

# ORGANIC CHEMISTRY I

## CHMB41H3

### LECTURE OUTLINE

**Due to the ongoing provincial health guidelines restricting large gathering and mandated social distancing, please be advised that CHMB41H will be delivered partially in person with online components for the FALL 2021 semester. Please read through this syllabus carefully, and check the course webpage on Quercus regularly for updates and announcements regarding course resources and assignments, deadlines, and other requirements.**

**This document contains important course information and should be kept in a safe place where you can refer to it throughout the semester.**

#### **Organic Chemistry I**

Welcome to CHMB41! Organic chemistry is an exciting subject with applications that are found all around us. This course is going to require some hard work, but I hope to make it worth your while by exposing you to some of the exciting aspects of this diverse field and relating the subject to your everyday lives. ***This course was never meant to be nor should it be fully online!*** However, due to these uncertain and challenging times, we have been forced to limit in-person offerings, and I have had to make concessions to the way the course is delivered, which is not at all optimal for either the instructor or you as the student. Thus, I hope we can take advantage of the minimal in-person components we have been granted, and make the best of the online components, as you have learned to adapt to over the past year and a half! Please take a few minutes to read through this document. It contains important information which will help ensure you have all the tools you'll need to succeed in this course.

CHMB41 provides an introduction to the electronic structure, nomenclature, and bonding in organic compounds, and studies the mechanisms of various chemical transformations, such as substitution, elimination and radical reactions of several classes of organic compounds. The stereochemistry, or 3-dimensional arrangement of atoms in organic molecules, and various methods for stereochemical representation will also be discussed in detail.

**Students enrolled in CHMB41H must have previously successfully completed CHMA10H and CHMA11H. If you do not have these prerequisites, you will be removed from the course by the instructor. If you have any exceptions to this requirement, is imperative you see the instructor to discuss your situation; otherwise I cannot accept any responsibility for your performance and outcome in the course.**

#### **Lectures:**

Lectures are partially in person and those who have registered for section LEC01 can attend classes in person, and the remainder of the class in section LEC70 will be provided with recordings of the live lectures, to watch asynchronously. Please watch these recordings on the days they are released, as they will be removed after two weeks, so make sure you keep up and do not procrastinate!!

**Classes start TUES SEPT 7th. Last day of classes will be FRI DEC 3<sup>rd</sup>.**

**Lecturer:** Dr. Shadi Dalili (EV-562)

**Lab Coordinator:** Dr. Shadi Dalili (EV-107 or EV-127) during days that labs are running in person.

**Email:** [sh.dalili@utoronto.ca](mailto:sh.dalili@utoronto.ca)

**In person Office Hours (EV 562):** starting Sept 14<sup>th</sup>  
Tues 11:30am-12:30pm  
Thurs 12:30-1:30pm

**Virtual Office Hours (MS teams or Zoom):** starting Sept 15<sup>th</sup>  
Wed 9-10pm

Please join via Blackboard Collaborate at the designated time and day through our Quercus webpage. Although text chat is possible, it is much easier and faster to communicate if you have a mic and speakers set up. There is also a whiteboard to write/draw on and an option to share files and screens.

**Course Website:** CHMB41 maintains a Quercus web space which archives a variety of course-related information including: class announcements, lecture slides, extra resources, contact information and links to some useful outside resources. In addition, class emails will regularly be sent via Quercus. ***In order for you to receive these emails, you must have a valid "@utoronto.ca" email account registered with ROSI/ACORN.***

**To login,** go to: <https://q.utoronto.ca> and login in with your UTORid. Click on the link for our course (CHMB41H LEC01 Fall 2021). The support site is <https://qinfo.utoronto.ca>

***Discussion Board:***

An online discussion board will be maintained through Quercus. This online space will provide you with a place to post and answer questions related to the course material. You may post anonymously, or as yourself. The forums will be monitored by me (and/or a teaching assistant) to ensure that all questions are answered accurately. The posts will be checked periodically at least twice a week. However, ***the main purpose of the Discussion board is for students to engage with each other and answer each other's questions!*** So please be active and participate by posting and answering questions in the different forums at least once a week.

In addition, frequently asked questions (with their answers) may also be posted here so be sure to check in periodically.

***Please note: Posts which contain answers/solutions to weekly homework assignments for tutorials, labs, or any other course material are not permitted and will be removed promptly.***

**Learning Outcomes for Course:** By the end of this course, students will be able to:

- a) Identify and name major classes of organic compounds
- b) Describe and distinguish between different types of bonding and their effect on physical properties of molecules
- c) Give examples of different types of nucleophiles and electrophiles and show electron movement in reactions using curved arrows
- d) Predict major and minor products of reactions based on reaction data and explain why/how they are formed
- e) Compare and contrast thermodynamic versus kinetic products and conditions for formation of each
- f) Classify reactions as substitution, elimination, addition, etc and choose/distinguish between factors and conditions that favor one type versus others
- g) Convert 2-dimensional structures into 3-dimensions and determine R or S stereochemistry for chiral compounds
- h) Distinguish between enantiomers, diastereomers, meso and other forms of isomers
- i) Anticipate and validate the stereochemical outcome of reactions involving stereocenters

- j) Propose and design syntheses of given compounds using retrosynthetic analysis
- k) Draw mechanisms for various chemical transformations, such as bond breaking, bond formations, proton and electron transfers, etc

**Textbook:** *Organic Chemistry: Mechanistic Patterns 2<sup>nd</sup> Edition* by William Ogilvie, et al.

We will be using **Top Hat** to access the digital textbook: *Organic Chemistry 2e*

If you already have a Top Hat account, you can go to <https://app.tophat.com/e/302558/> to be taken directly to our course digital textbook.

If you are new to Top Hat:

Go to <https://app.tophat.com/register/student>

Search for our course textbook with the following join code: **302558**

Your Top Hat textbook is not only easy to use, it is fully mobile too! For more information about the interactive features in the textbook, click here: <https://success.tophat.com/s/article/Student-Using-Your-Textbook>

The price will be \$65 for the text and \$38 for the Top Hat 1-year subscription. If you already have a Top Hat classroom subscription from another course, you don't have to pay for it again. So, after the free trial period, you will be prompted to pay \$65 plus tax for the textbook, not \$99 which is for both together if you are a first time subscriber and account holder in TopHat.

Should you require assistance with Top Hat at any time please contact their Support Team directly by way of email ([support@tophat.com](mailto:support@tophat.com)), the **in-app support button**, or by calling **1-888-663-5491** (9am-9pm ET). Specific user information may be required by their technical support team when troubleshooting issues.

**Chapters:** 1-8, 11

**Recommended:** Molecular Modelling Kit

You are *strongly encouraged* to purchase a molecular model kit from the UTSC bookstore or other bookstores such as Indigo or Chapters. You can also purchase them through Amazon for \$25.95 ([https://www.amazon.ca/Molecular-pieces-Advanced-Chemistry-Instructional/dp/B01NCU854K/ref=sr\\_1\\_1\\_sspa?crd=1GO6C51DREVCF&dchild=1&keywords=molecular+model+kit&qid=1595354012&srefix=molecular%2Caps%2C179&sr=8-1-spons&pvc=1&spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUEzQTdGRjFITzdQT0ZUJmVuY3J5cHRIZElkPUEwNTc4MTY1M1RROFBPSTVBNDdZSiZlbnNyeXB0ZWRBZEIkPUEwMDkzMDAyTjhUTzVNNDMyUjE5JndpZGldE5hbWU9c3BfYXRmJmFjdGlvbj1jbGlja1JlZGlyZWV0JmRvTm90TG9nQ2xpY2s9dHJlZQ==](https://www.amazon.ca/Molecular-pieces-Advanced-Chemistry-Instructional/dp/B01NCU854K/ref=sr_1_1_sspa?crd=1GO6C51DREVCF&dchild=1&keywords=molecular+model+kit&qid=1595354012&srefix=molecular%2Caps%2C179&sr=8-1-spons&pvc=1&spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUEzQTdGRjFITzdQT0ZUJmVuY3J5cHRIZElkPUEwNTc4MTY1M1RROFBPSTVBNDdZSiZlbnNyeXB0ZWRBZEIkPUEwMDkzMDAyTjhUTzVNNDMyUjE5JndpZGldE5hbWU9c3BfYXRmJmFjdGlvbj1jbGlja1JlZGlyZWV0JmRvTm90TG9nQ2xpY2s9dHJlZQ==))

These will become an invaluable tool as the course progresses since several key topics require visualization and manipulations of compounds in three-dimensions.

**IN PERSON Labs:**

**Please note that labs will be running at limited capacity IN PERSON. There is no option for fully online labs. Due to capacity restrictions, TWO of your labs will be run asynchronously online. More information will be provided through our Quercus course website and in class announcements. ALL OTHER LABS WILL BE IN PERSON.**

Chemistry is a practical science, making hands-on laboratory experience an integral part of any chemistry course. In normal semesters, students would be required to pass five, in-person labs, in order to pass the course. This semester, due to capacity restrictions for physical distancing measures, three of the five labs can be performed in person, but two others have been converted into an online format, and ***students must still complete and pass all five labs in order to pass the course.*** I, along with a team of talented and dedicated students and lab techs, have tried to create effective learning experiences through these online labs by incorporating videos, images, and detailed instructions on all the techniques and procedures. However, we understand that nothing can fully replace actually performing the procedures, holding the glassware, and manipulating the instruments in person.

We recognize the necessity of providing in-person hands-on instruction to students carrying forward with chemistry in their programs, so it is imperative that you attend all the in person labs, as you cannot pass the course by only completing the two online labs.

**DUE TO CO-HORTING AND CAPACITY LIMITS, WE CANNOT PROVIDE ANY MAKEUP LABS FOR MISSED LABS – PLEASE ATTEND YOUR OWN REGULARLY SCHEDULED LAB ON THE DAYS AND TIMES YOU HAVE REGISTERED FOR.**

**Note:** *Students who attempted this course in a prior semester (2018-2020) and successfully completed the lab portion of the course IN PERSON may choose to have their lab grades from the prior semester used for this Fall 2021 semester. This will exempt them from needing to complete the lab components associated with the Fall 2021 semester. Contact Dr Dalili if you would like to make use of this option.*

### **Labs Schedule:**

The lab schedule for the first experiment based on practical numbers and day of the week are listed below; the schedule repeats **\*\*every 4 weeks\*\*** for the subsequent experiments, so please keep track of your week and day that you are required to be in the lab.

Please see a tentative schedule below for the **FIRST experiment based on lab section number.** The 2<sup>nd</sup> and 3<sup>rd</sup> in-person experiments will follow the same pattern.

Practical #	Day of the Week	Date	Expt #
1, 5, 9, 13	Mon	Sept 13	1
2, 6, 10, 14	Mon	Sept 20	1
3, 7, 11	Mon	Sept 27	1
4, 8, 12	Mon	Oct 4	1

Practical #	Day of the Week	Date	Expt #
17, 21, 25, 29	Tues	Sept 14	1
18, 22, 26, 30	Tues	Sept 21	1
19, 23, 27	Tues	Sept 28	1
20, 24, 28	Tues	Oct 5	1

Practical #	Day of the Week	Date	Expt #
33, 37, 41, 45	Fri	Sept 17	1
34, 38, 42, 46	Fri	Sept 24	1
35, 39, 43	Fri	Oct 1	1
36, 40, 44	Fri	Oct 8	1

**\*\* please note that this may change to *every 3 weeks or less* depending on attrition rates and numbers in the labs, so you should be prepared for your lab section to be combined with others at the same day and time if numbers allow, so we can fit more in person labs into the schedule.**

**The laboratory component of CHMB41H is compulsory. In order to pass the CHMB41H course, students must pass the lab component of the course.**

**Changes to lab sections:** No lab changes are allowed as we are VERY limited in capacity due to physical distancing measures, unless there is a schedule conflict with another LIVE/SYNCHRONOUS course or lab, for which a current timetable and course instructor verification must be submitted.

You will not be allowed to miss a lab on the same day of a CHMB41 midterm and/or submit any late work pertaining to the missed lab.

### **Laboratory Rules:**

**Lab Manual:** The experiments, lab schedule, and appendix material for the lab will be provided electronically through Quercus under the “laboratory materials” section. Note, you may **not** use a lab manual from a previous year as many of the experiments are changed every year. It is imperative that you read and keep copies (either electronically or printed form) of all the sections of the lab manual, as the lab test and quizzes will cover material from all sections. You are responsible for printing the data sheets for each experiment to complete and submit to your TA. Marks will be deducted for failing to submit your datasheets within the deadlines set on Quercus.

**Lab Safety Videos:** Safety in the laboratory is an extremely important element in the chemistry program. You will be required to complete the WHMIS online course accessible through the Quercus website using your UTORid. It will be different from the course you had to take for CHMA10H3 or CHMA11H3. Instructions on how to access the course will be posted on the CHMB41H Quercus site.

All students registered for a lab section MUST watch the WHMIS training videos on Quercus and pass the quiz pertaining to the videos BEFORE being allowed to work in the labs. In order to access the WHMIS training video and quiz, follow the steps below:

1. Login to the Quercus portal using your UTORid and access the WHMIS course under “My Courses” in your Quercus portal
2. You will be expected to watch the video (approximately 30 minutes long). Once you have watched the video content, take the quiz. PLEASE NOTE YOU MUST OBTAIN AN 80% OR HIGHER ON THE QUIZ IN ORDER TO PASS IT
3. Submit your completed quiz, with your name, student number and score (you can do a screenshot of your web page) to your lab TA AT LEAST 24 hours prior to your first lab period.
4. Any labs missed due to handing in the safety quiz data late CANNOT be made up and you will forfeit the marks/credit for those labs.
5. Students who have not completed the WHMIS safety course will not be allowed to participate in the lab.

### **ONLINE Tutorials:**

**Due to COVID-19 restrictions, all tutorials will be delivered remotely through the Quercus course webpage. Please check the course modules for each week’s tutorial materials and your TA’s weekly announcements.**

**ALL tutorial** sections begin week of **September 13<sup>th</sup>, 2020**, with the **FIRST** tutorial being held on **THURSDAY SEPT 16<sup>th</sup>**.

Tutorials take place **EVERY OTHER WEEK** (unlike labs which are every 4 weeks), run by TAs moderating problem solving and discussions through MS Teams or Zoom sessions. The tutorial component of CHMB41H is compulsory, and it is expected that all students actively participate and engage with each other and their TAs for problem solving. Each tutorial will include a graded worksheet and/or quiz. The tutorial materials will be provided online through our Quercus course website. The following is a tentative tutorial schedule:

<b>Date</b>	<b>Tutorial Material</b>	<b>Content</b>
Sept 16	Worksheet 1	Chapter 1/2
Sept 30	Worksheet 2 + Quiz 1	Chapter 2/3
Oct 21	Worksheet 3 + Quiz 2	Chapter 4/5
Nov 4	Worksheet 4 + Quiz 3	Chapter 6/7
Nov 18	Worksheet 5 + Quiz 4	Chapter 8
Dec 2	Worksheet 6 + Quiz 5	Chapter 11

**Changes to tutorial sections:** Any changes to your tutorial section must be communicated to the course instructor no later than Mon Sept 7<sup>th</sup>.

**Policy on missed Labs/Tests/Tutorials:** If you miss any course work for any legitimate reason, please email Dr Dalili within 24 hours with appropriate documentation to verify the reason for your absence. During the pandemic, the university is not requiring students to submit a verification of illness (VOI) form unless there are exceptional circumstances necessitating additional documentation. Instead, students are being asked to use the Absence Declaration tool available through ACORN (<https://www.acorn.utoronto.ca/>). Until the university policy changes, these self-declarations will be deemed acceptable for all medically related absences.

With this Absence Declaration, the grade for missed term work can be redistributed to the other related work.

THERE ARE NO MAKEUPS FOR LABS MISSED. For labs, please ***note that students cannot miss more than one lab and pass the lab portion of the course***, which is a requirement for passing the course itself.

THERE ARE NO MAKEUPS FOR TUTORIALS MISSED. You can drop your THREE lowest grades from the total, so that you may miss up to 3 tutorials without penalty (no more than 1 with a quiz)

***Please note that if you miss the Final Exam, you must petition the Registrar's Office to write a make-up exam in the next formal exam period.*** Check the UTSC Calendar for instructions and deadlines.

**E-mail policy:**

- Use @utoronto.ca account
- If Yahoo or Hotmail used follow instructions below to prevent email ending up in junk mail:
  - put CHMB41 in the subject line followed by the reason for the email
  - use a greeting of some kind - NOT "Hey"
  - sign your first and last name
  - please include your student number after your name
- Student emails will be replied to within 24 hours (M-F) provided that the above protocol is used.

**A note on email content:** Please do not email questions regarding the lecture material/assigned reading/suggested problems. These should be posted on the discussion board (see above) so that others can

benefit from the responses provided. Questions on the lab and tutorial materials should be directed first to your TA. If you still do need to, you can contact the instructor for lab and tutorials questions.

**Extra Resources:**

a) *Facilitated Study Groups*

In this course, we will be offering Facilitated Study Groups (FSGs) through CTL in an online format. Facilitated Study Groups (FSGs) are weekly study sessions open to all students taking CHMB41, and who want to improve their understanding of course material, improve their study techniques, and improve their grade. Attendance is voluntary. In FSGs you'll compare notes, discuss important concepts, develop study strategies, and prepare for exams and assignments on course material. Course material is NOT re-lectured. FSGs are lead by a trained facilitator who has previously taken the course. Research shows that students who attend FSGs regularly can achieve better grades. A survey will be taken during the first week of class to determine the best days and times for most students, and then the FSGs will start (probably the second or third week of class). Those days, times, and session locations will be announced in class, posted on our course page, and at <http://ctl.utsc.utoronto.ca/home/fsg/>. Attend as many sessions as you want!

b) *Center for Teaching and Learning*

The Centre for Teaching and Learning (CTL) is available to support you in your writing, English language, math and stats needs. It offers online tutoring and consultations, and has a variety of helpful online resources. For more information, please visit CTL's Academic Learning Support site at <http://uoft.me/AcademicLearningSupport>.

**Methods of Evaluation:** The grading scheme for the course is shown in the table below:

Term Test 1*	15%	Early to mid-Oct
Term Test 2*	15%	<i>Cumulative</i> Mid to late-Nov
Final Exam	30%	Entire course work
Tutorials (5 x 2%) + 5% **	15%	Tutorial worksheets and quizzes
Laboratory (5 x 3%) + 5% ***	20%	See lab manual online for dates/evaluation
Experiential Learning Project	5%	Details to be announced in class

\* there may be a makeup for term test with appropriate documentation IF number of students necessitates- otherwise the percentage will be *added to the final exam*.

\*\* 10% for worksheets and 5% for quizzes; 3 tutorials may be missed without penalty (no more than 1 with a quiz), thus you can drop your 3 lowest marks from the overall tutorial mark

\*\*\* lab component must be passed in order to pass course; each lab is worth 3%, and 5% of the lab is a written lab test included as part of the final exam

**NOTE: In order to pass the course, you MUST pass the laboratory component and at least one of the midterms and final exam (2 out of 3 assessments). If you miss one of the two midterms, you MUST pass the midterm written AND the final exam in order to pass the course.**

**Term Tests and Final Exam:** Due to the ongoing physical distancing and large gathering restrictions, we will have to hold all tests and final exams online until further notice. If restrictions are lifted, we may be able to hold in-person tests and exams, depending on the campus and university policies. For now, all tests and the final exam will be given online through our Quercus course website and announcements for dates and times will be given in class and through Quercus.

**Online Grades:**

Individual grades will be posted on Quercus as they become available. Please check these periodically to make sure that the posted grades match your own records. Any discrepancy should be reported immediately to the instructor or the lab coordinator, as appropriate.

**Please note:** Final exam marks WILL NOT be posted on Quercus.

**Marked Term Tests** - an announcement will be made when tests are marked. You have one week to check your test with Dr Dalili, during any office hours, or other announced times. Re-marking claims will only be considered for one week after the announcement has been made. Claims must be accompanied by a written statement, outlining the reasons (referenced, if necessary) to support your claim for extra marks.

***AccessAbility:*** Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach us and/or the AccessAbility Services Office as soon as possible. The UTSC AccessAbility Services staff (located in S302) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations (416) 287-7560 or [ability@utsc.utoronto.ca](mailto:ability@utsc.utoronto.ca). The sooner you let us know your needs, the quicker we can assist you in achieving your learning goals in this course.

***Cell Phones:*** During all live course components, please turn off your cell phones to avoid disruption of the class. If circumstances warrant use of your cell phone and you must receive an emergency call, please inform the instructor in advance at the beginning of the session, and excuse yourself from class to receive the call.

***Academic Calendar:*** Further information about academic regulations and course withdrawal deadlines can be found in the UTSC Calendar. You are encouraged to read this material.

***Centre for Teaching and Learning:*** If you need assistance with effective writing skills, study skills, exam preparation, note taking, or time management, free workshops and advice are available from the Center for Teaching and Learning, which can be reached at: [http://www.utsc.utoronto.ca/~ctl/Student\\_Support/index.html](http://www.utsc.utoronto.ca/~ctl/Student_Support/index.html)

***Computer Use:*** Ethical use of University computers is expected at the University of Toronto Scarborough. Guidelines are set out in the UTSC calendar. It is expected that the equipment and/or resources accessed in the UTSC library and the computer labs are to be used for academic research, assignments, and course activities only.

***Academic Integrity:***

Academic integrity is one of the cornerstones of the University of Toronto. It is critically important both to maintain our community which honours the values of honesty, trust, respect, fairness and responsibility and to protect you, the students within this community, and the value of the degree towards which you are all working so diligently.



According to Section B of the University of Toronto's Code of Behaviour on Academic Matters <http://www.governingcouncil.utoronto.ca/policies/behaveac.htm> which all students are expected to know and respect, it is an offence for students to:

- To use someone else's ideas or words in their own work without acknowledging that those ideas/words are not their own with a citation and quotation marks, i.e. to commit plagiarism.
- To include false, misleading or concocted citations in their work.
- To obtain unauthorized assistance on any assignment.
- To provide unauthorized assistance to another student. This includes showing another student completed work.
- To submit their own work for credit in more than one course without the permission of the instructor.
- To falsify or alter any documentation required by the University. This includes, but is not limited to, doctor's notes.
- To use or possess an unauthorized aid in any test or exam.

There are other offences covered under the Code, but these are by far the most common. Please respect these rules and the values which they protect. Offences against academic integrity will be dealt with according to the procedures outlined in the Code of Behaviour on Academic Matters.

The most serious offence is impersonation of another student. This applies to all assessment components for the term work.