Chemistry 2213a Course Outline 2016
Organic Chemistry for Life Sciences

Mandatory Notice from the Registrar

Unless you have either the prerequisites for this course or written special permission from your Dean to enrol in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites. The prerequisite for this class is Chemistry 1301A/B and Chemistry 1302A/B. The website of the Registrar is http://www.registrar.uwo.ca.

Course Website

A single, common OWL website has been created for all students enrolled in C2213a. It is the student's responsibility to check OWL (http://owl.uwo.ca) on a regular basis for news and updates. The missing of critical information due to failure to check OWL cannot be used as a basis for appeal.

Lecture presentations will be made available through OWL prior to delivery in class. Students are responsible for embellishing their notes, annotated lecture notes will not be provided. Although the details of the delivery may vary, both instructors work from the same lecture notes, present the same scope of material and equally contribute to the construction of the midterm and final exam.

Instructor and Lecture Information

<table>
<thead>
<tr>
<th>Lecture Section</th>
<th>Time and Room</th>
<th>Instructor</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>MWF 12:30 – 1:20 NS 145</td>
<td>Professor Mark Workentin</td>
<td><a href="mailto:mworkent@uwo.ca">mworkent@uwo.ca</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>MWF 1:30 – 2:20 NS 145</td>
<td>Professor Robert Hudson</td>
<td><a href="mailto:rhudson@uwo.ca">rhudson@uwo.ca</a></td>
</tr>
</tbody>
</table>

If you wish to meet with your instructor, please send an email for an appointment using your Western email account (see below). Questions related to course material should be asked at the Resource Room, not over email.

Email Policies

We are required by law to comply with privacy regulations, so you must use your Western email account (http://mail.uwo.ca) whenever you contact us. Email from a non-uwo.ca address will not be answered. If you have automatic forward of your uwo email address, you are responsible for ensuring your uwo quota is not exceeded and emails can be received.

Email to the instructor’s accounts must have exactly: **Chem 2213a** in the subject line, otherwise the mail may go unanswered.

Email should only be used for administrative purposes; the instructors will respond to legitimate concerns as quickly as possible. Emails of the following nature will receive no response:
• Questions about course material or how to do a particular problem. Such questions should be taken to the Resource Room.
• Questions that can be answered based on the information found in this course outline or within the academic calendar.
• Requests for grade increases, extra assignments, make-up labs, etc.

Course Materials

The following materials are available at the Western BookStore in the UCC

Required course materials:

1) Chemistry 2213A Lab Manual + Supplementary Problems 2016-2017
   ISBN: 9780738078007

Students repeating the course must repeat the labs.

2) Organic Chemistry With Wileyplus/Orion online access to Student Solutions Manual (Recommended)
   ISBN: 9781119205609
   Author: Brown    Publisher: Wiley, Edition: 6th
   *Contains full access to entire e-book and e-solutions manual (no expiration)

or

Wileyplus/Orion For Intro To Organic Chemistry 6th Ed.
   ISBN: 9781118498002
   *Does not include solutions manual.

3) Optional/suggested materials:

• Molecular Model Kit, preferably the Flex Molecular Visions Model kit by Darling from first-year chemistry.

Accessibility

Please contact the course instructor if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 ext. 82147 if you have questions regarding accommodation.

Student Development Centre

Students are encouraged to make use of the free, study-skills courses and other services, including learning-skills counselling, provided by the Student Development Centre, http://www.sdc.uwo.ca

Students who are in emotional/mental distress should refer to Mental Health@Western http://www.uwo.ca/uwocom/mentalhealth/ for a complete list of options about how to obtain help.
Outline of Course Topics and approximate timing. These are also learning outcomes.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Description</th>
<th>Text Sections</th>
<th>Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0a</td>
<td>Structure and Bonding (review of 1st year; self-study section)</td>
<td>1.1 – 1.7</td>
<td>1</td>
</tr>
<tr>
<td>0b</td>
<td>Organic Nomenclature (self study)</td>
<td>various</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>Acid-Base Reactions (some material from 1st year)</td>
<td>2.1 – 2.6</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Fundamentals of Organic Structure (primarily from 1st year)</td>
<td>3.1 – 3.7, 4.1 – 4.2, 4.4, 6.1 – 6.10</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>• Alkanes, Cycloalkanes, Alkenes, Alkynes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Isomerism and Stereochemistry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Alkene Reactions</td>
<td>5.1 – 5.8</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Arenes</td>
<td>9.1 – 9.8</td>
<td>3</td>
</tr>
</tbody>
</table>

**MIDTERM TEST  October 22**

| 5     | Haloalkanes | 7.1 – 7.9 | 3 |
| 6     | Alcohols   | 8.1 – 8.6 | 2 |
| 7     | Amines     | 10.1 – 10.7 | 1 |
| 8     | Structure Elucidation: IR, $^{13}$C-NMR, $^1$H-NMR | 11.1 – 11.13 | 4 |
| 9     | Aldehydes and Ketones | 12.1 – 12.10 | 5 |
| 10    | Carboxylic Acids and Derivatives | 13.1 – 13.8, 14.1-14.8 | 3 |

**Final Exam during the December exam period.**

The cutoff for material to be included on the midterm test will be announced as the date approaches but expect for it to cover the topics 0a-4 (ca. 16-18 lecture hours) plus laboratories. The final exam is cumulative.

Laboratory Information and Schedule

Labs are in rooms 111 and 112 of the Chemistry Building. Your room will be assigned when you arrive for your first experiment. You must attend the section in which you are registered and be in your assigned room. Sorry, we cannot accommodate requests to switch rooms. Section changes must be completed prior to the end of the university-designated add/drop period.

Note, there is no “lab orientation” your first time at the lab will be for Experiment 1, so it is your responsibility to come prepared and in appropriate attire. Read the entire introduction section of the lab manual, as well Experiment 1, before your first lab.

Lab-related enquires should be directed to the Chem 2213a Laboratory Coordinator:

- Sandra Zakaria Holtslag  MSA 1235 (next to year-1 lab)  szakaria@uwo.ca

If you miss a lab due to your inability to follow the schedule below, you will receive a zero for that lab.
Please note that there is an unusual schedule due to the Thanksgiving holiday and Fall study break that affects Experiment #2 and #3 for both even and odd-numbered lab sections.

<table>
<thead>
<tr>
<th>Experiment</th>
<th>Odd-Numbered Lab Sections</th>
<th>Even-Numbered Lab Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Synthesis, Recrystallization and Determination of Melting Point</td>
<td>Week of September 19</td>
<td>Week of September 26</td>
</tr>
<tr>
<td>2. Separation of a Mixture by Extraction</td>
<td>Week of October 3</td>
<td>Tues-Fri Oct. 11, 12, 13, 14 and Mon Oct. 17</td>
</tr>
<tr>
<td>4. Preparation and Reactions of Alkyl Halides</td>
<td>Week of November 7</td>
<td>Week of November 14</td>
</tr>
<tr>
<td>5. Test of Carbonyl Compounds and Spectroscopy</td>
<td>Week of November 21</td>
<td>Week of November 28</td>
</tr>
</tbody>
</table>

Resource Room Schedule

Chem 2213a operates a Resource Room, located in the atrium of the Materials Science Addition on floor 1 (accessed from the chemistry building) for those who wish to seek assistance with course material. There is no cost, and the setting is very informal. Simply drop in anytime during the hours listed on OWL.

Evaluation

Components: The overall course grade, out of 100, will be calculated as listed below. Listed next to the respective components are their maximum contributions toward the course grade.

<table>
<thead>
<tr>
<th>Component</th>
<th>Notes</th>
<th>% of total grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm Test</td>
<td>Saturday, Oct. 22, 7:30 pm start time</td>
<td>30</td>
</tr>
<tr>
<td>Final Exam</td>
<td>TBA by the Registrar</td>
<td>45</td>
</tr>
<tr>
<td>Laboratory</td>
<td>Five experiments (3.00 each)</td>
<td>15</td>
</tr>
<tr>
<td>WileyPlus/Orion exercises</td>
<td>Approximately one graded assignment per Topic (10 x 1%)</td>
<td>10</td>
</tr>
</tbody>
</table>

There are no make-up labs or midterm test. See Missed Course Components for more details.

To obtain credit for the course, it is necessary to obtain a minimum of 38 points (out of a possible 75) on the test components and a minimum of 7.50 out of 15.00 on the laboratory component. The latter is calculated from all five experiments. **Failure to meet these criteria for passing, a course grade of 45% (or lower) will be assessed.** A missed experiment is assigned a grade of zero unless it is officially excused by an Academic Counsellor (see Missed Course Components). Students who miss three or more experiments, whether excused or not, will not be given course credit and assigned a grade of 40%.

All labs, the midterm test, and final exam and online exercise count; none of the components will be “dropped.” Re-weighting of any component will only be done under the circumstances listed below for missed course components.
Missed Course Components

If you are unable to meet a course requirement due to medical illness (physical or mental) or other serious circumstances, you must provide valid medical or supporting documentation to the Academic Counselling Office of your home faculty as soon as possible.

If you are a science student, the Academic Counselling Office of the Faculty of Science is located in WSC 191, and can be contacted at 519-661-3040 or scibmsac@uwo.ca. Their website is http://www.uwo.ca/sci/undergrad/academic_counselling/index.html.

For further information, please consult the university's medical illness policy at http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_illness.pdf

Missed Labs

There are no make-up labs, and it is not possible to reschedule them. If you miss a lab for any reason, you will be assigned a mark of zero for that lab. If the missed lab is due to a reason that is approved by your faculty’s Academic Counselling Office, the weight of the missed lab with be shifted onto all of the other labs.

You must, within one week of the absence, submit documentation to your faculty’s Academic Counselling Office. If they approve your circumstances, ask them to send an email to szakaria@uwo.ca and copy you on the email. The email must contain the date of the missed lab.

Chem 2213a entrusts your faculty’s Academic Counselling Office with the task of assessing your circumstances and deciding whether academic accommodation is warranted. Thus, the email from your faculty’s Academic Counselling Office must explicitly state that they recommend the granting of academic accommodation.

Students who arrive unprepared or late for a lab will receive a zero for that lab. No credit will be given for the pre-lab exercises. Students are deemed unprepared if they arrive in inappropriate attire, without a completed pre-lab, or possess an old lab report or report with pre-filled observations. Students are deemed late if they arrive after the lab doors have closed. Lab technicians and teaching assistants have the right to eject students from the lab.

Tests and exams will contain questions related to the theoretical aspects of the experiments. Students are responsible for the material pertaining to the missed labs.

- Missed Midterm Test or Final Exam

There is no make-up midterm test. If your faculty’s Academic Counselling Office has approved your circumstances, then the value of the midterm test will be shifted to the Final Exam.

If you miss the Final Exam, contact your faculty’s Academic Counselling Office as soon as possible. They will assess your eligibility to write the Special Exam in January 2017.

Anyone missing the midterm for a university sponsored/acknowledged event or sporting event must see their faculty’s Academic Counselling Office or office of the Manager of Intercollegiate Athletics immediately.

Students seeking academic accommodations based on medical (physical or mental) illness should begin by contacting the Academic Counsellors of their home faculty. Please visit the following link for
policy on Accommodation for Illness: 
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_illness.pdf

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following website:  
http://www.uwo.ca/univsec/handbook/appeals/scholoff.pdf. Computer-marked, multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating. If you study in a group, it is recommended that you do not sit in proximity to each other during testing if you believe that you’ll give the same pattern of answers. Before testing begins, you have the opportunity to be reseated.

No electronic devices (phones, calculators, etc.) may be in your possession during tests and exams, even for timekeeping purposes.

• Missed Online Assignments

Online assignments will be given absolute due dates. Assignments not finished within the proper time period will be given a grade of zero.

Equal Opportunity and Evaluation Policy

The University is committed to academic integrity and has high ethical standards. All students will be treated equally and evaluated strictly using the criteria presented in this course outline and their respective weights. The evaluation is based solely on actual achievement; arguments based on effort, attendance, or personal issues (finance, relationships, etc.) are not entertained.

There is no extra work available for extra credit or to “make up” another grade; we do not offer any extra assignments, essays, experiments, or other work of any kind to any student.

Learning Outcomes

1) Demonstrate an introductory knowledge of the structure and reactivity of organic molecules.

2) Analyze and critically assess introductory level organic chemistry problems, and take a systematic approach to solve them.

3) Demonstrate a proficiency for basic experimental organic chemistry laboratory techniques.

4) Observe, report, and draw scientific conclusions from experimental data without bias.

5) Relate lecture material to experimental methods and results.
How to Achieve Your Goals in Chem 2213a

1. **Attend class!**
   
   Be attentive, participate and think (about organic chemistry).

2. **Stay on top of the material.**

   Organic chemistry is cumulative. Concepts build on top of previously learned concepts. Former Chem 2213a students have noted the importance staying on top of the material to perform well in the course. There is a significant curriculum associated with this course, and the pace requires that you keep up-to-date with the material.

3. **Learn and understand the course material – don’t just memorize it.**

   Try reading ahead before lectures. Do end of chapter problems and work on the online Orion exercises to build your confidence in the material.

4. **Focus on making connections.**

   Look for similarities between different organic reactions. Use fundamental principles to explain the reactivity of functional groups. How does one chapter relate to the next?

5. **Learn from the textbook, online resources and supplemental questions.**

   When working on questions from the textbook, supplemental problems or online exercises, your objective should be to focus on the concepts, the approach, the thought process, how to arrive at the correct answer and understand why it’s the answer.

6. **If you have questions about the course material, address them promptly.**

   Ask questions as soon as they arise and take advantage of the Resource Room, don’t wait until pre-midterm or pre-exam.