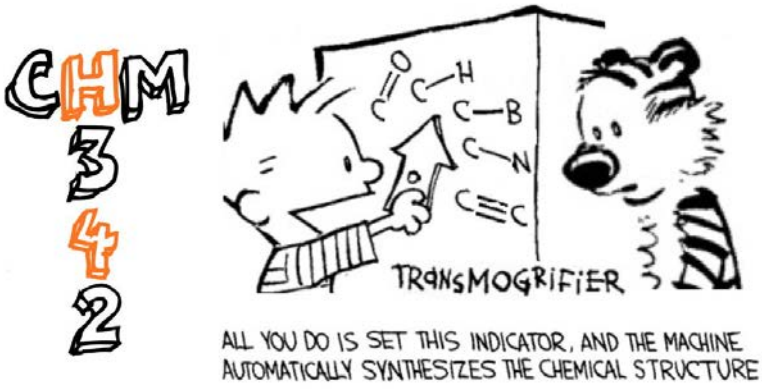
UNIVERSITY OF TORONTO:
DEPARTMENT OF CHEMISTRY

Modern Organic Synthesis
CHM 342F Fall 2020

Course Overview



Instructor: Prof. Rob Batey (Room LM151)

Contact: E-mail: rob.batey@utoronto.ca
Tel: 416-946-5602

Classes: Monday, 1:10–2:00 PM, online
Wednesday, 1:10–2:00 PM, online
Please note that the final class content of the course (a "Makeup Monday") will be held on Thursday Dec 10th 2020.

Zoom Link: https://utoronto.zoom.us/j/93642874401
Meeting ID: 936 4287 4401 Passcode: 208893

Student Hours: *"Yeah, well, that's just, like, your opinion, man*."

Tuesday, 9:30–10:30 AM, online
Thursday, 4:30–5:30 PM, online

Please take advantage of my virtual student hours, I am always very happy to meet with students and to discuss chemistry! Note: the scheduled time of online student (office) hours may be subject to change.

Zoom Link: https://utoronto.zoom.us/j/96614736806
Meeting ID: 966 1473 6806 Passcode: 220945

Tutor: Cody Wilson-Konderka (email: c.wilsonkonderka@mail.utoronto.ca)

Tutorial: Monday, 2:10–3:00 PM (first tutorial: Week 2, Sept 21st 2020)
Wednesday, 10:10–11:00 PM (first tutorial: Week 2, Sept 23rd 2020)

Zoom Link: https://utoronto.zoom.us/j/95096003550
Meeting ID: 950 9600 3550 Passcode: 851475

Prerequisites: This course requires knowledge of second year organic chemistry, as found in the courses CHM249H or CHM247H.

Course Objectives: CHM342F provides an overview of modern methods for the preparation of complex organic molecules. The course uses and builds upon the course content of CHM247/249, including reactions and mechanisms. In CHM342F achieving selective transformations, the control of stereoselectivity and the planning of multistep synthesis will be emphasized. The course is used as preparation for the course CHM440F, and is designed to complement the practical and technical aspects of the course CHM343S. Together these courses prepare for research / career in the areas of organic, synthetic and medicinal chemistry.

Learning Objectives: During the course you will expand your understanding of (i) reaction mechanisms and functional group reactivity, (ii) modern synthetic organic reactions, (iii) synthetic planning, and (iv) develop non-quantitative problem solving skills.

In the first part of the course it is essential to ensure that you understand and be able to apply the core concepts and terminology of organic chemistry (e.g., understanding structure and bonding, electronic / inductive / resonance / steric effects, reaction types, nucleophiles, electrophiles, oxidants, reductants, acids, bases, arrow-pushing mechanisms).

In the early stages of the course I would urge you to review all of the review files, including "1st and 2nd Year Review Materials and Glossary of Terms", a review of top 10 things to know from first year chemistry, a review of arrow-pushing (including some questions), a review of second year organic reactions, understanding organic reactions, and help drawing organic structures. Particularly please attempt the arrow pushing and self-review questions found under this section.

Building upon these core concepts we will aim to develop problem solving particularly in the areas of stereoselective synthesis, multi-step synthetic synthesis, and mechanistic understanding.

Additionally, you will gain experience working with the chemical drawing program ChemDraw (which requires a Mac/PC program download), and using online literature/structure searches, such as SciFinder. Both will require action from you, and I encourage you to familiarize yourself with these tools as early as you can. Download instructions for ChemDraw are available here: http://guides.library.utoronto.ca/Chemdrawinstructions. Register for SciFinder at: https://guides.library.utoronto.ca/chemistry/Scifinder.

Course Website: https://q.utoronto.ca/courses/179243. It is essential that you check the course website periodically for announcements related to exams, assignments, etc. as well as posted course materials. Most notes and past exams, etc. will be posted under the modules section of the website. A glossary of terms used in the course is also provided here.

Technology Requirements: Specific guidance from the U of T Vice-Provost, Students regarding student technology requirements is available here: https://www.viceprovoststudents.utoronto.ca/covid-19/tech-requirements-online-learning/

Advice for students more broadly regarding online learning is available here: https://onlinelearning.utoronto.ca/getting-ready-for-online/

This course requires the use of computers, and of course sometimes things can go wrong when using them. You are responsible for ensuring that you maintain regular backup copies of your files, use antivirus software (if using your own computer), and schedule enough time when completing an assignment to allow for delays due to technical difficulties. Computer viruses, crashed hard drives, broken printers, lost or corrupted files, incompatible file formats, and similar mishaps are common issues when using technology, and are not acceptable grounds for a deadline extension.

Content will be delivered online per the meeting schedule and recorded. Tutorials will be delivered online per the meeting schedule. Students will require the ability to use videoconferencing software through a web browser. The use of a wired rather than a wireless connection is generally recommended. We will be using Zoom for the scheduled class times and for the student (office) hours. **It will be helpful for me to know which of you may be operating in a different time zone for this semester (if you are please let me know).**

Zoom: Zoom is the primary technology platform that will be used for online content in CHM342. Zoom is now available for free for all UofT students using your UofT credentials. To download Zoom on your computers/devices, see:

https://zoom.us/support/download

or

https://utoronto.zoom.us/download#client_4meeting

For instructions on using and configuring Zoom, see:

https://utm.library.utoronto.ca/students/canvas/zoom

https://support.zoom.us/hc/en-us/articles/201362193-How-Do-I-Join-A-Meeting-

For lectures the zoom link is set-up such that students can only login to the room once the host (the instructor) has logged in to Zoom. If the instructor has not logged in then you must wait to log in. There is a single meeting ID for the lectures – when you login to the meeting you must enter the provided passcode.

The default is such that your camera and microphone are not connected on login. Unless you are asking a question keep your microphone turned off (i.e., muted).

Questions are encouraged and the use of the "raised hand" feature of Zoom is helpful to gain attention (un-raise your hand once your question has been addressed). The "chat" feature can also be used to ask questions. Both of these features are accessed at the bottom of the Zoom window. Be respectful of others in any form of communications with the class during lectures, office hours, chats, etc.

Screen recordings of the lectures will be recorded and will be uploaded to MS Streams for viewing once they are available. Any student with UofT credentials can access these videos.

For details on meeting / connection details for connection to the lectures/classes and the student hours, see the end of this document (pages 13-15).

Online Etiquette: We will follow the University guidelines regarding etiquette/participation in online activities, including classes, tutorials, and office hours. The University of Toronto is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. UofT does not condone discrimination or harassment against any persons or communities.

E-mail Policy: I am happy to respond to course-related e-mail inquiries. Please include the course code CHM342F in the title of your e-mail, and use your UTOR e-mail account to send the message. I will endeavour during weekdays to respond within 24 h where possible.

Approach: *The course will employ a partially "flipped" approach, in that you will be required to* ***view online content (notes/videos) relevant to each online class prior to the class****.* This material will be available through the course website. It will serve as the basis for more detailed discussions in the online classes (which will be recorded) as well as problems that we work through. This will allow us to cover examples and problems in class that use the chemistry described in the notes. To keep on top of the material, *you are advised to develop a study flow that will ensure that you can review online materials in both a timely and organized manner.*

Advice: Although the class notes/content are fairly thorough, please take note that not all of the material discussed in class will show-up on the pdf copies of the class notes. Indeed, there is a considerable amount of very important material that does not and that will be discussed only in the online classes. Recognizing what are the most important concepts, reactions, mechanisms, etc., from a handout is often apparent only during the class. ***In other words, although the provided notes are extensive, they are not a substitute for attending class.*** Also, there will be sections or examples in the class notes that we may not have time to discuss in class. You will be expected to be familiar with these sections. Success in the course is generally achieved more through application of your knowledge and problem solving skills rather than rote memorization.

The tutorials are intended to be participatory, and will involve learning how to solve problems and questions in mechanism and synthetic planning. These will also provide an opportunity to prepare for quizzes, assessments, and the final assignment. The first tutorial will occur in week 2, and will be directly after the class. As for the classes we expect that all students will participate in these. On occasion I may participate in the tutorials.

The initial part of the course will include the review of material from CHM247/249 (along with some new material). We will go through these classes rather rapidly as a result.

Finally, the knowledge base of organic chemistry is a cumulative one. It is akin to learning a language and requires practice. Therefore, this is not a course where "cramming" the night or even the week before is a good strategy! Keep on top of the course material! I would encourage forming study groups to discuss the chemistry in this course. Working with peers can improve your understanding and problem solving.

The best advice I have for succeeding in the course is to work through problems and not to be left hanging when it comes to studying … don't leave this to the last minute.

["Safety Last" starring Harold Lloyd, 1923]

Molecular Models: Stereochemical issues will be emphasized in this course, and molecular models can be very useful in visualizing molecules in three dimensions. Molecular models are allowable aids for assessments and tests. You are free to use the models of your choice (many of you will already own or can easily borrow a set), but I'd recommend the Darling Molecular model sets. These are available through the UofT bookstore, see: https://uoftbookstore.com/buy_book_detail.asp?pf_id=10615973

Textbook: In addition to the class notes there is also a recommended (not required) course textbook, which serves as a valuable resource for the course. (Please note that in preparing for exams you should prioritize the online content as being more important than the course textbook). For anyone wishing to continue in organic synthesis, this is the one text that I'd recommend as essential from a learning perspective.

Clayden, J.; Greeves, N.; Warren, S. *Organic Chemistry*, Oxford University Press **2012**. 2nd Edition

The following online, but older, text is also available to UofT students (within UofT) network and has some good examples:

Francis A. Carey and Richard J. Sundberg. New York: Springer, 2007.
Advanced Organic Chemistry. Part A: Structure and Mechanisms
and
Advanced Organic Chemistry. Part B: Reactions and Synthesis

Grading Scheme: † (Provisional)

Mid-Term Test (Weds/Thurs Nov 4/5th)	20%
Quizzes (Weds Oct 8th & Weds Dec 2nd)	20%
Assignment	25%
Final Assessment	35%
	100%

Please note this is a provisional grading scheme. It will be finalized for the end of the first week of class.

† Note 1: All quizzes and assessments will be run through Quercus.

† Note 2: if an unexpected technical issue occurs with a university system (e.g., Quercus services, network outage) that affects availability or functionality, it may be necessary to revise the timing or weighting of the assessments.

† Note 3: We want to grade you on your best effort. Accordingly, the value of the final assessment may be modified to between 25 or 40% of the final grade (and the values of the higher or lower of the term test/quizzes modified accordingly) if this adjustment results in an improved "raw score" for the student. Essentially a series of raw scores that each deemphasize one of the scoring elements for the tests/quizzes/exams will be generated. The *highest* of these scores will be used to determine any final grade.

Assignment: (Provisional) There will be one graded assignment worth 25% during the semester. The assignment will be focused upon aspects of synthetic planning using multistep synthesis.

The due date for this assignment (submitted through Quercus) is:
4 p.m. on Thursday December 10th 2020.
earlier submissions are encouraged

Late assignments will be penalized at the rate of 20% per day (i.e., the last possible date to submit is 4 p.m. on Monday December 14th 2020, and the assignment will then only be worth 5% of the overall course grade, as opposed to 25%).

Term Tests: The dates of the quizzes / term tests will be announced during the first/second week of classes.

Missed Exams: Since there are numerous opportunities for student evaluation in the class, there will not be any 'make-up tests' for students who are absent for medical or other reasons. Instead, the weighting of the remaining evaluation methods will be increased equally to compensate for the missed test. Students should both advise the course instructor and will need to report their absence through the **online absence declaration** (available through ACORN).

Online Absence Declaration and Other Documented Absences for 2020-21:

For this year, the University has announced that students will not require a Verification of Illness (VOI) form. Instead, the **online absence declaration** (available through ACORN) will be used. The ACORN online tool is for absence from academic participation in the University and where students require consideration of missed academic work.

From the updated FAQ for students: **"What should I do if I can't attend class (in-person or remote) and it is affecting my academic work?** Students who are absent from class for any reason (e.g., COVID, other illness or injury, family situation) and who require consideration for missed academic work should report their absence through the **online absence declaration**. The declaration is available on ACORN under the Profile and Settings menu. Students should also advise their instructor of their absence."

Final Assessment: A final assessment will be held during the Faculty of Arts & Science final assessment period. The final assessment will be comprehensive and cover all course content.

Drop Date: Monday November 9th 2020 is the last day to drop F section code courses from academic record and GPA. After this deadline a mark is recorded for each course.

Fall Break: Mon-Fri November 9th–13th 2020.

Copyright: This course, including your participation, will be recorded on video and will be available to students in the course for viewing remotely and after each session. Course videos and materials belong to your instructor, the University, and/or

other source depending on the specific facts of each situation, and are protected by copyright. In this course, you are permitted to download session videos and materials for your own academic use, but you should not copy, share, or use them for any other purpose. For questions about recording and use of videos in which you appear please contact your instructor. All such reproduction is an infringement of copyright and is absolutely prohibited. More information regarding this is available here: **https://teaching.utoronto.ca/ed-tech/audio-video/copyright-considerations/**

This course is an iteration of a 3rd Year organic synthesis course that has been taught at UofT for over 25 years. The structure of the course has benefitted from input from several individuals, and in particular the Fall 2010 course notes of Prof. Mark Taylor. His materials have been added to and adapted, but original elements remain. Some new course content in 2020 has been generated (including reaction flash cards), under my direction, by the graduate students Cody Wilson-Konderka and Stephanie Nakamata Huynh.

Some of the course materials make use of images under Fair Use and Copyright for Online Education. These images are being made available for teaching, study, and research purposes only, and are not intended for distribution to students outside of the course or to be used for any other purpose other than in this course.

Academic Integrity: Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters (https://governingcouncil.utoronto.ca/secretariat/policies/code-behaviour-academic-matters-july-1-2019) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to:

In papers and assignments:

i. Using someone else's ideas or words without appropriate acknowledgement.
ii. Submitting your own work in more than one course without the permission of the instructor.
iii. Making up sources or facts.
iv. Obtaining or providing unauthorized assistance on any assignment.

On tests, quizzes, exams or other assessments:

i. Using or possessing unauthorized aids.
ii. Looking at someone else's answers during an exam or test.
iii. Misrepresenting your identity.

In academic work:

i. Falsifying institutional documents or grades.

ii. Falsifying or altering any documentation required by the University.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources (see https://www.academicintegrity.utoronto.ca/).

Accessibility: Students with diverse learning styles and needs are welcome in this course. The University of Toronto is committed to accessibility: if you require accommodations for a disability, or have any other accessibility concerns about the course, please contact Accessibility Services as soon as possible. Accessibility services provides supports including advisors, note-takers, peer mentors, etc. Please note that materials presented during the course will be available online at https://q.utoronto.ca/courses/179243. I will also post annotated notes.

Supports: Join or Lead a Recognized Study Group (RSG). Participate in *Meet-to-Complete* daily study-with-me sessions available to Faculty of Arts and Science Students. For details of these see the end of this document (page 16).

Additional Services and Support:

The following are some important links to help you with academic and/or technical service and support:

https://www.artsci.utoronto.ca/current/academic-advising-and-support/online-resources-students

- General student services and resources at Student Life
- Full library service through University of Toronto Libraries
- Resources on conducting online research through University Libraries Research
- Resources on academic support from the Academic Success Centre
- Learner support at the Writing Centre
- Information for Technical Support/Quercus Support

Course Mascot:

This is ***Arya***, named by my kids after the Game of Thrones character. She enjoys long walks, running around in concentric circles, being tickled, and, most of all, napping. Her generally mischievous and tenacious character, is evidenced by her unceasing, as yet unfulfilled, ultimate quest to catch a squirrel. Although generally indifferent to the concerns of organic chemistry, she is generously offering her time for this task. She will undoubtedly make occasional appearances and vocalizations during virtual student/office hours and possibly classes. She and I very much look forward to making your acquaintance and getting to know you better.

Your Instructor:

I'm originally from England, from what was once an industrial area known as the Black Country (named because of the soot-dust covered buildings). I am trained as an organic chemist. Following a B.A. degree in Chemistry at Oxford University, I studied as a graduate student at Imperial College London. I was then a Post-Doctoral Fellow at the University of Pennsylvania followed by the Upjohn Company (back then a major Pharma company). I have been a faculty member at UofT since the mid-1990's and it is my honour to serve as the current Chair of the Department of Chemistry (since 2013).

My group has research interests in the area of organic synthesis and its application to medicinal chemistry and chemical biology problems, particularly targets involved in protein degradation relevant to anti-cancer and anti-infective development. These interests encompass the development of new organic reactions, the synthesis of alkaloid and macrocyclic natural products, and the use of new enabling technologies in synthesis.

Outside of the University and scribbling chemical structures, I enjoy exasperating my family members with eclectic tastes in cooking, movies, and music (check out / follow my Spotify playlists under "rob batey – ca", including this one: https://open.spotify.com/playlist/2xY4uWSmWAcmDXD55cdlKj?si=CiuPysagSUaH5y7mZ-pBsg). Finally, inspired by basketball-crazy kids, I have been a proud **Raptors** fan for a number of years (😕, 2020).

Here are Some Blogs / Websites I Recommend:

• For penetrating insights into science, chemistry, and the Pharmaceutical and Biotech Sectors, where many students of organic synthesis find employment, please see the always informative *In The Pipeline*: http://blogs.sciencemag.org/pipeline/

• For a useful overview of drug discovery resources, see: https://www.cambridgemedchemconsulting.com/resources/

• For those needing demystification of the practical aspects of organic synthesis, see the *Not Voodoo* site: http://www2.chem.rochester.edu/~nvd/

• For those craving food ideas, see: https://food52.com

• More food inspiration from *the Food Lab* and *Serious Eats*: https://www.seriouseats.com

• For those wishing to optimize their experiences on Mac computers (I've been hooked since the days of the 8-bit Apple II), see: https://www.macrumors.com

• For those seeking current news, see: http://www.guardian.co.uk

• For sublime inspiration: https://www.youtube.com/watch?v=4xgx4k83zzc

• And, similarly … now for something completely different: https://www.youtube.com/watch?v=tWe3mbHxJ3I

Building an Essential Library (For students interested in pursuing organic synthesis as a career):

While nowadays most books can be accessed online through the UofT website, I often get asked for advice on what books would form the basis of an essential library for prospective and ongoing graduate students. In addition to my first choice book (the recommended text for this course), the list would comprise the following additional 4 books. You will notice that none of these are organic synthesis texts, but instead they focus on fundamental aspects of organic chemistry.

• *Advanced Practical Organic Chemistry* by John Leonard, Barry Lygo, and Garry Procter (ISBN-10: 1439860971 / ISBN-13: 978-1439860977). The essential desk reference of practical chemistry. A classic.

• *Modern Physical Organic Chemistry* by Eric V Anslyn and Dennis A Dougherty (ISBN-10: 9781891389313 / ISBN-13 : 978-1891389313). There are some other good choices for physical organic chemistry books, but this monster has it all.

• *Molecular Orbitals and Organic Chemical Reactions: Reference Edition* (or the more affordable Student Edition) by Ian Fleming (ASIN: B01MZ3QO2V). This book is available in pdf form through the UofT library.

• *Basic One- and Two-Dimensional NMR Spectroscopy*, 5th Edition, by Horst Friebolin (ISBN-10 : 9783527327829 / ISBN-13 : 978-3527327829). A translation from the German edition.

Advanced Level Organic Synthesis References:

With the exception of the first book listed here, which would be useful as reference for this course, these recommended organic synthesis books are intended more for graduate students:

• Warren, S.; Wyatt, P. *Organic Synthesis: The Disconnection Approach,* Wiley **2008**.

• Nicolaou, K. C.; Sorensen, E. J. *Classics in Total Synthesis*, Wiley **1996**.

• Kurti, L.; Czako, B. *Strategic Applications of Named Reactions in Organic Synthesis*, Academic Press, **2005**.

• Corey, E. J.; Cheng, X.-M. *The Logic of Chemical Synthesis*, Wiley, **1995**.

• Carreira, E. M.; Kvaerno, L. *Classics in Stereoselective Synthesis*, Wiley-VCH, **2009**.

Inspiration Outside Chemistry:

My three "Desert Island" reading choices. All three are journey books of a kind:

Alice in Wonderland, by Lewis Carroll with Illustrations by John Tenniel. The pinnacle of absurdist prose and poetry – practically prefect in every way.

The Odyssey by Homer. Which translation though?

One River by Wade Davis (1997) (ISBN-13: 978-0684834962 / ISBN-10: 0684834960). This book tells the story of a personal hero of mine, the ethnobotanist Richard Evan Schultes, and his explorations in the Amazon rainforest.

Zoom Connection Details:
CHM342 Lectures (Mon / Weds 1:10 – 2:00 pm)
Join Zoom Meeting
https://utoronto.zoom.us/j/93642874401

Meeting ID: 936 4287 4401
Passcode: 208893
One tap mobile
+16473744685,,93642874401#,,,,,,0#,,208893# Canada
+16475580588,,93642874401#,,,,,,0#,,208893# Canada

Dial by your location
+1 647 374 4685 Canada
+1 647 558 0588 Canada
+1 778 907 2071 Canada
+1 438 809 7799 Canada
+1 587 328 1099 Canada
+1 613 209 3054 Canada
+1 720 928 9299 US (Denver)
+1 786 635 1003 US (Miami)
+1 971 247 1195 US (Portland)
+1 206 337 9723 US (Seattle)
+1 213 338 8477 US (Los Angeles)
+1 253 215 8782 US (Tacoma)
+1 267 831 0333 US (Philadelphia)
+1 301 715 8592 US (Germantown)
+1 312 626 6799 US (Chicago)
+1 346 248 7799 US (Houston)
+1 470 250 9358 US (Atlanta)
+1 470 381 2552 US (Atlanta)
+1 602 753 0140 US (Phoenix)
+1 646 518 9805 US (New York)
+1 646 558 8656 US (New York)
+1 651 372 8299 US (St. Paul)
+1 669 219 2599 US (San Jose)
+1 669 900 6833 US (San Jose)
Meeting ID: 936 4287 4401
Passcode: 208893
Find your local number: https://utoronto.zoom.us/u/aeH6CcQiN3

Join by SIP
93642874401@zoomcrc.com

Join by H.323
162.255.37.11 (US West)
162.255.36.11 (US East)
69.174.57.160 (Canada)
Meeting ID: 936 4287 4401
Passcode: 208893

Join by Skype for Business
https://utoronto.zoom.us/skype/93642874401

Zoom Connection Details:
CHM342 Student Hours (Weds 9:30–10:30 am & Thurs 4:30–5:30 pm)
Join Zoom Meeting
https://utoronto.zoom.us/j/96614736806

Meeting ID: 966 1473 6806
Passcode: 220945
One tap mobile
+16475580588,,96614736806#,,,,,,0#,,220945# Canada
+17789072071,,96614736806#,,,,,,0#,,220945# Canada

Dial by your location
- +1 647 558 0588 Canada
- +1 778 907 2071 Canada
- +1 438 809 7799 Canada
- +1 587 328 1099 Canada
- +1 613 209 3054 Canada
- +1 647 374 4685 Canada
- +1 786 635 1003 US (Miami)
- +1 971 247 1195 US (Portland)
- +1 206 337 9723 US (Seattle)
- +1 213 338 8477 US (Los Angeles)
- +1 253 215 8782 US (Tacoma)
- +1 267 831 0333 US (Philadelphia)
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Zoom Connection Details:
CHM342 Tutorials (Mon 2:10–3:00 pm & Weds 10:10–11:00 am)
Join Zoom Meeting
https://utoronto.zoom.us/j/95096003550

Meeting ID: 950 9600 3550
Passcode: 851475
One tap mobile
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+15873281099,,95096003550#,,,,,,0#,,851475# Canada

Dial by your location
- +1 438 809 7799 Canada
- +1 587 328 1099 Canada
- +1 613 209 3054 Canada
- +1 647 374 4685 Canada
- +1 647 558 0588 Canada
- +1 778 907 2071 Canada
- +1 651 372 8299 US (St. Paul)
- +1 669 219 2599 US (San Jose)
- +1 669 900 6833 US (San Jose)
- +1 720 928 9299 US (Denver)
- +1 786 635 1003 US (Miami)
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- +1 646 558 8656 US (New York)

Meeting ID: 950 9600 3550
Passcode: 851475
Find your local number: https://utoronto.zoom.us/u/aXBI9bWfH

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95096003550@zoomcrc.com

Join by H.323
162.255.37.11 (US West)
162.255.36.11 (US East)
69.174.57.160 (Canada)
Meeting ID: 950 9600 3550
Passcode: 851475

Join by Skype for Business
https://utoronto.zoom.us/skype/95096003550

Recognized Study Groups (RSG) are voluntary, peer-led study groups of 3 – 6 students enrolled in the same course. They're available for all A&S courses and are now fully online. In addition to supporting students' study habits and academic success, RSGs also encourage student participants to be socially connected with their peers. Last year, over 2,000 A&S students participated in RSGs for courses spanning all streams and class sizes.

Join or Lead a Recognized Study Group (RSG) for CHM342

By joining an RSG you will be able to:

- Meet weekly with a group of 3 – 6 classmates online*
- Increase your understanding of course material
- Prepare for tests and exams
- Learn valuable study skills
- Receive Co-Curricular credit

Looking for a leadership opportunity? You can lead an RSG for this course by facilitating your studygroup with the support and training of upper-year Arts & Science Students.

Register to Lead an RSG for your course by November 2nd
Register to Join an RSG for your course by November 16th

Find more information and register at: https://uoft.me/recognizedstudygroups or @sidneysmithcommons

Meet to Complete are online drop-in study sessions held exclusively for A&S undergrads. Offered multiple times per business day and led by trained A&S student-staff, these study sessions help students to stay motivated and productive by offering daily goal-setting and the opportunity to study alongside their A&S peers.

**you can choose to make an open RSG to meet new classmates, or register as an RSG leader with people you already know*