

CHEM 222 - INTRODUCTORY ORGANIC CHEMISTRY II - Fall 2019**GENERAL INFORMATION**

Introductory Organic Chemistry I and II (Chem 221 & 222) are a two-semester sequence required for all programmes in Chemistry, Biochemistry and Biology. *Chem 221 is a prerequisite for Chem 222.*

Course Description: Introduction to the use of IR and NMR spectroscopy for the identification of simple organic compounds. Benzene and aromatic compounds: aromaticity, electrophilic aromatic substitution, nucleophilic aromatic substitution, substituent effects. Chemistry of aldehydes and ketones: nucleophilic addition, oxidation, reduction, and condensation reactions, tautomerism. Chemistry of carboxylic acids and their derivatives. Chemistry of alcohols, ethers, and related compounds. Amines: basicity, reactions. Lectures and laboratory.

Instructor**Dr. Pat Forgione**

Office hours (SP-275.11): Wednesdays, 14:00-15:00 or by e-mail appointment

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Course Format

Lectures: 2.5 h / week, 13 sessions; Wed/Fri 11:45-13:00 in HC-155

Labs: 4 h / week, starting Sept. 9th; section specified on your Portal;

Materials required

1) Organic Chemistry, 3rd Edition, David Klein, Wiley (2017) (available in bookstore) or eBook

2) *Introductory Organic Chemistry II Lab Manual*: Concordia Dept. of Chem. & Biochem

3) any molecular model kit (e.g., Darling's Molecular Visions, or any other kit)

4) Lab Safety Glasses, lab coat, scoopula, rubber bulb and lab notebook that produces carbon copies (all available from the Concordia bookstore)

Useful resources

1) M. Jones, Jr., S.A. Fleming, *Organic Chemistry*, Norton Publishing (eBook also available)

2) Jones/Fleming Study Guide & Solutions Manual, Norton Publishing

3) Course website (moodle site on your MyConcordia Portal): for lecture slides, handouts, problem sets

4) *Lab text*: J. W. Lehman, *Operational Organic Chemistry*, 3rd and 4th Ed., Prentice Hall Publishing

5) Interesting Read: *Molecules that Changed the World*, Nicolaou, K.C. Montagnon, T.

Wiley-VCH, 2008 ISBN 978-3-527-30983-2

Molecular models

Using models helps considerably with many aspects of organic chemistry – many concepts require you to picture, rotate and draw 3D objects. Models **are** permitted in exams. You are strongly advised to buy a model kit.

Lectures and readings

Lectures will reinforce and clarify the textbook, with emphasis on important concepts. A combination of blackboard and powerpoint will be used – come to class prepared to take notes. The best approach to success in organic chemistry is to work at it every day, **cramming does not work for organic chemistry!** Keep up-to-date with the lecture material. Take detailed notes during class, and then work through them after class. Read the relevant sections of the textbook for clarification, elaboration, and illustrative examples, and use your molecular models to aid with 3-D visualization. Practice applying your knowledge by working through problems. Then do more problems. Be careful—to learn, you must work at a problem independently before you look to the solution for answer verification or to get a quick hint.

GRADING SCHEME, DEADLINES & ABSENCES: *To pass the course, you must earn $\geq 50\%$ on your combined Final Exam and In-Class Tests AND $\geq 50\%$ on the Lab Exam Final.* Grading scheme:

WileyPlus Online Tests:	10%	(initial review test plus tests for each additional chapter)
In-Class Tests (2):	10% each	(during class Oct 4 th and Nov. 8 th mostly short answer, some multiple choice)
Laboratory Marks:	25%	(lab reports 15%; lab exam 10% held during class time on Nov. 27 th)
Final Exam:	45%	(<i>covers entire course content</i> , scheduled by Exams Office)

On-Line assignments will be done on the WileyPlus Online website (see below for more information. **Absolutely no late submissions accepted.** If absent from an examination, you must produce a written excuse on letterhead paper, appropriately signed (e.g., by doctor or employer), **no later than one week** after the exam. If you know you will be absent in advance, contact me to arrange alternative arrangements. The Department determines the validity of the absence and necessary arrangements will be made. If **no valid excuse** is produced, the student will receive a **zero** grade for the missed test.

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STRATEGIC LEARNING (see also http://learning.concordia.ca/SL_basics.shtml)

Research shows that students who attend Strategic Learning groups earn higher grades and withdraw less often than students who do not participate. Strategic Learning (SL) leaders are undergraduate students who have recently taken the selected course and done well in it. Their role is to facilitate collaborative learning among students who attend the groups. They are trained so that they can help students develop effective learning and study strategies appropriate to course material. Their role is NOT to lecture and teach course content but rather to help students interact with course material using effective learning strategies. The SL sessions integrate how to learn with what to learn. Students have the opportunity to become actively involved in the course material as the SL leaders use the text and lecture notes as vehicles for improving students' study skills and learning strategies and thus their understanding of course content. Sessions of one hour each are scheduled outside class time, usually at different times each week. Attendance is voluntary; groups are open to all students in the class throughout the semester. Early in the term, the SL leader assigned to our course will introduce himself / herself to the class and announce the times and locations of the SL sessions. **I strongly encourage you to take advantage of this free programme!**

PLAGIARISM AND OTHER FORMS OF ACADEMIC DISHONESTY

The academic code of conduct can be found in section 17.10 of the academic calendar (<http://www.concordia.ca/academics/undergraduate/calendar/current/17-10.html>). Any form of unauthorized collaboration, cheating, copying or plagiarism found in this course will be reported and the appropriate sanctions applied. The Department of Chemistry and Biochemistry offers a seminar on the academic conduct code and the appropriate use of information sources which aims to clarify what practices will be considered unacceptable with regards to work submitted for grading in Chemistry and Biochemistry courses. Attendance at this seminar is highly recommended and represents a clear and fair opportunity to learn what our faculty regards as academic misconduct. Failure to take part in this learning opportunity and thus ignorance of these regulations is no excuse and will not result in a reduced sanction in any case where academic misconduct is observed. **See the main Chemistry office (SP201.01) for more details on days and times this is available.** As space for each of the seminars is limited by the room size, please **sign up** to your preferred time as soon as possible (slots fill up quickly). Sign-up sheets are available two weeks in advance of the seminars outside SP 201.01 (Departmental office).

In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change without notice.

FINAL LETTER GRADES: The letter grades for the course will be based on the following scale:

A+ = 90 – 100%	A = 85 – 89%	A- = 80 – 84%
B+ = 77 – 79%	B = 73 – 76%	B- = 70 -72%
C+ = 67 – 69%	C = 63 – 66%	C- = 60 -62%
D+ = 57 – 59%	D = 53 – 56%	C- = 50 - 52%
F = < 50%		

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LABORATORY INFORMATION

The laboratory coordinator is Vincent Lau (Vincent.Lau@concordia.ca). **All questions on matters related to the lab component of the course should be addressed to her.** All students must attend the section for which they are registered. Changes will be considered only in exceptional circumstances. If you miss a lab, you must provide a medical note, or you will receive a grade of zero. **Only one absence is allowed per course.** Laboratory performance is graded on the quality of the experimental work and the lab reports, as well as the final lab exam.

The Chem 222 laboratories are located in SP-112. Starting the week of Sept. 9th, you will have a lab EVERY week except for the mid-winter break week; please refer to the attached schedule of experiments. Each laboratory section will have one or two demonstrators (TAs); be sure to write down your TAs' contact information in case you need to reach them.

Materials required for labs:

- 1) Introductory Organic Chemistry II Lab Manual: Concordia Dept. of Chem. & Biochem
- 2) Lab safety glasses, lab coat, scoopula, rubber bulb and lab notebook that produces carbon copies (all available from the Concordia bookstore)

Students who are repeating the course, and have passed the lab component within the past two (2) years, may request a lab exemption. Applications for the exemption (forms available in SP201.01) must be completed by the end of the first week of term (i.e. prior to the start of the laboratory); **late applications will not be accepted.** Signed and completed forms are to be returned to the Department Office, (SP 201.01). Students MUST register for the appropriate lab exemption lab/tutorial section; students registered in any other lab/tutorial sections will be required to complete the lab portion of the course (**NO EXCEPTIONS**). Students who withdraw from the course must also check out from the lab. Only students officially registered in the course may attend the lab and receive a grade for lab work. Lab Schedule will be posted on moodle in a separate document.

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Dr. Pat Forgione W/Fr 11:45-13:00 in HC-155

**Readings & problems from: Organic Chemistry, 3rd Edition, David Klein, Wiley, 2017
(available in the bookstore and on reserve in library).**

- You are **NOT** responsible for every section of each chapter; consult the readings list & lecture notes from class.
- Use this schedule (*subject to change*) as a guideline to keep on track with your reading & to plan your study goals.

Week	Topics	Readings	Comment
1	Introduction (<i>Review Chem 221</i>) and Synthesis	Ch. 1-9 (review) Ch. 11 (new)	<i>WileyPlus Review Test 1 due Sept 15th, 2019, 11:00 pm. Other Wiley Online Tests will be assigned throughout the term.</i>
2	Spectroscopy and Spectrometry	Ch. 14 and 15, 17.8, 19.13, 20.15, 22.13	<i>Related to Lab Experiment 11, 42, 20, 30, 29</i>
3			
3/4	Reactions of alcohols, ethers, epoxides & related reactions	Ch. 12-13	<i>Related to Lab Experiment 7, 30</i>
4	Dienes and Conjugated pi Systems	Ch. 16	<i>Related to Lab Experiment 9</i>
5	In-Class Test 1 (10%)		<i>Oct 4th, 2019 (Includes everything covered in class up to and including Sept 27th lecture)</i>
6	Aromatic Compounds	Ch. 17 (except Frost circles)	
7	Substitution Reactions of Aromatics	Ch. 18.1-18.12, 22.10-22.11	
8	Aldehydes and Ketones and Organometallics	19, 23.1-23.2	<i>Related to Lab Experiment 11, 7, 42, 30, 29</i>
9	In-Class Test 2 (10%)		<i>Nov 8th, 2019 (Includes everything covered in class up to and including Nov 1st lecture)</i>
10	Carboxylic Acids	20.1-20.5	<i>Related to Lab Experiment 4, 42</i>
11	Derivatives of Carboxylic Acids	20.6-20.15	<i>Related to Lab Experiment 4, 20</i>
12/13	Enols and Enolates, Review	Ch. 21	
13	Lab Exam (10 %)	Nov 27th	Lab Operations (all)
	Final Exam (40 %)		Scheduled by the Examinations Office

PARTIAL LIST OF CONCORDIA UNIVERSITY SERVICES...take advantage, they are there for your benefit!

1. Concordia Counselling and Development offers career services, psychological services, student learning services, etc.
<http://cdev.concordia.ca/>
2. The Concordia Library Citation and Style Guides: <http://library.concordia.ca/help/howto/citations.html>
3. Advocacy and Support Services: <http://supportservices.concordia.ca/>
4. Student Transition Centre: <http://stc.concordia.ca/>
5. New Student Program: <http://newstudent.concordia.ca/>
6. Access Centre for Students with Disabilities: <http://supportservices.concordia.ca/disabilities/>
7. Student Success Centre: <http://studentsuccess.concordia.ca/>
8. The Academic Integrity Website: <http://provost.concordia.ca/academicintegrity/>
9. Financial Aid & Awards: <http://web2.concordia.ca/financialaid/>
10. Health Services: <http://www-health.concordia.ca/>
11. etc. etc. etc.

SELECTED WORKSHOPS

First-year Experience Seminars are suitable for all students who are new to university-level study:

<http://cdev.concordia.ca/workshops-and-events/workshops/first-year/>

Counselling and Development Workshops cover a wide range of topics related to personal, academic and career development:

<http://cdev.concordia.ca/workshops-and-events/workshops/>

Student Experience Seminars are facilitated by the Student Success Mentors, who provide practical information and strategies from a student perspective:

<http://cdev.concordia.ca/workshops-and-events/workshops/student-experience/>

PLUS Leadership Workshop Series is designed to introduce students to the basic skills and knowledge needed to become effective leaders. A certificate is awarded to students who complete the entire series.

<http://cdev.concordia.ca/workshops-and-events/workshops/plus/>