

**Chemistry 2600: Organic Chemistry II**  
**Spring 2015**

**Section A**

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**Section B**

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(or by appointment)

**Class URL:** <http://classes.uleth.ca/201501/chem2600b/>

**Email:** Due to the complex nature of the subject, it is not possible to properly answer questions about course material via email. Thus, all such inquiries should be made in person. Only emails of an administrative nature (*e.g.* exam absence, appointment set-up, *etc.*) will receive responses. Grades will not be given out by email.

**Credit Hours:** 3.0

**Prerequisites:** Chemistry 1000, 2000, 2500

**Course Subject:** CHEM 2600 is the second half of a full year course in organic chemistry. In this course, you will continue to learn about a wide variety of organic reactions from a mechanistic approach. You will also learn about nuclear magnetic resonance (NMR) spectroscopy, the organic chemist's most useful analytical tool.

**Lectures:** Section A: MWF at 10:00 – 10:50 in D634  
Section B: TTh at 10:50 – 12:05 in C640

**Labs:** The laboratory portion of the course is compulsory and commences January 12<sup>th</sup>. Both the lab and lecture portions of the course must be passed independently (*i.e.* A good lab mark cannot raise a failing lecture grade). The details of the laboratory policies and operation will be addressed at that time. The laboratory manual contains information pertinent to the laboratory which you must read. It is a requirement that all students wear a lab coat, safety glasses (contact lenses beneath safety glasses are not acceptable), adequate footwear (sandals are not permitted) and have fully covered legs (shorts and skirts and not permitted). A deposit of \$15.00 is required in order to obtain a locker key. Please pay at the cashier's office and bring the token to the laboratory. Lab books and coats can be purchased at the university book store. Please ensure that these details are dealt with prior to the beginning of your first lab period. Refer to the lab manual for complete details on these and other topics relating to the laboratory component of Chemistry 2600.

**Attendance Policy:** Attending the laboratory component of this course is mandatory, and you will be assigned a grade of 0 for any lab missed without a valid reason. Please see your lab manual for the correct protocol to make up a lab that was missed due to illness, *etc.* It is strongly recommended that you attend the lectures as all material discussed in lectures is examinable, and not all course material is covered in the text. Students who do not attend class regularly and punctually tend to fail this course.

**Special Needs Students:** Please contact the Disabilities Resource Office to arrange for accommodations. Also, feel free to inform your instructor of your special needs in order for you to have a productive learning experience.

**Exams:** Midterms:     Friday, January 30<sup>th</sup> (17:00 – 19:00) in PE250  
                              Friday March 13<sup>th</sup> (17:00 – 19:00) in PE250

          Final:            TBA

Note: As stated in the 2014/2015 University of Lethbridge calendar (Pg. 84), failure to attend an exam without a valid reason (*i.e.* illness) will earn a grade of 0. Proof of illness requires presentation of a signed medical certificate. Notify either Dr. Hayes or Dr. Patenaude **as soon as possible** if you are going to miss an exam. If any course component is missed for a valid reason, that portion of the course grade will be shifted to the final examination.

**IMPORTANT NOTE:** Exams will cover all course material including demonstrations, practice problems, Sapling assignments and assigned readings up to the end of the preceding lecture, unless otherwise stated. The **final exam** for this course is **cumulative** covering all material presented in lecture, assignments, etc. throughout the semester. Assignments and suggested problems are intended as partial preparation for exams. Failure to put forth effort is perilous.

**Text Books:**

- Thomas N. Sorrell, *Organic Chemistry, 2<sup>nd</sup> Ed.*, University Science Books, Sausalito, 2006. ISBN: 1-891389-38-6, [QD251.3.S67 2005].
- James W. Zubrick, *The Organic Chem Lab Survival Manual, A Student's Guide to Techniques, 9<sup>th</sup> Ed.*, John Wiley & Sons, New York, 2007. ISBN: 978-1-118-08339-0, [QD261.Z83 2012].
  - This book is also available as an e-book from the University Book Store for approximately half the price of the hardcopy.

**Additional Useful Materials:**

- It is highly recommended that students obtain a molecular model kit. These kits are permitted for all assignments and exams. Model kits can be purchased from the Chemistry and Biochemistry Undergraduate Society (Contact Dr. Patenaude in E782 – \$20.00). In addition, the University Book Store sells a more expensive, alternate model kit (~\$80.00).

**Course Contents** (may be subject to change):

- |   |                        |
|---|------------------------|
| 1. Infrared (IR) & Nuclear Magnetic Resonance (NMR) Spectroscopy. | Chapters 13, 14.3      |
| 2. Elementary Mass Spectrometry                                   | Chapter 14.2           |
| 3. Addition Reactions of Alkenes and Alkynes                      | Chapter 9              |
| 4. Addition Reactions of Conjugated Alkenes                       | Chapter 10             |
| 5. The Chemistry of Benzene                                       | Chapter 17             |
| 6. Addition Reactions of Ketones and Aldehydes                    | Chapters 18-20, 15, 23 |
| 7. Oxidation and Reduction Reactions                              | Chapter 11             |
| 8. Reactions of Carboxylic Acid Derivatives                       | Chapter 21             |
| 9. Free Radicals (Time Permitting)                                | Chapter 12             |

**Practice Problems:** The textbook and the website both contain supplementary practice problems. It is in your best interest to practice as many problems as possible throughout the semester. Additionally, 7.5% of your final mark will come from completing weekly online assignments. The assignments and problem sets are meant to help prepare you for exams. It is virtually impossible to succeed in an organic chemistry course without working on problems consistently throughout the term. Cramming does not work in this discipline!

**Evaluation Mechanisms:**

- Laboratory (30%). Note: *All experiments must be performed (and submitted before the end of the course) in order to pass.* A grade of 50% constitutes a pass.
- Online Sapling Assignments (7.5%)
- 2 Midterms (25%; First Midterm: 12.5%, Second Midterm: 12.5%)
- 1 Final exam (37.5%)

**Sapling Online Assignments:** Dr. Susan Findlay, E786, [susan.lait@uleth.ca](mailto:susan.lait@uleth.ca), (403) 317-5044

**How to Register for Sapling Online Assignments**

1. Go to <http://saplinglearning.ca> Make sure to enter .ca NOT .com
2. If you already have a Sapling Learning account, log in, click "View Available Courses", then skip to step 6.\*
3. Otherwise, click "Create account" located under the Login box.
4. Choose a username and password, and supply the other requested information. Click "Create my new account".
5. Check your email (and spam filter) for a message from Sapling Learning. Click on the link provided in that email.
6. Find "ULETH - CHEM 2600 – Spring15" in the list (listed by school, course, and instructor) and click the link.
7. Click the button that says "Send payment via Paypal or Credit Card" and follow the remaining instructions.\*\*
8. Once you have registered and enrolled, you can log in at any time to complete or review your homework assignments.
9. If you have any problems, send an email to [support@saplinglearning.ca](mailto:support@saplinglearning.ca) explaining the issue.

\*If you completed Sapling for CHEM 2600 in a previous semester (i.e. if you were not dropped from Sapling for a refund), you can contact Sapling support (see step 9) to be unenrolled from the old course in exchange for free enrollment in this semester's course. Old Sapling grades will NOT be reused; you must do THIS semester's assignments.

\*\*If you are unable to pay online due to lack of credit card and/or PayPal account, the easiest solution is usually to give the money to a family member with PayPal (and/or credit card) and have that person pay for you. If this is not feasible, contact Sapling support (step 9) to arrange for an alternate method of payment. Also, email Dr. Susan Findlay, the Sapling Coordinator ([susan.lait@uleth.ca](mailto:susan.lait@uleth.ca)) BEFORE 5 pm on Friday, January 9<sup>th</sup> so that she is aware of the potential delay in your access to the system.

**How to Use Sapling**

Once you have registered your account, you can get started using the system. A training assignment is available to introduce you to the system if you have not used Sapling before. An additional training assignment shows how to answer question types specific to organic chemistry. The remaining assignments are due on Sunday nights at 23:55 (typically one assignment per week). This does not mean that you should wait to do the assignments on Sunday! If you want to leave your weekend free, finish the assignment during the week. Each assignment has been calibrated to take approximately 1 hour for the average student. If you tend to work slowly, expect that the assignments may take you longer than that. They can typically be completed more quickly if you've prepared/studied before starting the assignment.

1. Go to <http://saplinglearning.ca> or go to the Chemistry 2600 web site and choose the “Sapling online homework system” link. This will redirect you to <http://saplinglearning.ca>
2. Enter your Username and Password then click “GO”.
3. Click on the assignment you want to work on. This will bring up the first question in the assignment. They can be done in any order; use the “map” icon to navigate the assignment if you want to work on questions out-of-order. There is no need to submit the assignment as a whole once you have finished all of the questions.

New assignments will appear approximately once a week. Unless you are otherwise informed, there is one assignment due every Sunday night, and all assignments are weighted equally. If an assignment is broken into parts “a” and “b” (e.g. HW1a and HW1b), each part is considered to be half an assignment and is weighted accordingly. No credit is given for late assignments (though you may still complete them for practice). No extensions will be granted for any reasons other than those which would merit an exemption from a midterm exam (documented illness, etc.).

*If you are not familiar with Sapling, you are expected to work through both training assignments before beginning the for-credit assignments. Everyone is expected to work through the “for everyone” training assignment.*

### Schedule for Sapling Assignments:

Assignment	Due Date
Training Assignments (not for credit)	N/A
HW1a: IR Spectroscopy	Sun., Jan. 25
HW1b: Introduction to NMR	Sun., Jan. 25
HW2: More NMR	Sun., Feb. 1
HW3a: Advanced NMR	Sun., Feb. 8
HW3b: Mass Spectrometry	Sun., Feb. 8
HW4: Addition Reactions to Nonpolar Pi Bonds (Alkenes and Alkynes)	Sun., Mar. 1
HW5: Addition Reactions to Conjugated Pi Bonds (Dienes, etc.)	Sun., Mar. 8
HW6: Reactions of Aromatic Compounds (Primarily Benzene Derivatives)	Sun., Mar. 22
HW7: Addition Reactions to Polar Pi Bonds (Aldehydes, Ketones, Nitriles, etc.)	Sun., Mar. 29
HW8: Organic Oxidation and Reduction Reactions	Sun., Apr. 5
HW9: Reactions of Carboxylic Acid Derivatives	Sun., Apr. 12

\*\*The deadline for all assignments is 23:55 on the date listed

### Calculator Policy:

- While calculations are not the primary focus of Organic Chemistry, you may still need a calculator capable of simple algebra. You will be informed prior to each test whether or not you should bring your calculator. You are not allowed to store/download text to your calculator. Any calculators found to be in violation of this policy during a test will be confiscated along with the test paper; this is cheating and will be dealt with as such. **CALCULATORS WITH WIRELESS COMMUNICATION CAPABILITIES ARE STRICTLY FORBIDDEN.**

**Plagiarism & Cheating:**

**If caught cheating on any component of Chemistry 2600 (including Sapling online assignments) you be assigned a grade of F for the course. A letter describing the offense will be placed in your student file. Two such letters is grounds for expulsion from the university.**

**STUDENTS WHO CHEAT, CHEAT THEIR FELLOW STUDENTS BY DEVALUING THEIR HARD WORK, EARNED GRADES AND DEGREE.** If you see someone cheating during an exam, inform the proctor in the following way: 1) Write a message on your exam paper indicating what is happening and where. 2) Raise your hand and the proctor will come over -- point out your note. The proctor will take it from there. It is often pointless to report cheating after the event.

What is plagiarism? Plagiarism is defined as the taking of someone's thoughts, writings or inventions and using them as one's own.

When writing a paper or lab report on a given topic, you must read up on the topic, get the necessary information and then present it **IN YOUR OWN WORDS**. If you use a sequence of text verbatim (*i.e.* exactly) from someone else's work, **THAT IS A QUOTE** and must be cited (to give proper credit to the author). If you use an idea or data from someone else's work, then that work must be cited specifically as a reference, and/or in your paper's bibliography. Beware of information that is found on the web -- it is rarely primary source information and is generally not acceptable (*i.e.* Wikipedia!)

**IF, IN THE COURSE OF WRITING A REPORT, YOU EXECUTE A CUT AND PASTE FROM A WEBSITE OR OTHER SOURCE (without a citation) YOU HAVE COMMITTED PLAGIARISM.**

It is important to point out that there is a difference between working out answers to an assignment or a lab report with a friend and plagiarism. If, after conferring with others, what you write down is based on your own understanding of the material and **is in your own words**, then that is acceptable. If, however, you look at a friend's answer to a question, and then simply write (essentially) the same thing on your assignment (a mental cut and paste), then you have committed plagiarism (even if a few words, structures, etc. were changed). Similarly, **IF TWO OR MORE STUDENTS TURN IN IDENTICAL REPORTS/ASSIGNMENTS, THAT IS PLAGIARISM.** Accordingly, you must take care when you share work that you have completed with other students. If they take your material and plagiarize it, you are all subject to disciplinary action. If you have completed a course and loaned marked material from it to someone who is currently taking it, you will be called upon to explain your actions if this material is plagiarized. This also applies to taking marked course material and making it generally available as in a website.

**PLAGIARISM IS CHEATING** and is subject to discipline as described in the university calendar. If you are unclear about any aspect of the student discipline policy for academic offences, refer to Pages 78-80 of the 2014/2015 University of Lethbridge calendar.