

University of Toronto Scarborough – Department of Biological Sciences
BIOC13 – Biochemistry II: Bioenergetics and Metabolism – Summer 2014

Course Instructor: **Dr. Jason Brown**
Office: SW563B
Email: nysuloem.brown@utoronto.ca
Office Hours: Tuesdays 3-5pm, Wednesdays 4-6pm
*I am also available by appointment.

Teaching Assistant: **Fraser Soares**
Email: fraser.soares@utoronto.ca

Lectures: Tuesdays 6:10-9pm SW128

- Lecture notes (PowerPoint slides) will be posted on Blackboard ~24 hours before each lecture.
- An *optional* online quiz based on each lecture will be available on Blackboard within 24 hours following the lecture.

Course Description: A lecture course that introduces cellular metabolism, the process by which living organisms extract and utilize energy from their environment. Topics include: bioenergetics; oxidative phosphorylation; aspects of carbohydrate, lipid and amino acid metabolism; regulation of metabolism; and, the integration of metabolic pathways.

Prerequisites: BIOB10Y3 (or BIOB10H3 and BIOB11H3), CHMB41H3, CHMB42H3

Exclusions: CHMB62H3, BCH210H, BCH242Y, BCH310H, (BGYC13H3)

Textbook:

* I do not “teach from a textbook”.

* There will be no assigned readings from any textbook, and only material covered in class will be subject to examination. However, in my experience, many students enjoy having a textbook to supplement their lecture notes. If you so desire, I would recommend the following textbooks:

Biochemistry, 4th edition, Voet and Voet (This textbook has an extensive chapter on metabolism; older editions may also be available)

*Copies of this textbook are available in the campus bookstore in both hard cover (~\$170) and loose-leaf (~\$100) versions; this textbook is also available online via www.coursesmart.com (~\$80 for 360 days rental).

Bioenergetics 4, Nicholls and Ferguson (This textbook is the authority on bioenergetics)

*An e-book version of this textbook is available **for free** via the UTSC library’s website. UTSC’s license agreement with the publisher of this textbook permits students to use this textbook for course study but does not permit me to post any content of this textbook to Blackboard.

* I will post suggested readings from these textbooks; however, these textbooks may discuss material not covered in lecture, and I may discuss material in class not covered by the textbook. *You are responsible for all material covered in class only.*

Evaluation:

Term Tests	35%	(25% best; 10% worst)
Journal Club	30%	(12% presenter's blogs – 6% each; 6% group summative blog; 12% participation)
Final Exam	35%	

Important Notes Regarding Evaluations:

Term Tests

The first test will likely take place during the week of June 2 (2 hours; date and time TBD by the Registrar's office), and the second test will likely take place during the week of July 14 (2 hours; date and time TBD by the Registrar's office). The lectures covered on each Term Test will be announced in class and on Blackboard. Tests will comprise of multiple choice, fill-in-the-blank, and short answer questions. Students will have some choice with regards to which questions they answer (e.g., answer 20 out of 25 multiple choice questions). An online review quiz will be posted on Blackboard about 1 week prior to the each test, and additional office hours (both in-person and online) will also be made available. A student's best test will be worth 25% of their final grade, and their worst test will be worth 10% of their final grade.

Tests will be marked by the course instructor as quickly as possible (usually within 1 week). Once the tests are marked, a test viewing session will be set up to allow students to view their marked tests and ask questions. The date and time of these test viewing sessions will be announced on Blackboard and in class. These sessions are governed by the same rules as the test itself.

If you miss a test due to medical illness, then you must submit a detailed UTSC Medical Certificate filled out by the physician you saw on the day of the test itself. This note is due to me within three business days of the test. I will not accept any other medical notes, and if the UTSC Medical Certificate is not completed to my satisfaction, I reserve the right to refuse it. The UTSC Medical Certificate can be found via the following link:

http://www.utsc.utoronto.ca/~registrar/resources/pdf_general/UTSCmedicalcertificate.pdf.

If you miss a test for any other valid reason, please consult with me as soon as possible. I will determine whether the reason given for a missed test is valid in accordance with university policies.

Students who miss one test for a valid and verified reason will not be permitted to write a make-up test; rather, the weight of the remaining test will be increased to 35% of their final grade. Students who miss both tests for valid and verified reasons will not be permitted to write make-up tests; rather, the weight of their final exam will be increased to 65% and they will be asked to submit an additional written assignment worth 5%. Students who miss a test for any unverified and/or invalid reason will receive a grade of zero for that test; **this will not be negotiated.**

If you know in advance that you cannot write the term test at the scheduled time because it conflicts with some other valid activity, please notify me as soon as possible so that I can make arrangements for you to write the exam at an alternate time.

Journal Club

Beginning Tuesday May 27, the last 45 minutes of each lecture will be used for student journal clubs. The purpose of these journal clubs is to help students become more confident with analyzing and critiquing scientific papers as well as communicating in a scientific context.

For the purpose of these journal clubs, students will work in *groups of 4*. (Groups of other sizes will only be permitted where absolutely necessary due to course enrollment.)

Prior to each journal club session, one student (the “presenting student”) will select a *peer-reviewed* scientific paper and post it to his/her group’s blog site. (NOTE: Prior to the first journal club, each group must determine its own schedule for presentations; **failure to do so will result in all students in the group not being allowed to present their first papers, and, as a result, all group members receiving a zero grade for these presentations**). The scientific papers chosen must (i) be focused on some bioenergetics/metabolism-related topic and (ii) have been published in the last five years (i.e., since 2009, inclusive). At the journal club session, the presenting student will introduce the paper to his/her group members and lead/facilitate discussion of the paper. Within 1 week following the journal club session, the presenting student will make a blog post (**no more than 150 words**) which (i) briefly summarizes the paper discussed, (ii) identifies the strengths and weakness exhibited by the paper, (iii) identifies one question that remains unanswered by the research, and (iv) is well-written, being free of grammatical and spelling errors. (*We will have a brief lecture about journal clubs and blogging during the lecture on Tuesday May 20.*)

Each student will present two papers throughout the course, and each blog posting, which will be evaluated by the teaching assistant, will be worth 6% of the student’s final grade.

Within two weeks following the last journal club on Tuesday July 29, each group must make a summative blog post (**no more than 200 words**) which discusses the group’s thoughts about their journal club and any lessons learned as a result of this project. This summative blog posting is worth 6% of the students’ final grade.

Final Exam

The final exam (3 hours) will be scheduled by the Registrar's office (August 8-21) and will be worth 35% of the final grade. The final exam will cover all material covered in the lectures throughout the course. It will have the same format as the term tests.

Tentative Schedule:

DATE	LECTURE	JOURNAL CLUB	
May 6	Introduction to Course; Overview of Metabolism		
May 13	Glycolysis & Glycogen Metabolism		
May 20	Citric Acid Cycle & Pentose Phosphate Pathway		
May 27	Chemiosmotic Theory	Journal Club 1-1	
Jun. 3	Respiratory Electron Transport Chains: Electron Transport	Journal Club 1-2	Term Test 1 (TBD)
Jun. 10	Respiratory Electron Transport Chains: ROS Production	Journal Club 1-3	
Jun. 17	READING WEEK – NO CLASS		
Jun. 24	ATP Synthesis & Energetics	Journal Club 1-4	
Jul. 1	CANADA DAY – NO CLASS		
Jul. 8	Photosynthesis: Photosynthetic Electron Transport Chains & the Dark Reactions	Journal Club 2-1	
Jul. 15	Lipid Metabolism 1	Journal Club 2-2	Term Test 2 (TBD)
Jul. 22	Lipid Metabolism 2	Journal Club 2-3	
Jul. 29	Amino Acid Metabolism	Journal Club 2-4	
Aug. 5	Metabolic Control Analysis		

Accessibility Needs:

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. I will work with you and AccessAbility Services to ensure you can achieve your learning goals in this course. Enquiries are confidential. The UTSC AccessAbility Services staff (located in S302) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations (416) 287-7560 or ability@utsc.utoronto.ca.

Academic Integrity:

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, 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 include, but are not limited to:

- In papers and assignments:*
- 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:*
- using or possessing unauthorized aids;
 - looking at someone else's answers during an exam or test
 - misrepresenting your identity
- In academic work:*
- falsifying institutional documents or grades
 - falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. There are other offences covered under the Code, but these are the most common. ***Please respect these rules and the values that they protect.***