

INTRODUCTION TO BIOCHEMISTRY – BCH 2333A WINTER 2017

Welcome to BCH 2333!

Course description: The chemistry and biological properties of amino acids, proteins, nucleic acids, lipids, carbohydrates, and vitamins. The course includes laboratory and tutorial sessions.

Prof: Dr. Christopher Boddy

Office: Room 116
D'Iorio Hall

Tel: (613) 562-5800 extension: 8970

Email: cboddy@uottawa.ca *Please put BCH2333 in the subject line*

Web Site: the course website is on Blackboard

- I will use the website to post assignments, useful documents, links, etc.
- I strongly encourage you to post course-related questions on the class discussion forum in Blackboard and to answer your colleagues' questions.
- I will also use Blackboard to post your unofficial marks

Prerequisite: CHM2120

Dr. Boddy's Office Hours:

Tuesday: 9:00 – 10:30 DRO 116

Friday: 9:00 – 10:30 DRO 116

- If you can't make it during these hours, please make an appointment by e-mail (remember to put BCH2333 in the subject line)

Lectures: Attendance and participation in lectures is key to your success in the course!

Tuesday 13:00 - 14:30 MRN AUD

Thursday 11:30 - 13:00 MRN AUD

DGDs: DGDs start the week of Jan 16th 2017.

The DGDs are for lecture content. See your lab TAs for lab question. Students who attend DGDs (tutorials) have a much higher degree of success in the course.

DGD 1	Monday	10:00 - 11:30	LPR 155
DGD 2	Monday	13:00 - 14:30	BSC 140
DGD 3	Wednesday	10:00 - 11:30	BSC 140
DGD 4	Wednesday	13:00 - 14:30	MRT 250
DGD 5	Wednesday	16:00 – 17:30	FSS 1007
DGD 6	Thursday	17:30 - 19:00	BSC 140

Lab: The lab is coordinated by Drs. Luc Poitras (lpoitras@uottawa.ca) and Josée Coutu (Josee.Coutu@uottawa.ca). Please contact them for lab specific questions. Note the lecture and lab have separate blackboard pages.

Note: All labs take place in BSC 211, except the Intro which is in BSC140.

Assessment:	Online assignments	5%
	Exam 1: Thurs, Jan 26	10%
	Exam 2: Thurs, Feb 16	10%
	Exam 3: Tue, March 21	10%
	Final Exam:	35%
	Lab:	30%
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		Total: 100%

*All exams are cumulative. You must pass both the lab and lecture components to pass the class.

Online graded assignments: WileyPLUS is the online homework/study program that we will use. It gives immediate feedback and hints to help you get the right answer. Assignments will be posted once a week during the course.

- You can purchase access to WileyPLUS at the bookstore (see Required Material section of the syllabus below – it comes with the recommended text).
- When you register for the first time, type University of Ottawa, in the box below “Register for a new class”
- On the following page , select your “Course” and your “Instructor” , and click the green arrow
- On the next page, go to “Create Account” and agree to the terms on the following page
- You will then be prompted for a registration code, or a payment method, or using the 14 days free trial grace period. After completing this, you can sign in using your username and password.

Video describing how to register for WileyPLUS

www.wileyplus.com/register

Assignments: **Keeping up with the assignments is essential for success in the course.** Homework assignments will be posted on virtual campus on Fridays. Answers will be posted approximately one week after each assignment is posted. Be sure to understand any differences between your answers and the posted answers.

Required Material: The required material for this course is WileyPLUS. It can be purchased with or without the accompanying text. The options and their ISBN numbers are given below.

Binder Ready Text with WileyPLUS: ISBN 9781119388425

Hardcover Text with WileyPLUS: ISBN 9781119388418
WileyPLUS access on it's own (include the e-book): can be purchased
when registering at www.wileyplus.com

You can of course use earlier editions of the text or similar textbooks. All
of them will have the core material presented in class and can be used to
supplement the in class material.

Steps to Success in Biochemistry

1. **Read** the relevant sections in the text before the class.
2. **Review** your notes as soon as possible after each class. I will return your midterms as soon as possible, and you should review them as soon as possible too (aim to do this within a week at the most).
3. **Write** the key concepts in your own words.
 - a. Ask yourself questions like “why does that work?” and “how does that work?”
 - b. Try to identify the underlying concepts
4. **Practice** regularly:
 - a. **DO the assignments!** If you copy the correct answer from a Facebook post, you are not giving yourself a chance to learn the material. Write out the answers as well as answering the questions online. It can help with retention of the material. Ask questions to your TAs, in class, or at office hours about questions and problems you don't understand.
 - b. Do additional questions (not just the night before the exam). There are lots of introductory biochemistry texts that cover this material. Try problems from these texts.

Note: Attempt each question BEFORE looking at the answer. It is much easier to understand the question with the answer in front of you.
5. **Attend tutorials** (DGD's) and extra help sessions.
6. **Group study** is extremely useful because discussions will help make the material and concepts easier to remember and deepen your understanding. You will be asked to work in small groups in class—take advantage of this learning opportunity!
7. **Ask** questions! Your professor and TA's are there to help you succeed, but you have to put the time and effort into the course.

***Learning takes time!** I recommend that you spend 2 – 4 hours studying per hour of lecture (this translates to 6 – 12 hours per week in BCH2333)*

Approximate class-by-class outline

Lecture 1: Origin of life, chemical evolution, water

Lecture 2: Intermolecular interactions, Acid/Bases, pH, pKa

Lecture 3: buffers, amino acids

Lecture 4: amino acids, nucleotides

Lecture 5: lipids, carbohydrates

Exam

Lecture 6: 3D structure of proteins, secondary structure

Lecture 7: secondary structure

Lecture 8: super secondary structure, tertiary structure, and quaternary structure

Lecture 9: folding, protein purification

Lecture 10: protein purification, primary structure determination

Exam

Lecture 11: Protein binding, hill equation

Lecture 12: cooperativity, MWC & KNF models

Lecture 13: Enzymes, Michaelis-Menten

Lecture 14: Mechanism of catalysis, allosteric regulation of enzymes

Lecture 15: Allosteric regulation of enzymes, inhibition

Lecture 16: Inhibition

Exam

Lecture 17: DNA, structure and stability

Lecture 18: transcription, regulation, mRNA

Lecture 19: Translation, DNA replication

Lecture 20: DNA replication, recombinant DNA technology

Lecture 21: recombinant DNA technology,

Final exam