

BIOCH 200: INTRODUCTION TO BIOCHEMISTRY

3 credits, 14 weeks, 3 hours lecture per week

Course description: An introduction to the fundamental principles of biochemistry. Protein structure and function; structure of nucleotides and nucleic acids; structure and function of biological membranes; metabolism of carbohydrates, lipids, and nitrogen; the regulation and integration of cellular metabolism; and bioenergetics.

Prerequisites: CHEM 101 and CHEM 261 (or 164)

Instructor

Dr. Blaine Legaree

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Office Hours

Tuesdays: 1:00 – 2:00 pm

Wednesdays: 1:00 – 3:00 pm

Thursdays: 12:00 – 1:00 pm

Fridays: 1:00 – 2:00 pm

Hours of Instruction

Lecture: Tuesdays 3:00 – 4:50 pm Rm S210

Fridays 11:00 – 11:50 am Rm S214

Required Resources

1. **Principles of Biochemistry, 5th Ed.** 2011, Moran *et al.*, ISBN-13: 978-0321707338

Available in ebook digital formats at [Coursesmart.com](http://coursesmart.com), [MyPearsonStore.com](http://mypearsonstore.com) & [Amazon.ca](http://amazon.ca)

2. **Moodle (<http://ilearn.keyano.ca>)**. The course outline, lecture notes** and other resources will be made available on Moodle.

***For Bioch 200, it is important that you print the lecture notes before coming to class.*

Course Outcomes

Upon successful completion of this course, the student will be able to:

1. Describe the chemistry of proteins, carbohydrates, lipids and nucleic acids.
2. Explain the mechanisms of enzymatic catalysis.
3. Discuss the fundamental principles of key metabolic pathways.
4. Integrate biochemical principles into other areas of the life sciences.

Evaluation

Test 1	10%	Mon, Jan 26, 2016
Test 2	10%	Mon, Feb 2, 2016
Assignment	10%	Due Thurs, Mar 4, 2016
Test 3	10%	Mon, Mar 15, 2016
Test 4	10%	Mon, Mar 29, 2016
Final Examination	50%	<i>Date to be set by the Registrar</i>

A grade of C- is required for progression or transfer.

Tests and Examinations

Exams and tests consist of multiple choice, short answer and long answer questions and are based on material covered in lectures **and** from the problem sets..

The final exam is cumulative and must be written in order to complete the course.

Assignment

Students will use on-line resources to investigate protein structure and gain exposure to electronic databases and tools.

Assignments are to be the product of **each student's own work**. Although you may discuss the assignment with others, you are expected to do the actual work **independently**. Disciplinary action will be taken if strong similarities are found between examples of student work OR between the student's work and on-line material. Do not share assignments, nor loan them to anyone.

Assignments must be typed and **will not be accepted via email**.

Late assignments will be penalized 10% per day late & will not be accepted if more than 5 days late.

Note: Lectures, problem sets, assignments, and textbook readings are all designed to help you succeed in this course. Completing assignments and attending lectures are essential to your success. Students who do not complete all the required work should not expect to pass the course. Good study habits, such as reviewing material in advance of the midterms and participating in class, will also aid your efforts.

Grading System

Descriptor	Alpha Grade	4.0 Scale	Percent	Rubric for Letter Grades
Excellent	A+	4.0	> 92.9	Work shows in-depth and critical analysis, well developed ideas, creativity, excellent writing, clarity and proper format.
	A	4.0	85 – 92.9	
	A-	3.7	80 – 84.9	
Good	B+	3.3	77 – 79.9	Work is generally of high quality, well developed, well written, has clarity, and uses proper format.
	B	3.0	74 – 76.9	
	B-	2.7	70 – 73.9	
Satisfactory Progression	C+	2.3	67 – 69.9	Work has some developed ideas but needs more attention to clarity, style and formatting.
	C	2.0	64 – 66.9	
	C-	1.7	60 – 63.9	
Poor Minimum Pass	D+	1.3	55 – 59.9	Work is completed in a general way with minimal support, or is poorly written or did not use proper format.
	D	1.0	50 – 54.9	
Failure	F	0.0	< 50	Responses fail to demonstrate appropriate understanding or are fundamentally incomplete.

Schedule of Topics

Textbook Readings:

1. Introduction: Biomolecules and Water	1.1-2.6
2. Acids, Bases and Buffers	2.7-2.10
3. Protein Structure and Function	3.1-4.15
4. Enzymes	5.1-7.6
5. Carbohydrates	8.1-8.7
6. Nucleotides and Nucleic Acids	19.1-19.2
7. Lipids and Biological Membranes	9.1-9.10
8. Introduction to Metabolism and Oxidations	10.1-10.10
9. Glucose Metabolism	11.1-12.7
10. The Citric Acid Cycle and Oxidative Phosphorylation	13.1-14.13
11. The Metabolism of Fats and Cholesterol	16.7
12. Nitrogen Metabolism	17.6

Please Note

Date and time allotted to each topic is subject to change. It is your responsibility as a student to contact the Office of the Registrar to complete the forms for Withdrawal or Change of Registration, and any other forms. Please refer to the list of important dates as noted in the Academic Schedule in the Keyano College Credit Calendar.

Performance Requirements

Student Attendance

Class attendance is useful for two reasons. First, class attendance maximizes a student's learning experience. Second, attending class is a good way to keep informed of matters relating the administration of the course (e.g., the timing of assignments and exams). Ultimately, you are responsible for your own learning and performance in this course.

It is the responsibility of each student to be prepared for all classes. Students who miss classes are responsible for the material covered in those classes and for ensuring that they are prepared for the next class, including the completion of any assignments and / or notes that may be due.

Academic Misconduct

Students are considered to be responsible adults and should adhere to principles of intellectual integrity. Intellectual dishonesty may take many forms, such as:

- Plagiarism or the submission of another person's work as one's own
- The use of unauthorized aids in assignments or examinations (cheating)
- Collusion or the unauthorized collaboration with others in preparing work
- The deliberate misrepresentation of qualifications
- The willful distortion of results or data
- Substitution in an examination by another person
- Handing in the same unchanged work as submitted for another assignment
- Breach of confidentiality.

The consequences for academic misconduct range from a verbal reprimand to expulsion from the College. More specific descriptions and details are found in the Student Rights and Student Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Student Code of Conduct Policies.

In order to ensure your understanding of the concept of plagiarism, you must successfully complete the online Plagiarism Certificate at learn.keyano.ca. Then print the certificate, sign it, and show it to each of your instructors. Your course work will not be graded until you show this signed certificate. If you completed this certification previously, show evidence to your instructor.

Specialized Supports

Counselling and Disability Services

Counselling Services provides a wide range of specialized counselling services to prospective and registered students, including personal, career and academic counselling.

SKILL Centre

The SKILL Centre is a learning space at Keyano College where students can gather to share ideas, collaborate on projects and get new perspectives on learning from our tutorial staff.

The SKILL Centre, through a variety of delivery methods, provides assistance in skill development to Keyano students. Assistance is provided by instructors, staff and student tutors. Individuals wishing to improve their mathematics, writing, grammar, study, or other skills, can take advantage of this unique service.

Authorization

This course outline has been reviewed and approved by the Program Chair.

Blaine Legaree, Instructor

Louis Dingley, Chair

Date Authorized

Guy Harmer, Dean

Date Authorized

Signed copies to be delivered to:

Instructor
Registrar's Office