

# Topics in Biological Chemistry

## CHMD 79H3-S

### LECTURE OUTLINE

**This document contains important course information and should be kept in a safe place where you can refer to it throughout the semester**

#### **Welcome to CHMD79H3-S: Topics in Biological Chemistry**

Welcome to CHMD 79H3-S. This course is going to require some hard work but we hope to make it worth your while by exposing you to some of the exciting aspects of medicinal chemistry and how drugs you encounter in your everyday lives and in the news are developed and function in physiological conditions. Before we get started please take a few minutes to read through this document. It contains important information which will help ensure you have all the tools you'll need to succeed in this course.

**Description:** The course focuses on the important concepts in the design and synthesis of drugs. Reaction schemes for drug design including synthetic and medicinal concepts will be discussed. Topics include structure-activity relationships, synthesis and reaction mechanisms, and case studies of drugs. Pharmacology and pharmacokinetics of the various drug classes in biological systems will be discussed as well as protein enzyme interactions with the different classes of drugs.

**Background:** Development of modern drugs is a complicated process that demands improved methods for selective transformations of organic molecules. Typically medicinal chemistry efforts during the discovery stage focus on generating valuable structure-activity relationships for the compounds that are being screened for activity. At this stage the main synthetic challenges pertain to the selective transformations of valuable building blocks into diversely functionalized derivatives. At the next stage the process chemists take over the project and face completely different issues that relate to finding the shortest and most efficient route to the candidate identified during the medicinal chemistry part of the campaign. The present course provides an overview of reactions that are being used at different stages of the drug development process. Using representative examples from the literature we will concentrate on various classes of drugs and their syntheses.

**Prerequisites:** BGYC 1H Biochemistry I Proteins and Enzymes and II Bioenergetics and Metabolism CHMC 1H Bioorganic Chemistry OR CHMC 1H Organic Reaction Mechanisms OR CHMC 1H Organic Synthesis. **It is imperative that you have these prerequisites in order to succeed in the course and if you have enrolled in the course without having these prerequisites, it is your responsibility to discuss your situation with the instructors, otherwise we cannot accept any responsibility for your performance and outcome in the course.**

Lectures:

Mondays 2-4 pm BV363

Lecturer: Dr. Kagan Kerman (SW533)

Reading Week-no classes Feb 18<sup>th</sup> to Feb 20<sup>th</sup>

Email: [kagan.kerman@utoronto.ca](mailto:kagan.kerman@utoronto.ca)

Office Hours: Mon 3-5 pm & Wed 4-5 pm (SW533)

Course Website: CHMD79 maintains a Blackboard web space which has a variety of course-related information including: class announcements, lecture slides and notes if provided, contact information and links to some useful outside resources. In addition, class emails will regularly be sent via Blackboard. In order for you to receive these emails, you must have a valid "utoronto.ca" email account registered with ROSI.

To login, go to: <https://portal.utoronto.ca/webapps/portal/frame.jsp> Click on "log-in to the portal" at the top left. Login using your UTORid username and password (same as what's used for your UTORmail). Under the "My Courses" box (top right), click on the CHMD71 link.

E-mail policy:

- Use University account
- If Yahoo or Hotmail used follow instructions below to prevent email ending up in junk mail:
  - put CHMD71 in the subject line followed by the reason for the email
  - use a greeting of some kind - NOT "Hey"
  - sign your first and last name
  - please include your student number after your name
- Student emails will be replied to within 48 hours (M-F) provided that the above protocol is used.

Method of Evaluation: The grading scheme for the course is shown in the table below:

Mid-term Test	25%	Mid-term test will be in class on February 26, 2015.
Final Exam	45%	Entire course work, including lecture notes, assignments/quiz questions.
Weekly in-class quizzes	10%	10-min closed-book quizzes reviewing material from lectures

Each student will prepare 10 questions  
That may be asked in the mid-term re f 4352 /T Q 743.9

Assignment-1                      10%

Recommended textbooks:

1) Golan, Tashjian, Armstrong, and Armstrong,

**Missed Mid-term Test:** The exact date of the mid-term test is provided February 24, 2014. Students who miss the term test will be assigned a mark of zero for the test, unless they can document a compelling reason for missing it. Students in that position must submit a written request to the Course Instructor with appropriate documentation. Documentation, for approval, must be given within one week (e.g. Doctor's note - which should say that you were seen on the day in question and that in the Doctor's opinion you were unable to write a test that day). If the documentation is insufficient, you may be required to obtain further signed, paperwork. If a request is accepted for the mid-term test, the weighting of the mid-term will be included to the final exam. There will be no make-up mid-term test.

resources accessed in the UTSC library and the computer labs are to be used for academic research, assignments, and course activities only.

**Academic Integrity:** Honesty and fairness are considered fundamental to the University's mission, and, as a result, all those who violate those principles are dealt with as if they were damaging the integrity of the University itself. When students are suspected of cheating or a similar academic offence, they are typically suspended at how formally and seriously the matter is dealt with and how severe the consequences can be if it is found that cheating did occur. The University of Toronto treats cases of cheating and plagiarism very seriously.