CHEM 221 COURSE OUTLINE – Organic Chemistry I 2019F-51

1. General Information

- Organic Chemistry I (CHEM 221) 3 credits, Fall 2019, **section 51**
- Tuesday/Thursday 10:15-11:30 Loyola campus, HC-157.
- Professor Louis Cuccia, Faculty of Arts & Science,
  Department of Chemistry & Biochemistry. Office: SP 275-17
  Email: louis.cuccia@concordia.ca (*subject must be:* CHEM221)
- Office hours: Tues. 8:30-9:30 & Tues. 3:00-4:00
- Course web page available on Moodle (www.myconcordia.ca)
- Strategic Learning, collaborative study sessions, accompany this class - attendance is voluntary but strongly encouraged.
- Strategic learning leaders: Stephanie Patterson (Mon. 11:45-1:00 in CC-112 & Wed. 10:15-11:30 in CC-204 and Ilan Bloom (Tues. 4:15-5:30 in CC-204 & Thurs. 11:45-1:00 in CC-112)

General comments on CHEM 221:

There is no unique method to study and learn organic chemistry. I will be using PowerPoint presentations as lecture material and I will make the lecture presentations available to you on-line. They DO NOT fully replace the textbook but rather serve as a summary of many of the main points. The relationship between the lectures and the textbook are not always one-to-one. You should review the class slides and textbook before AND after each class.

A good understanding of organic chemistry is not possible without TIME and PRACTICE. You are strongly encouraged to solve assigned problems on your own. Please note that there are many problems in the text and you are encouraged to work through as many as your schedule and motivation will allow. For best results, seriously try the problems without referring to the answers. It is very easy to convince yourself that you understand a topic if you look up the answer prematurely without testing your own abilities first. One of the main points of the course is for you to become competent in solving problems in organic chemistry, particularly those that you may not have seen before.

DO NOT FALL BEHIND IN UNDERSTANDING THE COURSE MATERIAL AND WORKING THROUGH THE PROBLEMS. The material cannot be learned the night before a test. There are many good internet resources available and several textbooks and study guides available in the library. *Furthermore, please feel free to come if you have any problems regarding the course material.*

"You can get help from teachers, but you are going to have to learn a lot by yourself, sitting alone in a room." - Dr. Seuss

***Minimum** recommended study time: 3 x (class time): 7.5 hours/week*

Course Description

- Prerequisites: CHEM 205 & CHEM 206
- *Course Topics:*

1. **Electrons, Bonds and Molecular Properties**
2. **Molecular Representations**
3. **Acids & Bases**
4. **Alkanes and Cycloalkanes**
5. **Stereoisomerism**
6. **Chemical Reactivity & Mechanisms**
7. **Alkyl halides: Nucleophilic Substitution & Elimination Reactions**
8. **Addition Reactions of Alkenes**
9. **Alkynes**
10. **Radical Reactions**
11. **Synthesis**

2. Objectives

Upon successful completion of CHEM 221, students should demonstrate an understanding of key concepts in organic chemistry including: bonding, structure and nomenclature, stereochemistry, organic chemical reactions and mechanisms. The student is expected to apply this knowledge towards solving problems in organic chemistry.

3. Schedule *(may be subject to change)*

Examinations & assignments:

There will be TWO term term tests (tentative dates: Tuesday October 8, 2019, & Tuesday November 5, 2019). The final exam date will be arranged by the Concordia University Examinations Office. If you miss an exam due to illness, you must provide a written excuse (signed by a doctor on the appropriate letterhead paper) during the next possible class. **There are no make-up tests.** It is your responsibility to take note of the time and date of the final exam. There will be approximately ten (10) online graded assignments.

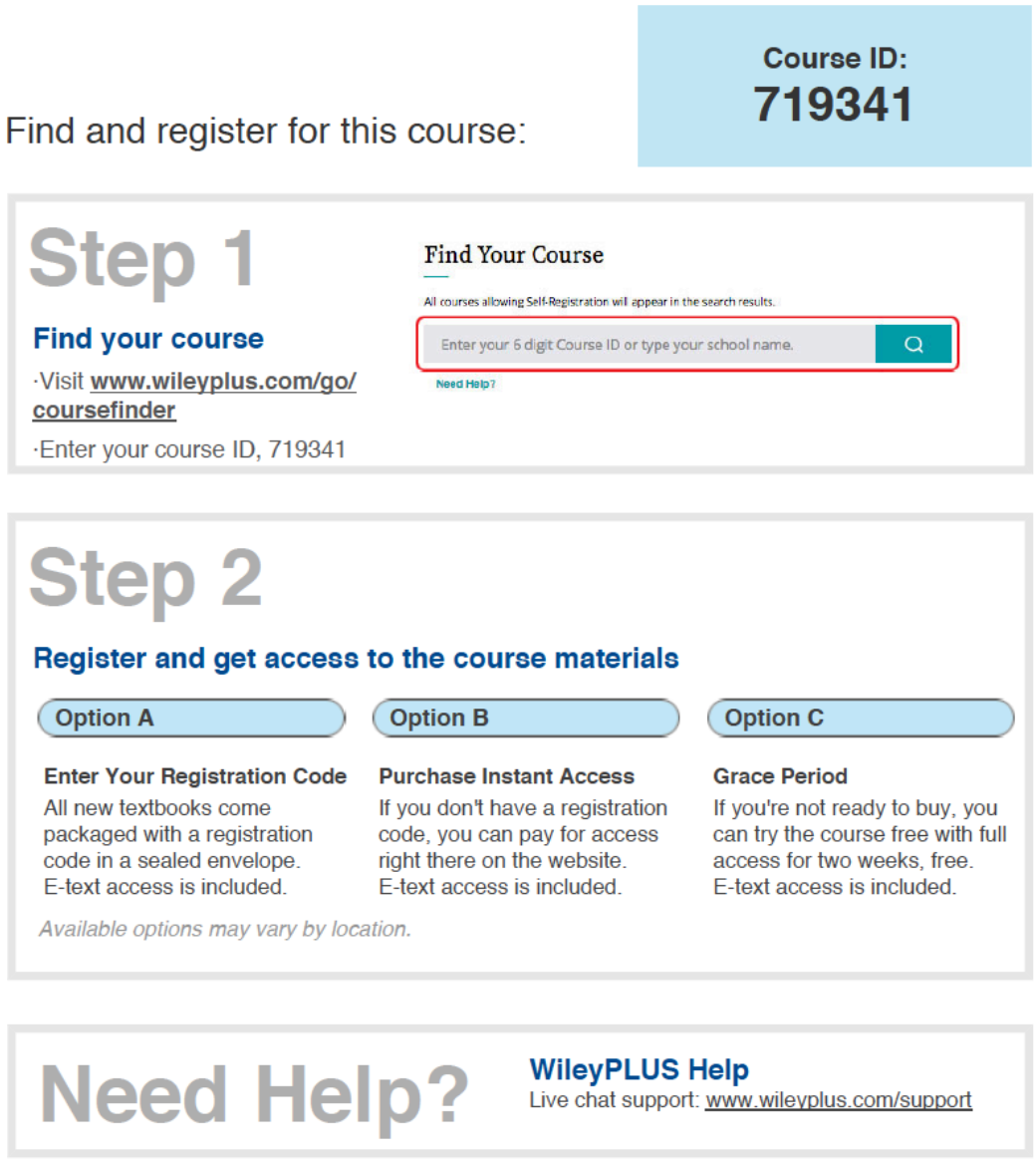
Laboratory information:

Laboratory performance is graded on the quality of the experimental work, the laboratory reports, pre-lab quizes as well as on practical laboratory exam questions in the lab exam (incorporated in the midterm tests). Laboratory experiments might not be directly related to the lectures although they illustrate the theory of Organic Chemistry. Consider the laboratory work as an independent and additional learning experience. The laboratory coordinator is Vincent Lau (L-SP 201-10; vincent.lau@concordia.ca) and the Chemistry 221 laboratories are located at SP-116 and SP-112. Laboratories start the week of September 9, 2019. All students *must* attend the lab section for which they are registered. If you are repeating the course and have passed the lab component **within the past two (2) years**, you may request a lab exemption. Applications for the exemption (form available in SP 201.01) must be completed by the end of the first week of term, **no later than noon on Friday, September 6, 2019**. Late applications will not be accepted. Signed and completed forms must be returned to **Mrs. Hilary Scuffell, SP 275.01**. You **must** register for

the appropriate lab exemption section (56); if you are registered in any other lab section, you will be required to complete the lab portion of the course. If you apply late or are denied exemption, you must repeat the lab portion. Partial exemptions will not be given, in particular, lab (reports) and lab exam are linked. If an exemption is granted, your previous lab mark (lab reports and lab exam) will be carried forward. A student who is denied a lab exemption must repeat the laboratory component of the course. *You must read and agree with the laboratory rules (section III of the Lab Manual) by signing the 'Laboratory Rules' form on your first day in the lab.*

Course withdrawal: Students who wish to withdraw from a course must do so before the deadline. Students who withdraw from this course must *also check-out from their lab section.* A student who does not properly withdraw before the specified deadlines will receive a failing grade.

4. Access to WileyPLUS homework (Fall 2019, section 51)



Laboratory Schedule Winter 2019

DATES	EXPERIMENT	TITLE
Mon. Sep 9 - Fri. Sep 13	Check-In/Lab Basics	Glassware, weighing, pipetting & waste disposal
Mon. Sep 16 – Fri. Sep 20	Exp 1 (Exp 15 in Lehman)	Thin-Layer Chromatographic Analysis of Drug Components
Mon. Sep 23 - Fri. Sep 27	Exp 2 (Exp 8 in Lehman)	Simple distillation: Identification of a Petroleum Hydrocarbon - Boiling Point & Refractive Index
Mon. Sep 30 - Fri. Oct 4	Exp 3	Molecular Modelling - Computer Lab
Tue. Oct 7 – Mon. Oct 11	Exp 4 Part I (Exp 6 in Lehman)	Fractional Distillation Part I: Separation of Petroleum Hydrocarbons (Ethyl Acetate/Toluene Mixture)
Mon, Oct 14 NO LABS – Thanksgiving Day		
Tue. Oct 15 – Mon. Oct 21	Exp 4 Part II (Exp 6 in Lehman)	Fractional Distillation Part II: Determination of Boiling Point, Density, Refractive Index & Gas Chromatography
Tue. Oct 22 – Mon. Oct 28	Exp 5	Liquid-Liquid Extraction: Purification of Benzoic Acid
Tue. Oct 29 – Mon. Nov 4	Exp 6	Stereochemistry: Optical Activity of Chiral Molecules o Part I: Determination of Absolute Stereochemistry & Sample Concentration by Optical Rotation o Part II: Identification of a Chiral Molecule by Specific Rotation
Tue. Nov 5 – Mon. Nov 11	Exp 7 (Exp 2 in Lehman)	Extraction & Evaporation: Separating the Components of "Panacetin" Demonstration: Operation of the Rotary Evaporator (Rotovap)
Tue. Nov 12 – Mon. Nov 18	Exp 8 (Exp 3 in Lehman) & Check-Out	Recrystallization & Melting Point Measurement: Identifying a Constituent of "Panacetin"

5. Course Materials

- Organic Chemistry (Wiley) 3rd Edition – David Klein
  (With WileyPLUS for online resources and homework)
- Concordia CHEM 221 Organic Chemistry I Laboratory/Safety Manual.
- Carbon-copy lab book
- **Lab coats & safety glasses** are compulsory during the practical laboratories and are available from the Concordia University bookstore.
- **Molecular models** help considerably in clarifying certain points on organic chemistry theory. They are permitted for exams and you are strongly advised to buy, borrow, or share a set.
- Optional: Organic Chemistry I as a Second Language (Klein)

6. Grading

The final grade of the course is based on the marks obtained in the examinations, assignments and the laboratory marks. The composition of the final grade is as follows:

Term tests:	35%
WileyPLUS online assignments	5%
Final exam (arranged by the Examinations Office):	35%
Laboratory and prelab tests:	15%
Lab exam (*within both midterm tests*):	10%
TOTAL:	**100%**

Students have to pass the lecture material and lab component SEPARATELY - Minimum passing marks: 50% lecture and 60% lab (within the lab mark the minimum passing grade for both the lab reports and the lab exam is 50%). The passing mark for the lab exam is 50% - You will receive an R (repeat) as course grade should your lab exam be below 50%. **STUDENTS MUST PASS THE THEORY PART OF THE COURSE (combined term tests and final exam) TO PASS THE COURSE**. While a lecture grade of 50% is a passing grade, a grade below 60% indicates that you are missing much of the understanding of the material and overall competence for future work in the area would be in doubt. In general, grades above the 75% level indicate decent competence so that success in future courses in organic chemistry can be expected. Grading scale: 0 F; 50.0 D-; 53.3 D; 56.6 D+; 59.9 C-; 62.2 C; 65.5 C+; 68.8 B-; 72.1 B; 75.4 B+; 78.7 A-; 83 A; 90 A+.
Failing Grades: F: <50 (theory) or <50 (exam); R: <40 (theory), <50 (lab exam) or <60 (lab)

In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.

7. Rights and Responsibilities

Source: http://www.concordia.ca/students/academic-integrity.html

MANDATORY QUIZ AND SEMINAR

As part of this course, you are required to (*i*) attend a Chemistry and Biochemistry Departmental Seminar on the academic conduct code and the appropriate use of information sources and (*ii*) pass the online quiz associated with this seminar (the passing grade for the quiz is 100%). (Note: This is not the University's quiz you may have been asked to take when you first registered and logged into the myConcordia portal; the one you must take is similar, but graded by the Department of Chemistry and Biochemistry, and you do not have access to it until after you have attended the seminar.) The aim of this seminar is to clarify the academic conduct code in terms of what practices will be considered unacceptable with regards to work submitted for grading in Chemistry and Biochemistry courses. You are only exempt from repeating the seminar and the quiz if you have done both in Fall 2014 (or more recently),* otherwise you are required to repeat both this term. This short seminar (1 hour) will be held at the following times (note that late-comers will not be admitted):

DATE	TIME	ROOM
Mon., Sept. 16, 2019	16:45-17:45	CC-111
Tues., Sept. 17, 2019	16:45-17:45	CC-308
Tues., Sept. 17, 2019	20:45-21:45	HB-130
Wed., Sept. 18, 2019	16:45-17:45	CC-308
Wed., Sept. 18, 2019	20:45-21:45	HB-130
Thurs., Sept. 19, 2019	16:45-17:45	HC-155
Fri., Sept. 20, 2019	16:45-17:45	HC-157

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). Only sign up in available slots: rooms must not be filled over capacity!

If you do not complete this course requirement, your final grade for the course may be lowered by one full letter grade with an incomplete (INC) notation until such time as this requirement is completed. Please refer to the undergraduate calendar (section 16.3.5) for details on removal of an incomplete notation.

** You are exempt if you can locate your ID in the pdf file located on the Departmental web site (http://www.concordia.ca/content/dam/artsci/chemistry/docs/Compliance-list.pdf).*

PLAGIARISM AND OTHER FORMS OF ACADEMIC DISHONESTY

The most common offense under the Academic Code of Conduct is plagiarism which the Code defines as, "the presentation of the work of another person as one's own or without proper acknowledgement."

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 mandatory seminar is 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.

8. Improving Your Academic Experience

The University offers many services that can help students:

Concordia Counseling and Development offers career services, psychological services, student learning services, *etc.* -
http://www.concordia.ca/students/counselling.html

The Concordia Library Citation and Style Guides -
http://library.concordia.ca/help/howto/citations.html

Advocacy and Support Services -
https://www.concordia.ca/offices/advocacy.html

Student Transition Centre -
http://stc.concordia.ca/

New Student Program -
http://newstudent.concordia.ca/

Students with Disabilities -
http://www.concordia.ca/students/accessibility.html

Student Success Centre -
http://www.concordia.ca/students/success.html

Financial Aid & Awards -
http://www.concordia.ca/offices/faao.html

Health Services -
https://www.concordia.ca/students/health.html

Sexual Assault Resource Centre -
https://www.concordia.ca/students/sexual-assault.html