

Biochemistry 2280A E-Course (section 650) – Summer 2018

Department of Biochemistry

Course Description and Goals:

Biochemistry is the study of the molecules of life and centers around four key groups of biomolecules: proteins, lipids, carbohydrates and nucleic acids. Students will learn about the structure and function of these key biomolecules, the mechanics by which the cellular machinery is supplied with energy, and how genetic material is converted to functional information. Students will also learn techniques of recombinant DNA technology that have profoundly changed how we study and use cell functions.

Course Outcomes:

Upon completion of the course students should be able to:

1. Demonstrate basic knowledge about the structure, roles, and functions of the different classes of biomolecules.
2. Provide examples where defects in biochemical processes result in disease and predict potential outcomes of biochemical defects.
3. Describe the central pathways that provide living organisms with energy, and the regulation of these pathways.
4. Detail information flow in living systems and mechanisms that regulate the expression of genetic material.
5. Formulate an approach to clone and express a gene of interest in bacteria.
6. Obtain and interpret scientific information from literature, databases and oral presentations.

Prerequisites:

Biology: One of Bio 1001A or 1201A, and one of Bio 1002B or 1202B

AND

Chemistry: Chem 1301A/B, and Chem 1302A/B.

Course Coordinator: Dr. Brian Dempsey

Email: brian.dempsey@uwo.ca

Phone: 519-661-3362

Available: 9 am – 4 pm Monday to Friday

Mail: Department of Biochemistry
Schulich School of Medicine & Dentistry
Western University
London ON, N6A 5C1

Find Dr. Dempsey on campus:

Lower level of the MBL building, room C5, described on the campus map as Molecular Bio Lab. Located between Medical Sciences and the Kresge building.

Course material:

All course material, other than textbook readings and questions, are available through the OWL online course site. Also available in OWL is a set of note summaries for the in-class lectures taught in the fall session of Biochemistry 2280A. Students with OWL issues should see:

<https://owl.uwo.ca/portal/site/owldocs>

Forum:

Your online course contains a student Forum – a discussion group for the course for you to review and ask questions. Student's names will not be visible to other students. A TA or Dr. Dempsey will respond to postings, though all students are also encouraged to contribute to discussions initiated by others. Students should conduct their interactions in a respectful manner.

Virtual Office Hours:

From time to time, Dr. Dempsey will hold virtual office hours via the Collaborate tool in OWL. Collaborate allows groups of people to interact via video, audio, or chat messages. Dates and times will be announced as the course progresses. The virtual office hours will be recorded.

Required Textbook:

Essential Cell Biology: Fourth Edition – Bruce Alberts, Dennis Bray, Karen Hopkins, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts and Peter Walter. *Garland Publishing Inc.*

Evaluation:

Component	Topics	Date	% of Final Mark
Midterm test	1-13	June 16	40
Final exam	14-24	TBA (Jul 30-Aug 2)	40
Assignment 1	1-4	May 28	10
Assignment 2	21-22	July 23	10

Topics and suggested timeline:

Recommended dates	Topics	Approx. time commitment**
	Section 1	20 hours
May 7 – 13	Topic 1 Fundamental concepts in Biochemistry	
	Topic 2 Amino Acids	
	Topic 3 Protein Structure	
May 14 - 20	Topic 4 Protein Function & Enzymes	
	Topic 5 Protein Purification & Proteomics	
	Section 2	30 hours
May 21 - 27	Topic 6 Lipids and Membranes	
	Topic 7 Carbohydrate Structure	
May 28 - Jun 3	Topic 8 Fundamental Concepts in Metabolism	
	Topic 9 Carbohydrate Metabolism	
Jun 4 - 10	Topic 10 Citric Acid cycle	
	Topic 11 Electron transport and ATP synthesis	
Jun 11 - 15	Topic 12 Lipid Metabolism	
	Topic 13 Summary and Review of Metabolic Pathways	
Sat. Jun 16th	Midterm Covers Topics 1 - 13	3-hour exam
	Section 3	10 hours
Jun 18 - 24	Topic 14 Nucleic Acid Structure	
	Topic 15 DNA Replication	
1st half Jun 25 - Jul 1	Topic 16. DNA Repair	
	Section 4	13 hours
2nd half Jun 25 - Jul 1	Topic 17 Prokaryotic Transcription	
Jul 2 - 8	Topic 18 Eukaryotic Transcription	
	Topic 19 RNA Processing	
1st half Jul 9 - 15	Topic 20 Translation	
	Section 5	20 hours
2nd half Jul 9 - 15	Topic 21 Recombinant DNA Technology	
Jul 16 - 22	Topic 22 Cloning Your Favourite Gene	
	Topic 23 Sequencing Genomes	
	Section 6	7 hours
Jul 23 - 29	Topic 24 Molecular Basis of Cancer	
	Review	
July 30 - Aug 2	Exam period – final covers Topics 14 - 24	3-hour exam

** Approximate time commitments do NOT include time spent on Assignments.

Exams: See http://www.registrar.uwo.ca/applying/distance_studies/examinations.html for information regarding Distance Studies Examinations.

The 3-hour midterm test will cover material in Topics 1 to 13 and will be: **Saturday, June 16th 2018**. The time and location will be announced closer to the day. The 3-hour final exam will cover Topics 14 to 24 and will be scheduled by the Registrar sometime between July 30 and August 2, 2018. Check online for the date, time and location.

NB: If you need to change the location of your exam you need to contact the Distance Studies office at least 3 weeks prior to the exam date at 519-661-2111 ext. 84879 or distexam@uwo.ca.

Biochemistry 2280A E-Course exams may include multiple choice components marked on Scantrons. The course uses software that will detect unusual coincidences in answer patterns that may indicate cheating. We caution students to transfer their answers to their Scantron with care! No adjustment for transposition errors will be made.

It is each student's responsibility to determine where she/he is to write each examination and to appear at the designated room on time. Students must provide their own pens, pencils (HB) and erasers for the examination.

No student will be allowed to write an examination without either a [Western ONECard](#) student ID or another piece of government-issued photo identification. Electronic devices, including (but not limited to) calculators, cell phones and iPods are NOT allowed in the exam room.

Missed test/examination: "Students who are unable to write a scheduled midterm test must inform their instructor and provide proper documentation to their academic counsellor. If approval is made for a make-up test and your exam centre is in London, your instructor will arrange the time and location of your rewrite. If you are writing at an off-campus exam centre, you must contact Distance Studies office if your make up test is approved to arrange your rewrite. Students will be required to pay an off-campus make-up exam fee."

Grades for the midterm will be available through OWL. Final course grades can be viewed online through the Registrar's Student Centre website. Final grades in this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer (e.g., 74.4 becomes 74, while 74.5 becomes 75). Marks WILL NOT be bumped to the next grade or GPA level (e.g., an 84 will NOT be bumped up to an 85). The mark attained is the mark you achieved and the mark assigned; requests for mark bumping will be denied, in accordance with Bachelor of Medical Science Undergraduate Education policy.

Assignments:

Students will be required to submit two assignments. The first assignment relates to Topics 2 to 4 and will be available on OWL in the second week of the course. Students must submit an electronic copy to Turnitin via OWL no later than 4:00 pm on May 28, 2018.

The second assignment relates to Topics 21 and 22 and will be available on OWL in the second week of July. Students must submit an electronic copy to Turnitin via OWL no later than 4:00 pm on July 23, 2018.

Late assignments will be penalized 1 mark (of the total of 10 allotted to the assignment) per day to a maximum of 3 days late (May 31- assignment 1, July 26- assignment 2). After an assignment is 3 days late a mark of zero is given.

All required papers may be subject to submission for review to the commercial plagiarism-detection software under license to the University. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and turnitin.com.

Academic Offenses: Scholastic offenses: As outlined by the University, plagiarism is the “act or an instance of copying or stealing another’s words or ideas and attributing them as one’s own.” (Excerpted from Black’s Law Dictionary, West Group, 1999, 7th ed., p. 1170). Whether intentional or unintentional, plagiarism is a Scholastic Offence and will be penalized. All students are responsible for work submitted under their name. All students are responsible for reading the list of [Academic Rights and Responsibilities](#). Infractions will result in a grade of zero on the test, exam, or assignment in question. If you require additional information review the policy for [Undergraduate Appeals](#).

Useful Links

Office of the Registrar – Distance Studies

http://www.registrar.uwo.ca/applying/distance_studies/index.html

Academic Counselling (Science and Basic Medical Sciences):

https://www.uwo.ca/sci/Maintenance/academic_counselling/index.html

Student Center: <https://student.uwo.ca/>

Student Development Centre: <http://www.sdc.uwo.ca/>

Student Health Services: <http://www.health.uwo.ca/>

Students who are in emotional/mental distress should refer to Mental Health@Western

<http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.