

CHM 136H: Introductory Organic Chemistry I
Course Syllabus: Winter 2021

THE TEACHING TEAM

Professor S. Browning: Course coordinator,
First third synchronous instructor.
cs.browning@utoronto.ca



Professor K. Quinlan: First third asynchronous
instructor & student hours.
kristine.quinlan@utoronto.ca



Professor M. Nitz: Middle third synchronous
instructor. mark.nitz@utoronto.ca



Professor J. D'eon: Middle third asynchronous
instructor & student hours.
jessica.deon@utoronto.ca



Dr. L. Perruchoud: Last third asynchronous
and synchronous instructor & student hours.
loise.perruchoud@utoronto.ca



Dr. S. Chulliparambil: Course administrator.
susha.chulliparambil@utoronto.ca



Dr. M. Morales: Organic chemistry lab
instructor.
marvin.morales@utoronto.ca



Dr. M. Staikova: Computational lab instructor.
mima.staikova@utoronto.ca



STUDENT OFFICE HOURS: (all times are EST)

Asynchronous instructors (via Zoom): Tuesdays, 3:00 – 4:00 pm and Wednesdays, 9:00 – 10:00 am

Practical (lab) instructors (via Zoom):

Dr. Morales (organic lab instructor)
(except Feb 9 and 11):
Tuesdays, 2:30 – 3:30pm
Thursdays, 2:30 – 3:30pm
Thursdays, 8:30 – 9:30pm

Dr. Staikova (computational lab instructor)
(Feb 2, 4, 9, 11, 23, and 25)
Tuesdays, 9:00 – 10:00 am
Thursdays, 9:00 – 10:00 am

II COURSE OVERVIEW

Welcome to CHM 136H – Introductory Organic Chemistry II! CHM 136H provides an introduction to the fundamental principles of structure, bonding and reactivity of organic molecules. It is designed for students who intend to follow a science program, primarily in the Life or Health Sciences. CHM135 is a prerequisite for this course. We believe that CHM 136H, along with CHM 135H, will prepare you well for other chemistry and life-science courses in later years. CHM 135H and CHM 136H are the recommended courses for those applying for entry into professional programs. CHM 135H and CHM 136H are also acceptable for admission to any of the undergraduate programs offered by the Department of Chemistry.

STUDENT LEARNING OUTCOMES

By the end of CHM 136H, students should be able to

- understand the relationship between molecular shape and current bonding models in organic chemistry;
- recognize the central role of molecular structure, including stereochemistry, in chemical properties, reactivity and reaction outcomes;
- apply the organic mechanism model to determine reaction pathways;
- identify patterns of reactivity of the alkene, alkyl halide or alcohol functional groups;
- propose effective routes for the transformations of organic molecules bearing the above functional groups as either reactants or products.

TEXTBOOK AND ONLINE HOMEWORK

The course textbook is "Organic Chemistry", 9th Edition by John McMurry. It is accompanied by a Student Solutions Manual and an online homework system. These three items are available together in digital format (known as OWLv2) or, alternatively, the textbook and solutions manual are available in print form, with an access code to the online homework system. Please note that previous editions of the course textbook (e.g. 8th, 7th, 6th) are NOT supported in CHM 136H. These resources are available through the UofT Bookstore. **Instructions for purchasing and registering these materials are available in your CHM136 LEC tile on Quercus.** The purchase of a molecular model kit is also **strongly** recommended. These are available for purchase from many vendors online.

III HOW THE COURSE IS ORGANIZED

CHM 136H (21S) is offered exclusively online, so there is **no in-person scheduled classroom time**. Each week, you will watch pre-recorded (asynchronous) videos, attend live (synchronous) problem-solving classes, practice with textbook problems in preparation for live (synchronous) tutorial sessions and complete online homework. In lieu of in-person laboratories this year, you will also complete five virtual experiments and meet synchronously five times to discuss those experiments over the course of the semester.

CHM 136H will introduce the fundamental principles of organic chemistry based on the following schedule:

Week	Some major concepts	Textbook sections	Sync session week of	Tutorial week of	Online homework due
1	Shape and drawing; bonding – hybridization	Ch. 1 (except 1.11)	Jan. 11	Jan. 18	Jan. 25, 9:00 PM EST
2	Bonding – resonance	Ch. 2.1 – 2.6	Jan. 18	Jan. 25	Feb. 1, 9:00 PM EST
3	Acid-base reactions; naming alkanes	Ch. 2.7 – 2.12 Ch. 3.1 – 3.4 Ch. 4.1	Jan. 25	Feb. 1	Feb. 8, 9:00 PM EST
4	Conformations	Ch. 3.5 – 3.7 Ch. 4.2 – 4.8	Feb. 1	Feb. 8	Feb. 22, 9:00 PM EST
5	Stereochemistry	Ch. 5 (except 5.3, 5.4, 5.10, 5.12); Ch. 25-2	Feb. 8	Feb. 22	Mar. 1, 9:00 PM EST
6	Organic reaction overview; alkene structure, reactivity	Ch. 6.1 (except 6.3, 6.8, 6.11); Ch. 7	Feb. 22	Mar. 1	Mar. 8, 9:00 PM EST
7	Alkene reactions and synthesis	Ch. 8.1 – 8.4, 8.12, 8.13	Mar. 1	Mar. 8	Mar. 15, 9:00 PM EST
8	Alkene reactions and synthesis	Ch. 8.5 – 8.9	Mar. 8	Mar. 15	Mar. 22, 9:00 PM EST
9	Organohalides	Ch. 10.1, 10.5 – 10.8	Mar. 15	Mar. 22	Mar. 29, 9:00 PM EST
10	Nucleophilic substitution reactions	Ch. 11.1 – 11.5	Mar. 22	Mar. 29	Apr. 5, 9:00 PM EST
11	Elimination reactions; aromaticity	Ch. 11.7– 11.10, 11.12 Ch. 15.1 – 15.5	Mar. 29	Apr. 5	n/a
12	IR spectroscopy; alcohol reactions and preparation	Ch. 12.5, 12.6, Ch. 17.1 – 17.7	Apr. 5	n/a	n/a

In your CHM 136H LEC section tile on Quercus, asynchronous videos and partial notes will be provided. As you learn from the videos, you should annotate these incomplete notes during each video with your own points and explanations. This activity should be completed **before** your weekly synchronous problem-solving class, in order to fully engage with the concepts discussed in this problem-solving class. You will join each synchronous class in Zoom, which can be accessed through your CHM 136H LEC course tile in Quercus. You can also access “office hours” via Zoom in the same manner. These “office hours” support your learning by giving you the opportunity to informally ask questions about the course content with your CHM136H instructors.

In addition to office hours, we will be using Piazza, a platform that facilitates online Q&A discussions. We highly encourage you to ask your content questions on Piazza where all students can benefit. The discussion board will be monitored but we expect students to help each other. Note that sharing solutions of any sort to the online homework problems is in violation of University of Toronto’s Code of Behaviour on Academic Matters (see Academic Integrity section of syllabus) and will be treated accordingly.

TUTORIALS

Tutorial sessions will meet each week synchronously starting on the week of January 18, 2021. **It is essential that you have enrolled in a tutorial section through ACORN/ROSI.**

The objectives of the CHM 136H tutorial are (i) to apply the concepts introduced in the videos and discussed in the synchronous problem-solving classes with instructors; (ii) to solve organic chemistry problems through open discussions with your Teaching Assistant (TA); and (iii) to give you an opportunity to ask questions in a smaller group environment than the large problem-solving classes. These smaller tutorial sessions will also provide a chance to meet your peers and build a community within the large course. When your CHM 136H TUT course tile shows up on Quercus, you will find the following:

1. a schedule of weekly assigned textbook questions;
2. a tutorial discussion board to introduce yourself and meet your peers;
3. links to your synchronous tutorial sessions with your tutorial Teaching Assistant (TA) via Zoom.

Before coming to your tutorial each week, prepare for them by completing that week’s assigned textbook questions. During your tutorial sessions, you will then practice applying these concepts to organic chemistry problems with your tutorial TA because **active student participation in problem-solving is linked to success in learning organic chemistry**. Your weekly tutorial session will also give you the opportunity to discuss, with your TA, any questions you may have concerning the exercises and assist you in understanding the course material. Online homework will then be due each Monday following each week’s synchronous tutorial sessions, starting on January 25, 2021.

Organic chemistry is an area of science that relies on problem-solving. **Practice** in problem-solving is necessary to master the material and be successful on the course assessments. The practice you will get in your tutorials (as well as the assigned textbook problems and online homework) will provide you an important opportunity for self-assessment and help you in keeping up with the course materials. You are the best judge of your own learning (provided you are honest with yourself).

PRACTICALS

PRA section codes ending in an odd number will begin the week of January 18, 2021 and will run on alternating weeks. PRA sections ending in an even number will begin the week of January 25, 2021 and run on alternating weeks. **It is essential that you have enrolled in a practical section through ACORN/ROSI.**

The purpose of the CHM136 Practicals ('labs') is to introduce you to some of the basic techniques of organic chemistry. Though online laboratories cannot provide a direct hands-on experience, they can teach invaluable lessons about practical work and safety and provide you with a good sense of what to expect in an actual laboratory setting. The laboratories in CHM136H include four "wet" organic experiments and one computational exercise. On your CHM136H PRA course tile on Quercus, you will find the schedule of CHM136 laboratory experiments for this term - one experiment is completed every two weeks. All of the materials, quizzes, online laboratory sessions and laboratory reports for each "wet" lab exists as a different module on your CHM 136H PRA course tile on Quercus.

Each "wet" experiment begins with reading the assigned materials, watching the relevant videos, answering pre-laboratory questions and completing a quiz. You will then have a synchronous online discussion session via BlackBoard with your laboratory Teaching Assistant (TA) where you will discuss the experiment and prepare for completing your written report for the experiment. Each "wet" laboratory finishes with the submission of this written report. An important complement to the online "wet" laboratories is a computational exercise that will give you practice in performing calculations on organic molecules to help understand their structures and properties.

More details about the Practicals, including how to access online Practical "office hours", i.e. synchronous Q&A sessions to discuss the Practical content with the CHM136 lab instructors and other students, are available on your CHM136 PRA course tile on Quercus. If you have questions about the "wet" laboratories, please contact Dr. Morales. If you have questions about the computational exercise, please contact Dr. Staikova.

IV GRADING SCHEME

Test 1: Tuesday, February 23, 7-8 pm EST: 15 or 20%*
Test 2: Tuesday, March 16, 7-8 pm EST: 15 or 20%*
Test 3: Tuesday, April 6, 7-8 pm EST: 15 or 20%*
Test 4: (during final assessment period, date TBD): 15 or 20%*
Practicals: 25%
Online homework: 5%

* your highest two of the four test scores will be weighted at 20%, your other two will be weighed at 15%; the four tests will therefore account for 70% of the final course grade

All tests in CHM 136H will be online, cumulative, multiple choice assessments.

Note: if you have a course conflict with the tests or you are writing in a time zone that makes it challenging to write at the test time, you will be given the opportunity to write at a different time. For students missing a test for a valid reason, the missed test mark will be calculated based on performance on the other three tests and class average of the other tests.

V COURSE POLICIES

E-mail

- For issues with **non-academic** problems, such as conflicts, illness and academic accommodations, please email Dr. Chulliparambil, the CHM136 course administrator.
- For course content questions, please ask during your tutorial or during the online student hours with instructors. Alternatively, post your question on the CHM136 discussion board. **Please keep in mind that email is not the mechanism to receive explanations of course material.**
- For Practical-related concerns, please ask during your Practical synchronous session or during Practical student hours with Dr. Morales or Dr. Staikova, the Practical instructors.
- When e-mailing the teaching team, please e-mail only **one** member of the teaching team. 😊 We will forward the e-mail to the correct person if necessary. Please use your UTORID email address, include your full name and student number and identify yourself as a CHM136 student. Keep the language and tone of your email professional.
- Please do not email your Practical or Tutorial Teaching Assistants.
- Most emails will receive a reply within 48 hours of being sent (except on weekends). Please keep your expectations reasonable as to the degree of detail that an email reply to your enquiry can realistically provide.

Course environment

- 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. U of T does not condone discrimination or harassment against any persons or communities.

Privacy policy

- Parts of 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 sources depending on the specific facts of each situation and are protected by copyright. Do not download, copy, or share any course or student materials or videos without the explicit permission of the instructor.

Absences

- Students who miss academic work for reasons entirely beyond their control must report their absence through the online Absence Declaration tool. The declaration tool is available on ACORN under the Profile and Settings menu. **In addition, you must submit, within one week, a written request for special consideration, explaining the reasons for missing the academic work and attaching appropriate documentation, to Dr. Chulliparambil, the CHM136 Course Administrator.**

VI 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 technical issues are possible. When working on an assignment (e.g. a laboratory report), students are responsible for scheduling enough time to allow for reasonable delays due to technical difficulties to be overcome - such issues therefore will not be acceptable grounds for deadline extensions. Particularly, maintaining up-to-date, independent backup copies of your work is strongly recommended to guard against e.g. hard-drive failures, corrupted files, lost computers, etc.

VII INSTITUTIONAL POLICIES AND SUPPORT

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 practical work:

1. using someone else's ideas or words without appropriate acknowledgement;
2. submitting your own work in more than one course without the permission of the instructor;
3. making up sources or facts;
4. obtaining or providing unauthorized assistance on any assignment;

On tests:

1. using or possessing unauthorized aids;
2. using someone else's answers or collaborating or discussing answers during an exam or a test;
3. posting questions or accessing answers from online tutoring websites;
4. misrepresenting your identity.

In academic work:

1. falsifying institutional documents or grades.
2. falsifying or altering any documentation required by the University.
3. sharing solutions to the online homework

The use of websites (such as Chegg.com or the course discussion board) to post quiz/term test questions or to post/access answers to questions is an academic offence under the University of Toronto's Code of Behaviour on Academic Matters. Alleged instances of this nature are forwarded to the Faculty of Arts & Science Student Academic Integrity office.

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 NEEDS

Students with diverse learning styles and needs are welcome in CHM136H. 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](#). **Please submit your Accessibility Services Letter of Academic Accommodations to Dr. Chulliparambil, the CHM136 course administrator, as soon as possible.**

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