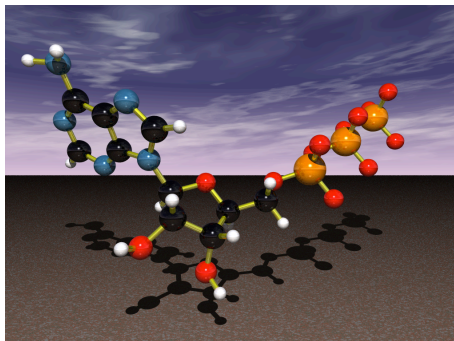


CHEM 3723 COURSE SYLLABUS

Metabolism

Fall 2015



1 General

- Instructor:** Dr. Sherri A. McFarland
Elliott Hall Room 113
Office hours: Tu 1–3
Phone: 585-1320
Email: sherri.mcfarland@acadiau.ca
- Lecture:** Tu Th
8:30–9:50 AM
Elliott Hall, Room 109
- Textbook:** *Fundamentals of Biochemistry* (Voet, Voet, and Pratt)
Or equivalent
- Laboratory:** Th 1:30–4:30 (begins Sept. 10)
Prelab lectures: Elliott Hall, Room 109
Laboratory: Elliott Hall, Room 204
Lab manual: none (experiments will be posted on Acorn)
Lab instructor: Ms. Kelly Stevens (Room 205)
- Prerequisite:** Chem 2713 with \geq C-
- Important Date(s):** Midterm 1, Oct. 1 (in-class)
Midterm 2, Nov. 12 (in class)

You will need to purchase a lab book (hard cover, no perforated pages), lab coat, and safety glasses. Safety glasses can be purchased in the Elliott Lobby Sept. 2–14 MWF from 12:30–1:30 and Tu Th 11:30–12:30. If you cannot make these times work, please see Dr. Bobby Ellis in his office (Elliott Hall, Room 323).

2 Content

2.1 Major topics

Enzymes
Introduction to metabolism
Glucose catabolism
Citric acid cycle
Electron transport and oxidative phosphorylation

2.2 Minor topics

Photosynthesis
Glycogen metabolism
Gluconeogenesis
Lipid metabolism
Protein metabolism

3 Course Philosophy and Objectives

This is a challenging upper division course that will require you to assimilate and understand lots of new information in terms of your prior chemistry background. There are two components to CHEM 3723: learning in lecture and learning at home. Expect to spend much more time studying outside of class than you spend in lab or lecture. In return for your effort, I will do my best to provide clear learning objectives, relevant practice problems and questions, and interesting supplementary course material.

You are expected to apply the knowledge you gained in CHEM 2713 which includes the structures and functions of sugars, amino acids and proteins, nucleic acids, and lipids. In addition, you are expected to know the organic functional groups (and properties) and to be able to draw detailed reaction mechanisms using curved arrows to show electron flow. A basic understanding of thermodynamics, kinetics, and acid-base equilibria is assumed. If these expectations are met and a genuine effort is put toward learning energetics and metabolism, this course will teach you:

- how the basic building blocks of life are constructed and broken down
- the principles of carbohydrate, lipid, and amino acid metabolism
- the energetics that fuel the life processes
- fundamental chemistry behind the synthesis, breakdown, and extraction of energy from metabolites
- to apply the information gleaned to real-life problems in medicine, biology, and nutrition

4 Grading Scheme

Periodic evaluations will be given throughout the term to assess your knowledge and understanding of intermediary metabolism. Your overall performance will be calculated according to the following schemes, and you will receive the highest grade calculated from the possible schemes.

Midterm 1	20%
Midterm 2	20%
Other	10%
Lab	15%
Final exam	35%

Midterm 1 (or 2)	35%
Other	10%
Lab	15%
Final exam	40%

Midterm 1	20%
Midterm 2	20%
Lab	15%
Final exam	45%

Letter grades will be assigned according to the guidelines outlined by the University (see Registrar's website). Point cutoffs may be lowered (but not *raised*) depending on the overall class mean and an individual student's progress. Other can include quizzes, assignments, participation, *etc.*

4.1 Attendance

Lecture attendance is highly recommended but not mandatory. However, attendance at the midterm tests, laboratory sessions, and the final examination is compulsory. The only acceptable reasons for absence from the midterm tests, laboratory sessions, or final examination are illness, participation in a varsity sport, and serious personal emergencies such as death in the family. Absence due to one of the above must be accompanied by official documentation.

4.2 Midterm

Make-up tests are not given for any reason. See your instructor if you must miss a test for valid reasons and be prepared to show documentation.

Midterms will be held in class and will be both challenging and **comprehensive**. You will be tested on two levels: (1) your basic understanding of the terms and concepts tested and your ability to coherently reproduce the knowledge presented in lecture and (2) your ability to use this information to apply, evaluate, compare, postulate, and predict. Those students earning a **C** on a given midterm will have only fulfilled requirement (1); those students who fulfill both (1) and (2) will receive an **A** or **B**. There may be problems on midterms that you have not seen, but if you *understand* the material, you have the tools to solve the problem. Don't equate memorization with understanding; the two are not interchangeable.

4.3 Assignments and Quizzes

Evaluation of your progress may be monitored in the form of period assignments and quizzes, which also serve to encourage you to "keep up" with the pace of the course and as a means of self-evaluation.

4.4 Laboratory

Laboratory make-up sessions are not given for any reason. See your instructor if you must miss a laboratory for valid reasons and be prepared to show documentation. Note that you must pass the lab component with a score of $\geq 50\%$ to pass the course. Laboratory scores are compiled from written reports, data sheets, and quizzes as well as experimental technique and laboratory preparation. To obtain credit for the laboratory component of the course, a student must submit all written reports, data sheets, and quizzes (regardless of whether credit is given).

5 Students with Documented Disabilities

If you are a student with a documented disability who anticipates needing accommodations in this course, please inform me after you meet with Jill or Suzanne in Disability/Access Services, in the Student Resource Centre, lower floor of the old SUB. jill.davies@acadiau.ca 585-1127 or suzanne.robicheau@acadiau.ca 585-1913.

6 Academic Honesty

The submission of another person's work as your own is plagiarism. All midterm tests, quizzes, assignments, laboratory reports, and the final examination are evaluations of your *independent* work. Evidence of non-independent work on any one of these evaluations is considered an infraction of academic honesty by your professor and will not be tolerated. The penalties for infraction of academic honesty range from failure on that piece of work to failure of the course.

7 Online Resources

Check ACORN daily for class updates and posted lectures.

8 Study Suggestions

Do not get behind! Skim chapters ahead of time to increase understanding when the material is presented in class. Print lecture templates prior to class and make many notes during lecture. Review your notes before the following class. If any points are still obscure, post concerns on the latest ACORN discussion.

Study this course with pencil and paper. Drawing your own diagrams and pictures is often the key to retaining vast amounts of information. The mere act of writing out things such as equations, formulas, pathways, and definitions is a major aid to retention. Paper and pencils are cheap! A calculator is essential since there will be occasions when you are separated from your laptop or when use of the laptop computer for a simple calculation is awkward or inefficient. It must be able to handle exponential notation and take square roots and logarithms.

Work lots of problems! Reading alone will not suffice; if you choose to read the chapters before starting on problems, look through the end-of-chapter problems *before* you begin reading the text. When midterm or exam time approaches, your time should be spent working problems and making sure you know pathways and mechanisms. This is not the time to begin reading chapters!

Don't hesitate to ask questions. You may initially feel shy or hesitant to do this, but you may be assured that the question you want to ask is also in the minds of many of your classmates. Asking such questions is also of value to your instructor as another means of measuring how well the material is being understood.

Be proactive in your studies. If you don't understand a particular concept, search Google, and you are likely to find an endless supply of alternative explanations. You may find an organic chemistry textbook extremely helpful in refreshing your memory of organic reactions and mechanisms that are used by enzymes. If all else fails, email your instructor for help; but do make a serious effort at answering your own question first as the search for the answer will often lead to retention.