research using of virtual simulations

Course Material Requirements, Access codes and System Requirements

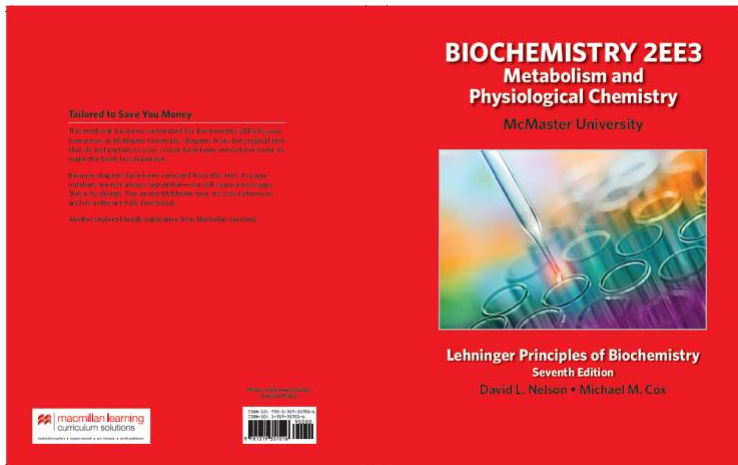
IMPORTANT

- ❖ Biochemistry 2EE3 Winter 2021 textbook and online learning platform: Lehninger Principles of Biochemistry with Macmillan Learning and on-line platform Sapling Plus
- ❖ Labster: each course has its own voucher code that is specific to each course, therefore, you will need to purchase a new code for each course
- ❖ **Both** Labster access codes and Sapling Plus standalone access codes are non-refundable
- ❖ Free trial available for Sapling-Plus until the end of the add-drop period
- ❖ Free trial available for Labster until the end of the add-drop period
- ❖ Custom textbook packages are refundable in original condition (still in shrink wrap, with Campus Store receipt) until the end of the add-drop period

1. **Textbook Custom Package (includes looseleaf custom text and Sapling access code which must be purchased together)**

- ❖ Cost: \$86.25 (*note this is the price quoted for 2020 and is subject to change*)
- ❖ Description: Biochemistry 2EE3 Metabolism and Physiological Chemistry, McMaster University, Lehninger Principles of Biochemistry, David L. Nelson, Michael M. Cox, University of Wisconsin-Madison, , Seventh Edition, W.H. Freeman, Macmillan Learning, New York and Sapling Plus for Lehninger 6M Access, ISBN: 9781319357023
- ❖ Access code for etext and Sapling: the code will be packaged inside the custom courseware (see picture)
- ❖ Follow the link to register for your etext and Sapling Plus
Update link will be provided when it is available
- ❖ System requirement:

<https://macmillan.force.com/macmillanlearning/s/article/System-requirements-for-each-product?ui-force-components-controllers-recordGlobalValueProvider.RecordGvp.getRecord=1&r=92&ui-knowledge-components-aura-actions.KnowledgeArticleVersionCreateDraftFromOnlineAction.createDraftFromOnlineArticle=1>



2. **Labster:**

- ❖ Cost: \$65 for 6 months access (**note this price is quoted for 2020 and subject to change**)
- ❖ Description: Virtual Lab Simulation, Biochemistry 2EE3, Winter 2021, ISBN: 97824256781679
- ❖ Voucher: The cashier at the University bookstore will print a voucher for you when you pay at the check out counter.
- ❖ Instructions to sign up will be provided on A2L
- ❖ **Important:** You must use your McMaster email to sign up, as the email address will be used as your ID to export your marks from Labster to A2L
- ❖ System Requirement: <https://help.labster.com/en/articles/1077008-what-are-the-minimum-system-requirements-for-labster-simulations>

Where to purchase?

1. *In-person:* Campus bookstore, look for Biochemistry 2EE3 Winter 2021
2. *On-line:* Please note that you still need to go in person to bookstore to obtain your package
Updated link will be provided when it is available

Assessments Overview

MSAFs are required for any missed assessment. In this course we will not re-weight assignment. Each MSAF is dealt with on a case-by-case basis. Most often extra time or an alternative assignment is given. However, the nature of the accommodation is at the discretion of the instructor. When using the MSAF, report your absence to bioc2ee3@mcmaster.ca . You must then contact bioc2ee3@mcmaster.ca immediately (normally within 2 working days) by email.

Assessment	Percent (%)
<p style="text-align: center;">Test 1 (Module 1-5) Saturday Feb 27th, 9 AM</p> <p>Please note – the test will launch through A2L, and it will remain open for a total of 1 hour. Please not if you do not begin the exam promptly when it opens, you may not be afforded the full hour.</p> <p>This is an individual test that needs to be completed in the absence of any other aids (i.e. Textbooks, online resources, class notes, peers, Google, Facebook, previous assignment/test, etc.).</p> <ul style="list-style-type: none"> ● The maximum allotted time to complete the test is 60 min. ● Once you have opened the test, the timer cannot be stopped, therefore, you must complete the test after you open it. 	25
<p style="text-align: center;">Test 2 (Module 6-10) Saturday March 27th, 9 AM</p> <p>Exactly the same instructions/expectations as Test-1, above.</p>	25
<p style="text-align: center;">Assignments Due Friday April 9th, 11:00 PM</p> <ul style="list-style-type: none"> ● There are a total of 10 assignments worth 2.5 % each. ● A mark of 0 will be given to any late assignments. ● Although all assignments are due at the end of the term, it is highly recommended that you follow the schedule and finish your assignments at the end of each Module. 	25
<p style="text-align: center;">Labster Due Friday April 9, 11:00PM</p> <ul style="list-style-type: none"> ● There are a total of 10 simulations worth 2.5% each. ● A mark of 0 will be given to any late Labster simulation submission. ● There is a limit of on the number of trials per simulations. ● We will record the highest score with 100% completion from each of the completed simulations as your mark. ● Although all simulations are available at the beginning of the school term, it is our recommendation that you followed the time schedule provided for you. Marks will not be deducted if you finish it ahead of time. 	25

Course Calendar

- ✓ All modules will remain open until the end of the term
- ✓ All Labster simulations are available on Jan 6, 2021 at 12 AM, however we do recommend you to follow the schedule below for better understanding and enhancing your learning experiences with the modules materials.

Week	Date	Time	Event(s)
1	Jan 4-10	Starts Jan 4 @12AM	<ul style="list-style-type: none"> ● Module 1: Biochemistry and the cell ● Labster: Demo <u>and</u> Pipetting: Mastering the Techniques ● Labster 1: Microscopy ● Assignment: Module 1
2	Jan 11-17	Starts Jan 11 @ 12AM	<ul style="list-style-type: none"> ● Module 2: Water and non-covalent interactions ● Labster 2: Acids and Bases ● Assignment: Module 2
3	Jan 18-24	Starts Jan 18 @ 12AM	<ul style="list-style-type: none"> ● Module 3: DNA and protein basics ● Labster 3: Protein Synthesis ● Assignment: Module 3
4	Jan 25-31st	Starts Jan 25 @ 12AM	<ul style="list-style-type: none"> ● Module 4: Protein structure-function ● Labster 4: Antibodies ● Assignment: Module 4
5	Feb 1-7	Starts Feb 1 @ 12AM	<ul style="list-style-type: none"> ● Module 5: DNA replication and the central dogma ● Labster 5: PCR ● Assignment: Module 5
6	Feb 8-14	Starts Feb 8 @12AM	<ul style="list-style-type: none"> ● Module 6: Signal transduction and metabolism overview ● Labster 6: Signal Transduction ● Assignment: Module 6
7	Feb 15-21 (Reading week)		Continued with Module 6 and Labster 6
8	Feb 18-28	Starts Feb 18 @ 12AM	<ul style="list-style-type: none"> ● Module 7: Glycolysis, Gluconeogenesis and the Pentose Phosphate Pathway ● Labster 7: Intro to Food Macromolecules ● Assignment: Module 7
8	Feb 22-26th	TBA	1-2 hour virtual tutorial
8	Feb 27 (Saturday)	Available 9 AM-10 AM	Test 1 (Module 1-5)
9	March 1-7	Starts March 1 @12AM	<ul style="list-style-type: none"> ● Module 8: Citric Acid Cycle and Lipid Metabolism ● Labster 8: Carbohydrates ● Assignment: Module 8
10	March 8-14	Starts March 8 @12AM	<ul style="list-style-type: none"> ● Module 9: Electron Transport Chain ● Labster 9: Cellular Respiration ● Assignment: Module 9

11	March 15-21	Starts March 15@12AM	<ul style="list-style-type: none"> • Module 10: Metabolism – pathway integration • Labster 10: Your diet and your DNA • Assignment: Module 10
12	March 22-26		Review
12	March 22-26	TBA	1-2 hr virtual tutorial
12	March 27 (Saturday)	Available 9 AM-10 AM	Test 2 (Module 6-10)
14	April 9	Due 11:00PM	All assignments and Labster due

ACADEMIC INTEGRITY

You are expected to exhibit honesty and use ethical behavior in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. **It is your responsibility to understand what constitutes academic dishonesty.**

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behavior can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university. For information on the various types of academic dishonesty please refer to the [Academic Integrity Policy](https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/), located at <https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/>

The following illustrates only three forms of academic dishonesty:

- plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained.
- improper collaboration in group work.
- copying or using unauthorized aids in tests and examinations.

AUTHENTICITY AND PLAGIARISM DETECTION

Some courses may use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. A2L, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty. Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software. **All submitted work is subject to normal verification that standards of academic integrity have been upheld** (e.g., on-line search, other software, etc.). For more details about McMaster’s use of Turnitin.com please go to www.mcmaster.ca/academicintegrity.

AVENUE TO LEARN

In this course we will use Avenue to Learn (A2L), Sapling Plus, and Labster. Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, usernames for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in a course that uses on-line elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

ONLINE PROCTORING

Some **courses may** use online proctoring software for tests and exams. This software may require students to turn on their video camera, present identification, monitor and record their computer activities, and/or lock/restrict their browser or other applications/software during tests or exams. This software may be required to be installed before the test/exam begins.

CONDUCT EXPECTATIONS

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the [Code of Student Rights & Responsibilities](#) (the “Code”). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, **whether in person or online**. It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviors that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students’ access to these platforms.

COPYRIGHT AND RECORDING

Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, **including lectures** by University instructors. The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

REQUESTS FOR RELIEF FOR MISSED ACADEMIC TERM WORK

McMaster Student Absence Form (MSAF): In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar “Requests for Relief for Missed Academic Term Work”. It is the prerogative of the Instructor to determine the appropriate relief for missed work. *It is your responsibility to follow up with the instructor (please e-mail bioc2ee3@mcmaster.ca) immediately about the nature of the accommodation.*

ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES

Students with disabilities who require academic accommodation must contact [Student Accessibility Services](#) (SAS) at 905-525-9140 ext. 28652 or sas@mcmaster.ca to make arrangements with a Program Coordinator. For further information, consult McMaster University's [Academic Accommodation of Students with Disabilities](#) policy.

ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the [RISO](#) policy. Students should submit their request to their Faculty Office ***normally within 10 working days*** of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

EXTREME CIRCUMSTANCES

The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labor disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.