

BIOC13 – Biochemistry II: Bioenergetics and Metabolism – Winter 2019

Course description: A lecture course that introduces how cells or organisms extract energy from their environment. The major metabolic pathways to extract energy from carbohydrates, fats and proteins will be discussed. An emphasis will be placed on real-world applications of biochemistry to human metabolism.

Pre-requisites: [BIOB11H3 or BIOB10Y3] and CHMB41H3

Instructor: Dr. Eliana Gonzales-Vigil
e.gonzalesvigel@utoronto.ca
Office: SW 567
Office hours: Thursday 2-4 pm

I am willing to answer questions by email, but they have to be straightforward to answer (please use #**BIOC13** in the subject line, otherwise message might be ignored). Pose your question and tell me what you think and why. Typically expect responses within 48 h, but NOT on weekends. If several students have similar questions, I will post the answers on Quercus. For more complicated questions, stop by SW 567 on Thursdays 2-4 pm.

TAs: Avesh Chadee
avesh.chadee@mail.utoronto.ca
Diana Bonea
diana.bonea@mail.utoronto.ca

TAs will be in charge of the case studies, and monitor discussions before the tests and final exam on Quercus.

Lectures: @AA112

Wednesdays 11.10 am – 1.00 pm

Thursdays 12.10 pm – 1.00 pm

Any important information related to this course will be announced on Quercus, and you are expected to check the announcements regularly.

Lecture Materials:

Lecture notes will be posted (as pdf) on Quercus before each lecture. However, lecture notes only allow you to follow the lectures easily, and some materials discussed in class may not be included in the lecture notes.

NOTE: I reserve the right to make changes to the lecture notes after they are posted.

Textbooks:

Biochemistry: A Short Course 3e & LaunchPad

John L. Tymoczko; Jeremy M. Berg; Lubert Stryer

©2016 | Third Edition

ISBN-10: 1-319-03572-8; ISBN-13: 978-1-319-03572-3

Purchase of the textbook is not absolutely required, but highly recommended. We will discuss three Case Studies provided on LaunchPad with this book. The Learning Curve and Practice Quizzes provide important study resources for this course.

Any other Biochemistry book can be used as reference. Metabolic pathways do not change from author to author.

A few examples include:

Biochemistry by Miesfeld & McEvoy.

Biochemistry by Garrett et al.

Biochemistry by Berg et al. (This is the extended version of the textbook we are using. However, without learning resources and case studies. It is freely available online
<https://www.ncbi.nlm.nih.gov/books/NBK21154/?term=biochemistry>)

Lecture Topics:

Basic Concepts in Metabolism – Chapter 15
Glycolysis – Chapter 16
Gluconeogenesis – Chapter 17
Citric acid cycle – Chapters 18 & 19
Oxidative phosphorylation – Chapter 20
ATP synthesis – Chapter 21
Fatty acid degradation and synthesis – Chapters 27 & 28
Amino acid degradation and synthesis – Chapters 30 & 31
Photosynthesis (if time permits) – Chapter 22 & 23

Course evaluation:

Term tests	35% (20% best; 15% worst)
Case Studies	35% (5 sessions x 7% each)
Final exam	30%
Bonus points	Several optional tasks will be assigned throughout the semester

Case Studies: (5 sessions x 7% each):

On the following dates, we will use the **Thursday** lecture (**12.10 to 1 pm**) to solve Case Studies.

Jan 24th “Sudden Onset”

Feb 7th “An Unexplained Death”

Feb 28th The truth behind diets and supplements

Mar 14th “A Day at the Beach”

Mar 28th “The Runner’s Experiment”

NOTES:

- This is a group activity, with one report per group submitted at the end of the session.
- All students are expected to attend to receive credit for the group submission.
- At least one member per group should have access to LaunchPad during these sessions. Please coordinate with your group the day before the announced dates. At least one student per group should bring a laptop/tablet for logging into LaunchPad during the class.
- There is no make-up report for missed sessions. Individual submissions will not be accepted.
- Please talk to the instructor promptly if attendance to the Case Study sessions is an issue.

Term Test 1: Jan 31st

First term test covers materials likely from the first four weeks. The test will be in the format of multiple choice and short answer questions. The exact location and coverage will be announced on Quercus.

Term Test 2: Mar 6th

Test materials cover lectures from the fourth to the eighth week of classes. Location will be announced on Quercus.
Same format at term test 1.

Final Exam: TBA

Schedule of the final exam will be arranged by the Registrar’s office. The format will be **similar** to the term tests but will be cumulative. However, emphasis will be on materials covered in the last four weeks of classes. The final

exam will require students to think critically and creatively. Students will be expected to apply their knowledge of the discussed pathways to explain novel observations.

NOTES:

- If you miss a term test for a valid reason (medical or otherwise), you have to contact the Departmental Undergraduate Coordinator (Jennifer Campbell, jacampbell@utsc.utoronto.ca) and she will determine whether you have a legitimate cause to miss the test.
- If you miss a Term Test for a valid reason, you will not be permitted to write a make-up Term Test; instead, the weight of the other Term Test will be increased to 25% and the Final Exam will be increased to 40%.
- Similarly, if a student misses both Term Tests for legitimate reasons, the weight of the Final Exam will be increased to 50%. This means one of the missed term tests will be treated as zero.
- Missing a Term Test for any invalid reason will result in a grade of zero for that Term Test.
- There is no make-up for Term Tests.
- Students who miss the final exam must contact the Registrar's Office for appropriate arrangement.

AccessAbility: 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, please feel free to approach me and/or the AccessAbility Services Office as soon as possible. AccessAbility Services staff (located in Rm SW302, Science Wing) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations 416-287-7560 or email ability@utsc.utoronto.ca. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

Academic Integrity: "The University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters

(<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences in papers and assignments include using someone else's ideas or words without appropriate acknowledgement, submitting your own work in more than one course without the permission of the instructor, making up sources or facts, obtaining or providing unauthorized assistance on any assignment. On tests and exams cheating includes using or possessing unauthorized aids, looking at someone else's answers during an exam or test, misrepresenting your identity, or falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes."

Laptop Use: Please stay on task if you choose to use laptops or other mobile devices during class. These tools can be useful to take notes, refer to class readings, or look up important course concepts. However, checking social media, texting or other non-course specific activity distracts you and people around you from learning, and can ultimately result in receiving a lower grade in this course.