

# ORGANIC CHEMISTRY II – CHM 2120 B

## FALL 2019

Welcome to CHM 2120!

**Professor:** Claudia El-Nachef  
**Office:** STM 351  
STEM complex  
**Telephone:** 613-562-5800 ext: 6863  
**Email:** [celnache@uottawa.ca](mailto:celnache@uottawa.ca)  
**Office Hours:** Mondays: 11:30 – 12:30 pm  
Wednesdays: 10:00 – 12:00 pm

**BrightSpace:** <http://uottawa.brightspace.com>  
All the details and information for the course are located here. Check it regularly!

**Prerequisite:** CHM 1321

**Classes:** Mondays 10:00 – 11:20 am MRN 150  
Wednesdays 8:30 – 9:50 am MRN 150

*Your attendance and in-class participation are key to your success in the course!*

**Teaching Assistants:** Meredith Allen [malle100@uottawa.ca](mailto:malle100@uottawa.ca)  
Alexandre Sicard [asica045@uottawa.ca](mailto:asica045@uottawa.ca)

**DGDs:** Mondays 2:30 – 3:50 pm STE G0103  
Tuesdays 2:30 – 3:50 pm CRX C140  
5:30 – 6:50 pm CRX C240

**Assessment: TopHat:** - In-class participation\*: 5%  
- Homework assignments: 5%

**Midterm 1:** Wed, Oct 2, *in class* 15, 20 or 25%\*\*  
**Midterm 2:** Wed, Nov 6, *in class* 15, 20 or 25%\*\*  
**Final Exam** (cumulative): TBD by the Faculty, 60, 50 or 40%\*\*

---

Total: 100%

\* TopHat = Your TopHat Mark/0.80 (max 100%).

\*\*The weighting that gives you the best result will be used to calculate your final mark.

### TopHat:

“We will be using the TopHat ([www.tophat.com](http://www.tophat.com)) response system to answer in-class questions and homework assignments. You will be able to submit answers using Apple or Android smartphones and tablets, laptops, or through text message.”

An email invitation will be sent to your uOttawa account. If you don't receive this email, you can register here with **Join Code 675593** (12\$ registration fee for the semester): <https://app.tophat.com/register>. The course can also be found here: <https://app.tophat.com/e/675593> or by searching CHM 2120B - Fall 2019.

- For the 5% in-class questions, TopHat marks are only based on participation (not correctness) (i.e., 100% for an answer, 0% for no answer). Your TopHat participation mark is calculated as follows:  $\text{TopHat mark} = \text{YourTopHatMark}/0.80$  (max 100%) (i.e., you can miss 20% of TopHat questions in class without penalty and get the full 5%).
- For the 5% homework assignments, TopHat marks are only based on correctness (not participation).

### **Practice problem sets – optional, not graded:**

Practice problem sets will be posted on the course website (Brightspace) as each module is covered in the course. You do not have to hand them in, but I encourage you to do them as soon as they are posted. The answers are going to be also available but give the questions your best try before looking at the answers.

### **Re-grades:**

Requests for midterm re-grades must be submitted to me in class or during my office hours no later than one week from the first day midterms are available for pick-up. Submissions after the deadline will not be considered. Please write the question number to be considered **at the top of the front page of your midterm**. The entire exam will be re-graded; your new score could be lower than your original score. **Do not write anywhere on your midterm. Midterms or exams that have been altered in any way will be forwarded to the academic fraud committee.**

### **Textbooks:**

*Organic Chemistry Mechanistic Patterns*, by Ogilvie, Ackroyd, Browning, Deslongchamps, Lee, Sauer. (Recommended)

You can also get similar textbooks (e.g., *Organic Chemistry* by Brown, Klein, Solomons or Wade).

### **Models:**

I strongly recommend that you use “Darling” *molecular models*. These are available in MRN 308 (where the laboratories are held). You can bring your models to the midterms and exam.

### **Absences:**

If you are ill on the day of a midterm, please provide a medical certificate to receive exemption asap. There will be NO MAKE-UP midterms and the weight of the missed midterm will be redistributed.

If you miss the Final Exam due to illness, please bring a medical certificate within 5 days of the exam date to the Faculty of Science to have the exam deferred to February.

CHM 2120 is a 2<sup>nd</sup> year course: **No make-up exam if failed.**

### **Academic Integrity:**

If you are caught committing academic fraud or allowing someone else to copy your work, you will be reported to the Faculty. Penalties range from failure of the course to expulsion from the

University. Don't risk it – your whole future could be affected! You can find out more details about uOttawa's policy on academic integrity here:

<http://web5.uottawa.ca/mcs-smc/academicintegrity/students.php>

## Course outline

**Nomenclature:** you are responsible for naming all classes of compounds seen in class for chains up to twelve carbons in length.

1. Review: (be sure to **master** the following basics)  
Formal charge, electronegativity, orbitals, hybridization, resonance, aromaticity, relative acidity, conformation, stereochemistry
2. Displacement on saturated carbons (Substitution) and Formation of  $\pi$  bonds (Elimination)  
Reactions:
  - a. Nucleophilic Substitution reactions:  $S_N2$ ,  $S_N1$
  - b. Elimination reactions: E2, E1, E1cb
  - c. Differentiating between  $S_N2$ , E2,  $S_N1$ , E1
3. Introduction to structure determination:
  - a. Infrared (IR)
  - b. Proton Nuclear Magnetic Resonance ( $^1H$  NMR)
4. Carbonyl chemistry
  - a. Aldehydes and ketones – Carbonyl bearing **no** Leaving Group
    - i. Preparation
    - ii. Reactivity:
      - Reactions with their electrophilic  $\pi$  bond
      - Reactions with their nucleophilic  $\alpha$ -carbon
  - b. Carboxylic acids and derivatives – Carbonyl bearing **a** Leaving Group
    - i. Preparation
    - ii. Reactivity