

# Chemistry 2213a Course Outline 2021 Edition

## Organic Chemistry for Life Sciences

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### Mandatory Notice from the Registrar

Unless you have either the requisites for this course or written special permission from your Dean to enroll 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 1302A/B. The website of the Registrar is <http://www.registrar.uwo.ca>.

### Course Website

A common OWL website has been created for all students enrolled in Chemistry 2213a and is the primary link for the Chem 2213a 2021 version. 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.

On-line lecture resources and lecture presentations etc. will be made available through OWL. Students are responsible for embellishing their own notes.

### Instructor and Lecture\* Information

Lecture Section	Time and Room	Instructor	Email
200	MWF 12:30 – 1:20	Professor Mark Workentin (he/him/his)	Use Message in OWL
201	MWF 1:30 – 2:20	Still Professor Workentin	Use Message in OWL

**Get to know me beyond the “classroom”.**

**Follow me on Twitter, Instagram: @WorkentinChem**

**Once a week (roughly) IN CLASS active learning sessions will start September 13 and be by group so that we can limit # of people in NCB 101. Labs will be in person!**

### Email Policies

Please use the *Message* tab in OWL to contact your instructor. Use your Western email account ALWAYS, including when registering in WileyPlus and Gradescope! Communication from a non-uwo.ca address will not be answered and your @uwo.ca address allows me to link your work to my gradebook

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I acknowledge that Western University is located on the traditional lands of the Anishinaabek (Ah-nish-in-a-bek), Haudenosaunee (Ho-den-no-show-nee), Lūnaapéewak (Len-ahpay-wuk) and Attawandaron (Add-a-won-da-run) peoples, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum. This land continues to be home to diverse Indigenous peoples (e.g. First Nations, Métis and Inuit) whom I recognize as contemporary stewards of the land and vital contributors of our society.

## Course Materials

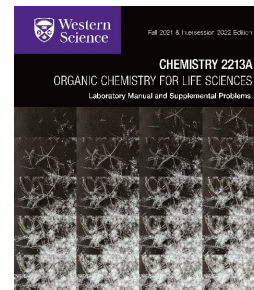
In addition to resources on OWL the following materials are key resources for success in #orgo2213:

Required course materials:

1) **Organic Chemistry for Life Sciences Chemistry 2213a Lab Manual + Suppl - Fall 2021 and Intersession 2022 Edition**

Available from the Bookstore- price is set by the department not me!

ISBN: 9781533939708



2) Textbook:— **list price: \$94 – Klein, Organic Chemistry, 4th Edition Integrated E-Text Reg Card w/WileyPLUS 1 Semester Set – this has the permanent ebook that will be needed for CHE 2223B.**

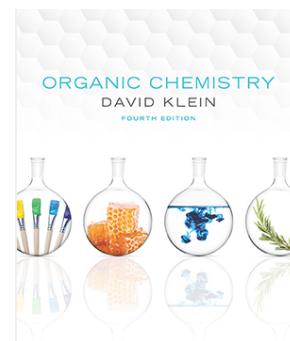
(a hard copy is also available, but is more expensive, if you prefer that)

**SBN: 9781119863885**

\*\*\*Key code access available from Western Bookstore:

<https://bookstore.uwo.ca/>.\*\*\*\*

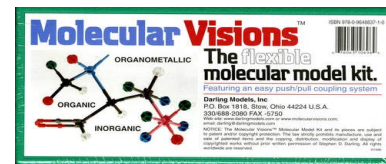
Author: David Klein Publisher: Wiley, Edition: 4th



3) Optional but highly, highly, highly recommended material:

(you can use these on tests of knowledge and the final exam).

- Molecular Model Kit, for example the Flex Molecular Visions Model kit by Darling
- **Same as you used in first-year chemistry.**
- SKU: 0964883716 (available from Western Bookstore: <https://bookstore.uwo.ca/>.)



## Rough Outline of Course Topics

Module	Description	Text Sections	Rough # Classes*
Refresher	Structure and Bonding (review of 1 <sup>st</sup> year; self-study sections) (including self-study- See lesson Nomenclature)	Chapter 1/2	0.5
1	Anatomy of an Organic Molecule	Chapter 2	1.5
2	Organic Molecules as Acid-Base Reactions (some material from 1 <sup>st</sup> year)	Chapter 3	2
3	Fundamentals of Organic Structure (primarily from 1 <sup>st</sup> year) Structure of Alkanes, Cycloalkanes,	4.3, 4.6-4.14	4
4	Isomerism and Stereochemistry (primarily from 1 <sup>st</sup> year)	5.1-5.3 5.5-5.8 5.11 Parts of 5.4	2
5	Alkyl Halides and Nucleophilic Substitutions and Eliminations	7.1, 7.3-7.8 7.9, 7.11, 7.12	5
<b>Test of Knowledge: October 23 7-9:00 p.m.</b>			
6	Addition Reaction of Alkenes	8.1, 8.4-8.8, 8.9 (not homogeneous cat), 8.10, 8.11, 8.	3
7	Aromaticity and Electrophilic Aromatic Substitution	17.1-4 (part), 17.5 18.1-18.6 (reactions 1-6 in review)	2
<b>Study Week Nov 1-7</b>			
8	Alcohols and Phenols Reactivity	12.1-12.6, 12.7, 12.9, 12.10 13.5-6, 13.8, 13.10, 13.11	3
9	Structure Elucidation: IR, <sup>13</sup> C-NMR, <sup>1</sup> H-NMR	IR: 14.1-14.7 ( <b>14.6!</b> ) NMR: 15	3
10	Chemistry of Aldehydes and Ketones	19.1-19.6 (parts), 19.7, 19.9, 19.10 (parts), 19.11	4
11	Carboxylic Acids and Derivatives	20.1-3 (review) 20.4-20.12	3
<b>Final Exam during the December exam period.</b>			

The test and the final exam are cumulative.

Rough # of classes indicates how many lecture times in a tradition in-class version of this course would occupy with a single midterm in October

## Evaluation

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.

Component	Notes	% of total grade
Test of Knowledge	Saturday, October 23 7:00-9:00 p.m. Gradescope- synchronous.	25
Final Exam	TBA by the Registrar IN PERSON ON CAMPUS	45
Laboratory	Five experiments (4.00 each)	20
WileyPlus Keeping-up Quizzes	Multiple tries- incentive to keep up	10
#orgo2213islife Social Media/Peer Engagement	Optional. Fun way to engage and earn 2%!- <b>details to come</b> Top 5 submissions every week have virtual Zoom Quaff with the Prof or if possible on-campus coffee	Bonus 2% to Final Grade <b>(deadline Nov. 21, 2021)</b>
Posting Your Orgo themed creative project Twitter	Posting your submission above to Twitter with #orgo2213islife to increase engagement and you must tag @WorkentinChem	Additional Bonus 1% to Final Grade

**There is no make-up Test of Knowledge.** The weight of a missed test will be shifted to the final examination.

To obtain credit for the course, it is necessary to obtain a minimum of 35 points (out of a possible 70) on the major test components *and* a minimum of 10 out of 20.00 on the laboratory component. The latter is calculated from all five experiments. *Failure to meet these criteria for passing will result in a course grade of 44% (or lower) being assessed.*

While 103% is possible, no mark above 100% can be recorded officially on transcript.

A missed experiment is assigned a grade of zero unless the reason for the absence is excused by an Academic Counselor (see Missed Course Components). Students who miss more THAN 1 experiment, whether excused or not, will not be given course credit and will be assigned a grade of no higher than 40%. There will be arrangements available for those that are ill and miss more than one lab. See LAB page.

All labs, the tests of knowledge and the final tests online, and the social media engagement assessments 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.

## Laboratory Information and Schedule

Labs are in person this year and you must attend the section in which you are registered. Each laboratory section has its own OWL site. You will be told the lab location on the lab OWL page.

There are prelab technique videos on OWL that must be watched and an online prelab quiz that must be completed before the start of your scheduled laboratory session. These will be available at least one week prior to your lab section. The prelab quizzes are worth 20% of each laboratory and cannot be taken until the videos are viewed.

The Data Sheets provided in the Laboratory Manual are filled out as you perform the experiment and are due at the end of the lab session.

On the weeks that you are not scheduled for a laboratory, a TA Resource will be available. Details at start of term.

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, you will receive a zero for that lab. **You must complete a minimum of 4/5 labs to pass the course, excused or not. If this situation occurs you must contact Sandra at the email above for possible alternate accomodation.**

**Please note that there is a break in the schedule due to the Fall study break.**

**\* Thanksgiving is on Monday October 11 so Lab Sections 012, 014, and 016 will be doing Experiment 2 on Monday October 4.**

<b>Experiment</b>	<b>Odd-Numbered Lab Sections</b>	<b>Even-Numbered Lab Sections</b>
1. Synthesis, Recrystallization and Determination of Melting Point	Week of September 20	Week of September 27
2. Separation of a Three Component Mixture by Extraction	Week of October 4 <b>odd plus 012, 014, 016</b>	Week of October 11* <b>even except 012, 014, 016</b>
3. Preparation and Tests for Reactivity of Alkyl Halides	Week of October 18	Week of October 25
4. Synthesis of Cyclohexene and Tests for C=C Bonds	Week of November 8	Week of November 15
5. Tests for Carbonyl Compounds and Spectroscopy	Week of November 22	Week of November 29

## Resource Schedule

Chem 2213a operates a TA Resource at designated times during the week. The location and mode will be announced as we learn details of space allocation. Additional open online resource schedules will be announced weekly on OWL.

## Missed Course Components

If you are unable to meet a course requirement due to medical/health issues or other serious circumstances, you must report this absence as described in the Policy on Academic Consideration for Student Absences or as directed from the University.

For policy on Academic Consideration for Student Absences - Undergraduate Students in First Entry Programs, see: [https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_illness.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_illness.pdf)

and for the Student Medical Certificate (SMC), see:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf).

**Chem 2213a entrusts the online system and your faculty's Academic Counselling Office with the task of assessing your circumstances and deciding whether academic accommodation is warranted. IT WORKS! Do not message your instructor. This is not necessary as the self-report and Academic Counselling Office are sufficient. I will not respond to emails related to absences or confirm that I have received notification from through Extranet.**

## Missed Labs

**There are no make-up in-person 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. No grade will be given for the pre-lab exercises in these cases. If the missed lab is due to a reason that is approved as above, you will be excused from that lab and the weight of the missed lab will be shifted on to all of the other labs. **You must complete a minimum of 4/5 labs to pass the course, excused or not.**

You must, within one week of the absence, report your absence. **Do not report your absence directly to the instructor; use the self-report or through your academic counsellor.** Accommodations for missing more than one lab for approved reasons will be handled on a case by case basis. Contact the lab coordinator.

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

## Missed Tests of Knowledge or Final Exam

**There is no make-up for the test of knowledge.** If you self report or your faculty's Academic Counselling Office has approved your circumstances, then the value of the 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 2022.

## Accessibility

If you require material in an alternate format or if any other arrangements can make this course more accessible to you please see Accessible Education Western ([aew@uwo.ca](mailto:aew@uwo.ca)) for resources available:

[http://academicsupport.uwo.ca/accessible\\_education/index.html](http://academicsupport.uwo.ca/accessible_education/index.html)

## #Orgo2213Wellness

This enabling course covers a lot of material in a single term. It is important to do your best at time management and use all the resources available to keep on top of things. We cover about a chapter of the textbook a week (yikes!) so that we can provide you the tools for other courses in your modules. We are also in the midst of unusual circumstances due to the global COVID pandemic and our situation may change dramatically and quickly. This is only a course – a great course- but only a course. Western University, and us in chemistry, are committed to a thriving campus; therefore, your health and wellness matter to us!

The following link provides information about the resources available on and off campus to support you: <https://www.uwo.ca/health/>

## Email Policies

Please use the *Message* tab in OWL to contact your instructor. Use your Western email account ALWAYS, including when registering in WileyPlus and Gradescope! Communication from a non-uwo.ca address will not be answered and your @uwo.ca address allows me to link your work to my gradebook.

Messages to the instructor should only be used for administrative purposes; I will respond to legitimate concerns as quickly as possible. Messages of the following nature will receive no response:

- Questions about course material or how to do a particular problem. Such questions should be addressed in Forums, at the active learning in class sessions, or the TA Resource time.
- Questions that can be answered based on the information found in this course outline, on OWL or within the academic calendar.
- Requests for grade increases, extra assignments, make-up labs (see Laboratory Section).

In an emergency Email to the instructor's account ([mworkent@uwo.ca](mailto:mworkent@uwo.ca)) must have exactly: **Chem 2213a 2021** in the subject line.

**Please Note: I trust the Academic Counsellors and you for the proper use of Self-reported absences. DO NOT contact me by email about any missed components or absences, even though your counselor or the system will instruct you to. I will see these on Extranet and make adjustments to evaluations/assessment. There is no need to contact me even though the system tells you to! All accommodations are addressed in this document.**

## Scholastic Offenses

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:

[https://www.uwo.ca/univsec/appeals\\_discipline.html](https://www.uwo.ca/univsec/appeals_discipline.html)

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.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. All assessments this year are on-line. You will be requested to make an ethics affirmation that you will take all tests as directed and not use additional resources of any type.

No electronic devices (phones, calculators, tablets, e-watches, etc.) other than the one you are working on may be in your possession during the tests/exam.

## Student Development Centre

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

## Acknowledgment of the Science Student Donation Fund

This course is supported by the Science Student Donation Fund. If you are a BSc or BMSc student registered in the Faculty of Science or Schulich School of Medicine and Dentistry, you pay the Science Student Donation Fee. This fee contributes to the Science Student Donation Fund, which is administered by the Science Students' Council (SSC). One or more grants from the Fund have allowed for the purchase of equipment integral to teaching this course. You may opt out of the Fee by the end of September of each academic year by completing the online form linked from the Faculty of Science's Academic Counselling site. For further information on the process of awarding grants from the Fund or how these grants have benefitted undergraduate education in this course, consult the Chair of the Department or email the Science Students' Council at [ssc@uwo.ca](mailto:ssc@uwo.ca).

## 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. Given the liberal grading system with up to 3% bonus possible there will be "bumping" grades.





This Chemistry-Progress Pride logo is used with permission of the University of Michigan and is partially credited to artist John Megahan. It combines the Progress Pride flag with the periodic table. The Progress Pride flag was designed by Daniel Quasar, who identifies as queer and nonbinary. It combines the traditional gay pride flag with the white, pink, and light blue reflect the colors of the transgender flag, and brown and black stripes representing people of colour. The idea of “you are welcome here” is to highlight that #STEM and #orgo2213 is a place for all.

## How to Achieve Your Goals in Chem 2213a- Remote Learning 2021 Ed.

### 1. Use Module Resources as your lecture time!

Be attentive while watching videos, participate by filling in notes and think (about organic chemistry).

### 2. Stay on top of the material. (Read and Write)

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. To help there will be regular WileyPlus Quizzes (assignments) for grades and a test of knowledge.

### 3. Learn and understand the course material – don't just memorize it. (Practice!)

Try reading ahead before lectures. Watch the online material provided. Definitely do the end of chapter problems from text and those provided in the lessons on line- many of the exam questions are based on (or are) these types of problems. Do problems! Do problems! Do problems! Weekly live active learning tutorial sessions will focus on problem solving based on your contributions to discussion in the Forum tab on OWL.

### 4. Focus on making connections. (Think! You can DO IT!)

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 and supplemental questions. (Use Resources)

When working on questions from the textbook or supplemental problems 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, post issues (and help) in the peer-to-peer forums, don't be afraid to engage your instructor in tutorials, take advantage of the Resource times, don't wait until just before tests.

### 7. Have fun! Stay engaged. Orgo is all around us in everything. Orgo is everywhere!