

## BIOC13 – Biochemistry II: Bioenergetics and Metabolism

Winter 2020

### 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 metabolism.

### Pre-requisites

[BIOB11H3 or BIOB10Y3] and CHMB41H3

**Instructor** Dr. Eliana Gonzales-Vigil  
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TAs can be contacted through:

Quercus > Discussions > **Ask a question to a TA**

**Lectures** (Live on Zoom, recordings will be posted on Quercus)

**Wednesday 11.00 am – 1.00 pm**

<https://utoronto.zoom.us/j/84823112860> (Links to an external site.)

Passcode 433720

**Thursday 12.00 pm – 1.00 pm**

<https://utoronto.zoom.us/j/87167733252> (Links to an external site.)

Passcode 349538



### Office hours

**Thursday 2.00 pm – 3.00 pm**

Bb Collaborate > Office hours

<https://ca.bbcollab.com/guest/65dd59edbf514cae9bc02ae70e82d270>



### Contact information

- Any important information related to this course will be announced on **Quercus**. Students are expected to check the announcements regularly. Check your settings to make sure you get notifications promptly.
- Questions about the **course content**, should be posted on the **Quercus discussion** board: **Ask a question to a TA**. Other students may benefit from reading questions and answers.
- For questions about **course administration**, send the instructor an **email**.
- For emails, please use **#BIOC13** in the subject line, and include your **full name** in the body of the message. Otherwise, your message might be ignored.
- Typically expect responses within 48 h, but NOT on weekends.

## Lecture Materials

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

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

## Textbooks



Publisher: W. H. Freeman, 2019

ISBN: 9781319275440

Purchase of the textbook is not absolutely required, but highly recommended. We will discuss the Case Studies provided on Sapling Learning with this book. This means that **at least one member of the group should have access to the platform.**

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.

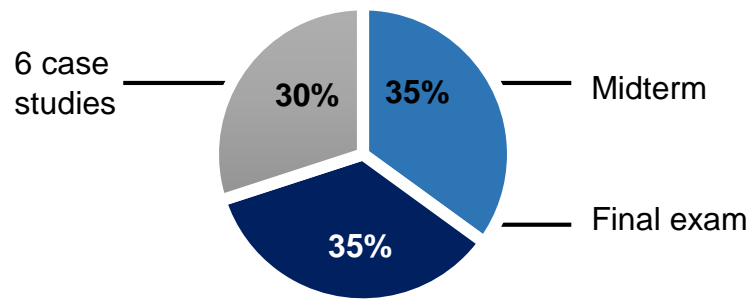
Biochemistry by Garrett et al.

Biochemistry by Berg et al. (This is the extended version of the textbook we are using. 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
Glycogen metabolism	Chapters 24 & 25
Fatty acid degradation and synthesis	Chapters 27 & 28
Amino acid degradation and synthesis	Chapters 30 & 31

## Course evaluation



### Case Studies (Six, 5% each)

On the following dates, we will use the **Thursday** lecture (12.00 to 1 pm) to work on Case Studies.



Jan 28 <sup>th</sup>	1 <sup>st</sup> : Introduction to metabolism – topics up to Chapter 16
Feb 11 <sup>th</sup>	2 <sup>nd</sup> : Carbohydrate metabolism – topics up to Chapter 19
March 4 <sup>th</sup>	3 <sup>rd</sup> : Real-life case study from the Toronto Zoo is assigned
March 10 <sup>rd</sup>	3 <sup>rd</sup> : Case study from the Toronto Zoo is submitted
Mar 25 <sup>th</sup>	4 <sup>th</sup> : Lipid metabolism – topics up to Chapter 27
April 8 <sup>st</sup>	5 <sup>th</sup> : Integration of metabolism – topics up to Chapter 30

#### NOTES:

- This is a group activity, with one report per group submitted at the end of the session.
  - The answers will be **submitted on Sapling Learning** (except for the third).
  - At least one member per group should have access to Sapling Learning during these sessions.
- Groups should meet on Bb Collaborate > look for the session with your group name.
  - The student with access to Sapling Learning will have to share the screen with the rest of the group.
  - Chrome and Firefox work well for sharing Sapling Learning while on a Bb Collaborate session.
  - Please try to coordinate a practice session with your group before the day of the first case study.
- Attendance is mandatory to receive credit for the group submission.
  - TAs will join sessions briefly to check attendance.
- If you miss a case study for a legitimate reason, submit an explanation and proper documentation to the instructor.

### Midterm: February 24<sup>th</sup> (in class)

The test will be in the format of short answer questions and case study.

- It will include lectures and case studies covered up to the week before the exam. The exact coverage will be announced on Quercus.
- Please note that the midterm is in class. Having another course conflicting with a term test is not a valid reason to miss it.
- Effective Summer 2020, students are able to self-declare illness for all term work (including term tests). Please check the following site: <https://www.utoronto.ca/biosci/missed-term-work>.

- If you miss the midterm for a valid reason (medical or otherwise), you must provide appropriate documentation (even if it is the self-declaration of illness form) within two days of the test to Jennifer Campbell ([jac.campbell@utoronto.ca](mailto:jac.campbell@utoronto.ca)).
- In the event that you missed the midterm for a legitimate cause, you will have the opportunity to write a make-up test. The make-up test will be scheduled at the discretion of the instructor during the week of March 15<sup>th</sup>. The format of the make-up test might be different, and might include an oral exam.
- Missing the midterm for any invalid reason will result in a grade of zero for that test.

### **Final Exam:** TBD

The test will be in the format of short answer questions and case study.

- The final exam will require students to think critically and creatively.
- The exam is **cumulative** and emphasizes questions that **integrate different pathways**.
- Students will be expected to apply their knowledge of the discussed pathways to explain novel observations.
- Students who miss the final exam must contact the Registrar's Office for appropriate arrangement. <https://www.utsc.utoronto.ca/registrar/missing-examination>

**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](mailto: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 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."

**Turnitin:** Normally, students will be required to submit their course assignments to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their material to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site.

**Mental health:** As a university student, you may experience a range of health and/or mental health challenges that could result in significant barriers to achieving your personal and academic goals. Please note, the University of Toronto offers a wide range of free and confidential services that could assist you during these times. The tri-campus [mental health support site](#) offers a series of resources, including in online settings.

### Online class etiquette:

- Check your Wi-Fi, test your video and audio, and get familiar with the different software (Zoom, Bb Collaborate, Sapling Learning) before the class.
- Pay attention to your video, microphone and screen sharing settings.
- Mute your microphone when someone else is talking.
- Zoom has buttons for raising your hand, responding yes or no, asking the presenter to adjust speed, etc. Use them appropriately.
- Engage and participate in class discussions. Use the chat to ask questions.
- In case of technical difficulties, please be patient.

