Course Description and Goals: Biochemistry is the study of the molecules of life and centers on 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 the genetic material is converted to functional information. Students will also learn the techniques of recombinant DNA technology that have profoundly changed how we study and use cell functions.

Biochemistry 2280A/2288A 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.
7. Explain scientific concepts in a way that can be understood by a general audience.

2280A Prerequisites:
Biology: One of Bio 1001A or 1201A, and one of Bio 1002B or 1202B
AND
Chemistry: Chem 1301A/B, and Chem 1302A/B.
(Integrated Science 1001X can be used in place of Bio 1002B and Chem 1302A/B)

The Course Office is room C5 on the ground level of the MBL building, described on the campus map as Molecular Bio Lab, it is located between the Medical Sciences and Kresge buildings. Office hours are Monday to Friday 10:00 am - 12:00 and 1:00 pm – 2:30.
Dr. Brian Dempsey is the Biochemistry Education Coordinator.
Email: brian.dempsey@uwo.ca Phone: x83362

Each professor has drop-in office hours. These office hours start the week that the professor begins his lectures. Dr. Chris Brandl is the 2280 Course Coordinator

Dr. Michael Boffa, MBL C5 on Thursdays 1:00 – 3:00 pm.
Dr. Derek McLachlin, MSB 349 on Thursdays 1:00 – 3:00 pm.
Dr. Chris Brandl, MBL C210 on Mondays & Tuesdays 12:00 – 1:00 pm.

Pre-exam tutorials will be held before the midterm and final exams. Times and locations will be announced on OWL.

Students can get help with course material by participating in the Biochem 2280_2288 Forum available through OWL. Students’ names are not visible to other students. Professors and TAs respond to the postings. Please keep your interactions friendly and respectful.

An optional course package may be purchased from The Book Store at Western. The package includes background notes, copies of the required readings from GENOMES 3rd ed. and a large number of practice exam questions and answers. The contents of the course package are copyrighted and cannot be reproduced without written permission from the Department of Biochemistry.

2018 Lecture Schedule

Lectures are subject to change, and section seating is not interchangeable. All lectures are in NCB 101.

SECTION 001: Mon., Wed., Fri. 2:30 – 3:30 pm
SECTION 002: Tues., Thurs., Fri. 3:30 – 4:30 pm

<table>
<thead>
<tr>
<th>Section 001</th>
<th>Section 002</th>
<th>Topics</th>
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| Dr. Michael Boffa  
Sept. 7,  
10, 12, 14,  
17, 19, 21,  
24, 26 | Dr. Michael Boffa  
Sept. 6, 7  
11, 13, 14,  
18, 20, 21  
25 | 1. Fundamental concepts of Biochemistry  
2. Amino Acids  
3. Protein Structure  
4. Protein Function & Enzymes  
5. Protein Purification & Proteomics |
| Dr. Derek McLachlin  
Sept. 28  
Oct. 1, 3, 5,  
15, 17, 19  
22, 24, 26  
29 | Dr. Derek McLachlin  
Sept. 27, 28,  
Oct. 2, 4, 5,  
16, 18, 19  
23, 25, 26 | 6. Lipids and Biological Membranes  
7. Carbohydrate Structure  
8. Fundamental concepts in metabolism  
9. Carbohydrate Metabolism  
10. Citric Acid Cycle  
11. Oxidative Phosphorylation  
12. Lipid metabolism  
13. Summary of Energy Metabolism |

Midterm test: Topics 1 – 13, November 3 from 7:00 – 10:00 pm

| Oct. 31  
Nov. 2  
5, 7, 9 | Oct. 30  
Nov. 1, 2  
6, 8 | 14. Nucleic Acid Structure  
15. DNA Replication  
16. DNA Repair |
| Dr. Chris Brandl  
Nov. 12, 14, 16,  
19, 21, 23,  
26, 28, 30  
Dec. 3, 5, 7 | Dr. Chris Brandl  
Nov. 9  
13, 15, 16,  
20, 22, 23,  
27, 29, 30  
Dec. 4, 6 | 17. Prokaryotic Transcription  
18. Eukaryotic Transcription  
19. RNA Processing  
20. Translation  
21. Recombinant DNA Technology  
22. Cloning your Favourite Gene  
23. Sequencing Genomes  
24. Molecular Basis of Cancer |

Final exam: Topics 14 – 24, Date TBD (set by Registrar)
The final exam is NOT cumulative
DO NOT book travel plans until after the date of the final exam has been set.
Please note that Biochem 2280A and Biochem 2288A are evaluated differently.

2280A evaluation:
3-hour midterm test  Saturday Nov. 3, 7:00-10:00 pm  Topics 1 – 13  40% of grade
Assignment          Due October 23, 4:00 pm              Topics 14 – 24  50% of grade
3-hour final exam   TBA                                    Topics 1 – 13  10% of grade

2280A Assignment:
Collaboration is a necessary skill when working in science so students are encouraged to form groups of up to 3 people to complete and submit one joint assignment. Students must submit an electronic copy to Turnitin via OWL no later than 4:00 pm on October 23. Late assignments will be penalized 1 mark (of the total of 10 allotted to the assignment) per day late. Assignments more than 3 days late will not be accepted.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism-detection software under license to the University for the detection of plagiarism. 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 (http://www.turnitin.com).

2280A test and exam:
Room assignments for the midterm test and final exam will be posted on the OWL course site. All students are responsible for determining where they are to write each examination and to appear at the designated room on time. Students should not make travel commitments before verifying when the final examination will be held through the Registrar’s Student Centre interface.

Students must provide their own pencils and erasers (pens are not allowed) for the examinations and they **MUST bring their Student ID card. A driver’s license is not adequate identification as it does not show you are enrolled at the University!** Electronic devices, including (but not limited to) calculators, cell phones and iPods are NOT allowed in the exam rooms.

Biochemistry 2280A/2288A exams include multiple choice questions marked on Scantrons. This course uses software that will detect unusual coincidences in answer patterns that may indicate cheating. Students should note that discrepancies between answers circled on their exam and those recorded on their Scantron will not be adjusted. Students should note that discrepancies between answers circled on their exam and those recorded on their Scantron will not be adjusted.

Missed midterm tests: Students who are unable to attend the midterm due to athletic or academic conflicts are expected to write a make-up test on Thursday Nov. 1. Students who know of a conflict in advance of the midterm must notify Dr. Dempsey no later than Monday Oct. 29.

Students who miss the midterm due to illness on the day of the exam must meet the necessary criteria for a make-up as designated by the University and their Dean’s office. Please take your medical documentation to the office of your Dean. See the Student Medical Certificate at: [http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf)
If you miss both the scheduled midterm and the make-up test you will be required to write a comprehensive final examination (Topics 1-24) worth the total value of both the midterm and final exams. You must obtain permission for this special exam from the office of your Dean and contact Dr. Dempsey at least 3 weeks prior to the date of the final exam.

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.

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 at the following website:

http://www.westerncalendar.uwo.ca/PolicyPages.cfm?PolicyCategoryID=1&command=showCategory&SelectedCalendar=Live&ArchiveID=

Infractions will result in a grade of zero on the test, exam, or assignment in question. If you require additional information please access:

https://www.uwo.ca/univsec/appeals_discipline.html

Statement on Student Conduct
Western’s Code of Student Conduct (see https://www.uwo.ca/univsec/pdf/board/code.pdf) prohibits assault, harassment, intimidation, threats, or coercion, as well as discrimination based on grounds including race, ethnic origin, sex, sexual orientation, gender identity, and disability. Students in this course are expected to speak and act in ways that maintain an environment in which all people feel safe and respected.

Useful Links
Registrar’s Office: http://www.registrar.uwo.ca/
Academic Counselling: Science and Basic Medical Sciences: https://www.uwo.ca/sci/counselling/
Student Center: https://student.uwo.ca/psp/heprdweb/?cmd=login
Student Development Centre: http://www.sdc.uwo.ca/
Student Health Services: http://www.health.uwo.ca/
Plagiarism: http://www.lib.uwo.ca/tutorials/plagiarism/index.html