

Fall '10

Bio-Organic Chemistry CHMC47 Course Outline

This document contains important information and should be kept in a safe place where you can refer to it throughout the semester.

Welcome to the CHMC47H3: Bio-Organic Chemistry. This course studies the chemistry of heterocycles, nucleic acids, terpenes, steroids and other natural products; amino acids, proteins and carbohydrates; introduction to enzyme structure and catalysis; an also introduction to the chemistry of drugs.

LEC01: Fri 9:00-11:00, SW-128 and TU 17:00-18:00, SW-143

Labs: Mo 9:00-13:00, SW153 and SW159. Please note that labs will be running every week. First lab will be on Monday, September 20th.

Lecturer and Lab Coordinator: Dr. Lana Mikhaylichenko

Contact: mikhay@utsc.utoronto.ca

(416) 287-7207, SW-633A

Office hours: Wed. 1:00 – 2:00 pm, Fri. 1:00 – 3:00 pm

Required Text Books:

P.Y. Bruce, Organic Chemistry, 5th ed., Pearson.

P.Y. Bruce, *Study Guide and Solutions to Organic Chemistry*, 5th ed., Pearson

(You can also use 4th edition book and Study Guide)

Recommended Websites:

Virtual Textbook of Organic Chemistry:

<http://www.cem.msu.edu/~reusch/VirtualText/intro1.htm>

Interactive Tutorials:

<http://www.cem.msu.edu/~reusch/VirtualText/Questions/problems.htm>

Free chemistry draw program-register and follow the instructions:

<http://www.chem.utoronto.ca/library/reg.php>

Method of Evaluation:

Labs: 25%

Literature Assignment: 5% (the assignment will be given during your first lab)

Midterm Test: 25%

Oral Group Presentation: 5% (location and time TBA)

Final Exam: 40% (December exam period)

Course Website: course site on Blackboard

Communication: via email and office hours

Discussion Section:

The discussion section for this class will be during our Thursday lecture. I will also organize the Blackboard discussion session. One of the course's TA will be running it. This is your time to ask questions that you were not able to ask during the lecture.

Learning Outcomes for Course:

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

- Identify, classify and name carbohydrates, amino acids, nucleic acids, and other biochemical compounds.
- Understand the principles of the chemistry connected to living systems. The principles of biosynthesis and metabolism of compounds such as: steroids, lipids, amino acids, peptides, proteins, vitamins, carbohydrates and nucleic acids.
- Use the vocabulary on organic chemicals and reactions in metabolism and other biochemical applications.
- Explain the role of enzymes in metabolism.
- Be more familiar with the modern organic techniques such as chromatography (TLC and column), separation methods (extraction, recrystallization, etc) and methods such as UV, IR, ^1H NMR spectroscopy, etc.

Lecture Schedule: This is a rough guide only and may change throughout the term.

Lec #	Week of	Subject	Reading (Bruice 5 th ed.)	Reading (Bruice 4 th ed.)
1	Sept-13	Carbohydrates	Ch 21	Ch 22
2	Sept-20	Carbohydrates Amino Acids	Ch 21 Ch 22	Ch 22 Ch 23
3	Sept-27	Amino Acids, Peptides, and Proteins	Ch 22	Ch 23
4	Oct-4	Amino Acids, Peptides, and Proteins Lipids	Ch 22 Ch 26	Ch 23 Ch 26
5	Oct-11	Lipids	Ch 26	Ch 26
6	Oct-18	Heterocyclic Compounds	Ch 20	Ch 21
TERM TEST	120 MINS	Around this time. Date to be announced. Chapters TBA		
7	Oct-25	Nucleic Acids	Ch 27	Ch 27
8	Nov-1	Catalysis	Ch 23	Ch 24
9	Nov-8	The Organic Mechanisms of the Coenzymes	Ch 24	Ch 25
10	Nov-15	The Organic Mechanisms of the Coenzymes The Chemistry of Metabolism	Ch 24 Ch 25	Ch 25 Ch 25
11	Nov-22	The Chemistry of Metabolism	Ch 25	Ch 25
12	Nov-29	The Organic Chemistry of Drugs: Discovery and Design	Ch 30	Ch 30

Fall Term Exams	Dec 7 -21	Tree hour term test (TBA).
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Assigned problems will be posted with the every lecture material.

Lab Manual for this course will be posted on-line on a Blackboard course page. The introductory part of the Lab Manual has a tentative lab schedule and all the information you need to know about these labs. Please read it before coming to the actual labs.

Oral Presentations

The assignment for the oral presentations will be given to you during lab period. The location and time for your presentations will be posted later on a Blackboard course page. Please check the Blackboard for the detailed explanation about this presentation. Do not worry – historically students do not like the idea about oral presentation at the beginning but really enjoy it at the end.

Literature assignment

The detailed explanation for my expectations for the good literature assignment will be posted on a course Blackboard page. We will also have a guest lecturer who will let you know about UTSC writing centre and all the help available there. You will submit your literature assignment through Turnitin program. This is a U of T statement about this program:

"Normally, students will be required to submit their course essays to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays 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".

I will post a detailed explanation of how to submit your assignment later on.

Study Hints:

Organic chemistry is a cumulative subject. As such, an understanding of new material depends on mastery of topics discussed in previous chapters, including that which was taught in Organic Chemistry I and II. **Keep up with the material –do not let yourself get behind!!!**

Class notes:

Sets of *incomplete notes*, including figures discussed in class, will be available on the class Intranet page prior to the corresponding lecture. You are responsible for printing these notes and bringing them with you to class. **You will be responsible for all**

material covered in lecture, even if it is not included in the online notes; you must attend lecture in order to get additional information.

Steps toward Success in Bio-Organic Chemistry:

1. **Look through the chapter before lecture.** It is not necessary to read the whole chapter before class, but look at headings and schemes, specifically trying to find similarities to topics that you already know. Much of organic chemistry follows the same trends, and identifying common themes will make studying and learning the material much easier.
2. **Go to class.** Go to class every time and pay attention during class.
3. **Do practice problems!** This is the most important and most productive way to study and ESSENTIAL to your success in the class. Work as many problems as you can, but realize that reading the solution manual is not the same as solving a problem on your own. If you have a difficult time with the problem, it will be much more beneficial to you if you reread the appropriate section of the textbook (and online text if you need additional explanations) than if you simply read the answer.
4. **Ask questions!** Attend office hours and discussion sections.

Accessibility:

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 STATEMENT

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. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources (see <http://www.utoronto.ca/academicintegrity/resourcesforstudents.html>).

I am looking forward to see you all and work with you!

