CHM 479S & 1008S Biological Chemistry
2020

Instructor: Prof. D. B. Zamble
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Lectures: TR11, LM155
Office hours: After class, or email to schedule a meeting

Prerequisites: BCH210H/242Y, CHM347, CHM348
Recommended text: D. Voet and J. G. Voet, "Biochemistry", 3rd or 4th ed, 2004, Wiley.

Course Content: An in-depth examination of biological systems at the molecular level. Several complex, multi-component molecular systems with a central role in life will be examined. The systems chosen for discussion are all from prokaryotic organisms, contribute to amide-bond synthesis, and serve as current or possible antibiotic targets. For each system studied, the focus will be on understanding the chemical mechanisms that underlie the biological activities, as well as how these activities are interrupted by antimicrobial compounds.

Notes: Course notes will be available on Quercus. Make every effort to attend all lectures because it is here that the fundamental content of the course will be presented and discussed.

Date	*Topic*
Jan. 7	Introduction to antibiotics and translation
Jan. 9	Translation: Amino acid-tRNA synthetases - mechanisms
Jan. 14	Translation: aaRSs – inhibitors and unnatural amino acid incorporation
	Assignment topic selection open
Jan. 16	Translation: Ribosome structure and translation initiation
Jan. 21	Translation: Elongation
Jan. 23	Translation: Amide bond synthesis
Jan. 28	Translation: Termination and translation-targeting antibiotics
Jan. 30	Translation: Tetracyclines, aminoglycosides, macrolides
Feb. 4	Peptidoglycan synthesis: MurC
Feb. 6	Peptidoglycan synthesis: MurD, alanine racemase and ligase
Feb. 11	Peptidoglycan synthesis: Vancomycin mechanism
Feb. 13	Peptidoglycan synthesis: Vancomycin resistance
Feb. 17-21	*Reading week*
Feb. 25	**Midterm test**
Feb. 27	Peptidoglycan synthesis: Penicillin mechanism
Mar. 3	Peptidoglycan synthesis: Penicillin resistance
Mar. 5	Peptidoglycan synthesis: Penicillin resistance
Mar. 10	Peptidoglycan synthesis: Blocking penicillin resistance
	Assignment abstract due in class
Mar. 12	NRPS/PKS systems
Mar. 17	NRPS/PKS systems
Mar. 19	NRPS/PKS systems
Mar. 24	Student presentations
Mar. 26	Student presentations
Mar. 31	Catch-up
Apr. 2	Review
Apr. 3	**Final assignment paper due**

Grading Scheme:

CHM 479		***CHM 1008***	
Mid-term test	20%	Mid-term test	15%
Assignment		Assignment	
Abstract	5%	Abstract	5%
Paper	25%	Paper	20%
		Presentation	15%
Participation	5%	Participation	5%
Final Exam	45%	Final Exam	40%

Bonus for proven scientific mistake in notes: 2% (one-time only)
Penalty for late assignments: 5% per day (weekend days included)

Turnitin: "Normally, students will be required to submit their course essays to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site".

Absence: If you miss a test or a significant period of class work through illness or a related reason, you should request consideration by submitting a completed University of Toronto Student Medical Certificate, which is available at the Faculty of Arts and Science web site.
http://www.artsandscience.utoronto.ca/current/forms.shtml
The document must be presented within one week of the date of the absence. Only serious illness (or equivalent reason) will be accepted as justification for absence (note: the UofT Medical Certificate, filled out by your doctor, stating that you saw him/her on a given day is not adequate. Your doctor must certify that you were too sick to attend the test, etc.) The form of consideration extended for a particular item of missed term work will be explained to you when you submit the certificate.

Email Policy:

For a response…

-All emails must contain a full student name and student number.

-Short questions only. Detailed questions especially those referring to chemical structures should be saved for office hours or face to face. These are very difficult to answer over email. All efforts will be made to return emails within 24 hrs during the week.

***Accessibility Needs**:*
The University of Toronto is committed to accessibility. If you require accommodations for a disability, or have any accessibility concerns about the course, the classroom or course materials, please contact Accessibility Services as soon as possible:
disability.services@utoronto.ca or http://studentlife.utoronto.ca/accessibility .