

**Faculty of Science Course Syllabus
Department of Chemistry***CHEM 4601**Principles of Biomolecular and Drug Molecule Design**Winter 2018*

Instructor(s): *Kate-lyn Lund* *katie.lund@dal.ca* *Office TBD*
Lectures: *Tuesday* *7:05-9:55pm* *Chemistry Rm 125*
Office Hours: *Tuesdays 5-6pm* *Thursdays 1-2pm*

Course Description

The course covers both general principles and biochemical considerations in drug design. The fundamental goal is to give students the necessary tools to design new chemical structures as putative therapeutics for a human or veterinarian pathological problem.

Course Prerequisites

CHEM 2402 Introductory Organic Chemistry: Reactivity of Functional Groups
CHEM 3601 Chemistry of Living Systems

Course Objectives/Learning Outcomes

Students passing this course will be able to:

- Understand the drug discovery process, from hit identification and target selection through to intellectual property and marketing
- Identify a drug-like molecule
- Design a drug-like molecule
- Have a good understanding of structure activity relationships
- Have a good understanding of DMPK concepts

Course Materials

- Suggested Textbooks;
 - o *Medicinal Chemistry: A Molecular and Biochemical Approach* by Thomas Nogrady and Donald F. Weaver
 - o *An Introduction to Medicinal Chemistry* by Graham Patrick

Course Assessment

Component	Weight (% of final grade)	Date
<i>Test I</i>	15%	<i>February 6th</i>
<i>Test II</i>	15%	<i>March 13th</i>
<i>Term Paper</i>	30%	<i>March 27th</i>
<i>Final exam</i>	40%	<i>(Scheduled by Registrar)</i>

Term Paper

Please see the handout "Term Paper" for suggested topics and guidelines.

Conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale

A+ (90-100)	B+ (77-79)	C+ (65-69)	D	(50-54)
A (85-89)	B (73-76)	C (60-64)	F	(<50)
A- (80-84)	B- (70-72)	C- (55-59)		

Course Policies

Tests and Assignments

The tests and final exam will be "closed book", with no allowed documents, cell phone, headphones etc. You will be responsible for all of the material covered in class. **No make-up tests are available**, exceptions are at the discretion of the instructor and will only be considered in extenuating circumstances.

Late assignments will face a penalty of 10% off of the grade attained per day.

Class cancelations

Class cancelations will follow university guidelines, check www.dal.ca and monitor your emails during inclement weather, all other cancelations will be communicated through email.

Academic Integrity

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity.

Information: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Student Accessibility & Accommodation

The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (Canada and Nova Scotia).

Information: https://www.dal.ca/campus_life/academic-support/accessibility.html

Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner—perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution.

https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

Course Content

Please note that the following is an **approximate** schedule of topics to be covered.

January 9 th	Welcome; Introduction to drug discovery; Phases of drug in vivo
January 16 th	The drug development process; Understanding the target
January 23 rd	Drug screening strategies; Lead identification
January 30 th	Structure Activity Relationships (SAR)
February 6 th	Test I; DMPK concepts
February 13 th	DMPK concepts cont'd; Development selection
February 20 th	No class (reading week)
February 27 th	Intellectual Property; Clinical Trials
March 6 th	Guest lecture (TBD)
March 13 th	Test II; Case study
March 20 th	Anticancer agents
March 27 th	Term paper due; Presentations (CHEM 5601)
April 3 rd	Drugs targeting common chronic diseases
April 10 th	Review