

**ORGANIC CHEMISTRY I
CHMB41H3
LECTURE OUTLINE**

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

Welcome to CHMB41HS: 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. 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.

This course includes a four hour laboratory every other week. It is a prerequisite for almost all other further chemistry and human biology and biochemistry courses at the University of Toronto at Scarborough campus. **Students enrolled in CHMB41H must have previously successfully completed CHMA10H & CHMA11H. If you do not have these prerequisites, it 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:

Tues,Thurs, Fri 1-2pm SW-128
Classes start Tues, January 7th, 2014. Last day of classes will be Fri, April 4th, 2014.

Clickers:

To encourage participation and engagement with the material in class, you are required to have a clicker (iClicker) which can be purchased from the bookstore so that you can participate in the questions that will be presented periodically through the lecture. You will have the option of selling them back to the bookstore at the conclusion of your courses (at a discounted rate).

Registering your iclicker:

To register your iClicker, visit this website:

<http://www.iclicker.com/registration/>

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

To login, go to: <https://portal.utoronto.ca/webapps/portal/frameset.jsp>. Click on “log-in to the portal” at the top left. Login using your UTORid username and password (same as what’s used for your UTORmail). Under the “My Courses” box (top right), click on the CHMB41 link.

Discussion Board:

An online discussion board will be maintained through Blackboard. 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 times during which the posts will be checked will be announced in class during the semester. 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 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 chiral structures into 3-dimensions and determine *R* or *S* stereochemistry
- 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

Textbook: Organic Chemistry (7th Edition), Paula Yurkanis Bruice (same text as used in CHMB42H, CHMC47H, and sometimes CHMC41H & CHMC42H, to make it cost effective)

The text, a study guide, solutions manual and Mastering Chemistry Online Homework access code will be available, as a package through the UTSC bookstore.

If you already have a textbook and only need the online homework access code, you can purchase the Mastering Chemistry code from the publisher website or through the bookstore. The publisher's web site at <http://www.pearsoncanada.ca/> also includes media materials, which supplement the text.

Chapters: 1-13 (excluding chapter 12)

Recommended: Study Guide and Solutions Manual

Molecular models:

You are *strongly encouraged* to purchase a molecular model kit from the UTSC bookstore or other bookstores such as Indigo or Chapters. These will become an invaluable tool as the course progresses since several key topics require visualization and manipulations of compounds in three-dimensions. There is also a molecular modelling lab as part of the lab component.

Online Homework: <http://www.masteringchemistry.com/>

The online homework system is Mastering Chemistry supported by Pearson Education. Please access the site using the website provided above, and register yourself using the access code in your textbook package.

Please use your **student number as your ID** (*NOT* your email address or UTORid), otherwise I will not be able to keep track of your grades and they will be lost in the system.

Please DO NOT register on the site more than once, otherwise I cannot keep proper track of your online homework grades and you will lose the 5% credit you can potentially receive for the online homework.

For instructions on registration and how to use the site, please access: <http://www.masteringchemistry.com/site/tours/getting-started.html> and read the one-page guide on registration.

To access the course, please use the **course ID: CHMB41HWINTER2014.**

The online homework counts for 5% of your overall course grade and can make a huge impact not only on your grade, but also understanding of the concepts and gaining extra practice with the material. Therefore, it is imperative that you attempt these problems individually once you have reviewed the lecture notes and text.

Online Homework schedule: The problem sets will be released every Friday evening after each chapter is finished and they are due the following Friday at midnight.

The assignments will be equally weighted and recorded as a percentage. They will cover the material discussed in class.

Late assignments will not be graded

In the final calculation for the Homework grade, the lowest mark will be dropped.

Extra Resources:

a) Facilitated Study Groups

In this course, we will be offering Facilitated Study Groups (FSGs) through CTL. 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) Lab Skills Seminar

An optional seminar will be held each week during which the upcoming lab will be discussed. New techniques will be demonstrated, including a review of how to set up the relevant glassware or any other apparatus to be used. Background theory for the lab will be discussed, including a review of any relevant reaction mechanisms. The time(s) and location(s) for these seminars will be announced in class and posted on Blackboard.

c) Chem Aid Center

Volunteers will be available in the ChemAid Center in SW-221 to tutor and help you with any questions on course material. These are students who have taken several organic chemistry courses have excelled in these courses. The days and times of their availability will be announced in class and on Blackboard once the schedules are finalized.

Laboratory Schedule:

Odd numbered labs Sections **PRA0001, PRA0003** etc. (**week 1 students**) begin labs week of **January 13th, 2014**. **Even numbered** labs Sections **PRA0002, PRA0004** etc. (**week 2 students**) begin labs week of **January 20th, 2014**.

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: Any changes to your lab section can be made through ROSI *up until Fri Jan 10th*. After this date, the labs will be closed and no more changes can be made. IF you cannot make a lab section change due to it being full, you have to find another student

willing to switch days with you, as the maximum capacity in each lab section is 16 students. Lab sections can be changed after the deadline only by contacting the lab coordinator and providing proper documentation for the change (i.e. lab/course conflicts shown on timetable, etc)

Medical Notes:

If you are absent: report it to your TA by phone or e-mail. Hand in your medical note in your next class or ASAP.

The medical note should:

- indicate clearly the degree of incapacitation on academic functioning; PLEASE NOTE **THAT ONLY THE FIRST 3 DEGREES (SEVERE, SERIOUS AND MODERATE) WILL BE ACCEPTED FOR RESCHEDULING OF MAKEUP LABS; MILD AND NEGLIGIBLE DEGREES WILL NOT BE ACCEPTABLE FOR LAB RESCHEDULING**

- if possible, state the illness and

- it MUST have the practitioner's stamp with address and telephone number

Documentation should be provided *within 48 hours* so that a makeup lab can be scheduled, provided that room can be found in another lab section. *If no reason for your absence is made, a mark of zero will be given for that lab. Missed labs can only be made up **within 1 week** of the missed lab and if there are further conflicts or a student misses a makeup lab, no more makeup opportunities will be provided and there will be a mark of zero recorded for that lab.*

Laboratory Rules

Please arrive *on time* for your labs and come *prepared*. The experiments are designed such that a *well-prepared* student can complete the experiment in the allotted time. If you haven't read over the procedure ahead of time and made sure that you understand each step, it will likely be difficult for you to finish your work on time. If you do not have the proper lab notebook writeup and preparation, you will not be allowed to perform the lab.

Lab Manual: This must be purchased **from** the UTSC Bookstore (\$10). Note, you may **not** use a lab manual from a previous year as many of the experiments are changed every year.

Lab Safety Videos: All students registered for a lab section MUST watch the WHMIS training videos put on the course website on Blackboard 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 Blackboard portal using your UTORid and access the CHMB41H course site
2. click on Community in the toolbar on the top right, click on Environmental Health and Safety, search for WHMIS in the "Search Catalog" section, then click on EHS005, then complete EHS005- WHMIS training
3. Once you have watched the course content, take the quiz. PLEASE NOTE YOU MUST OBTAIN AN 80% OR HIGHER ON THE QUIZ IN ORDER TO PASS IT

4. Email your completed quiz, with your name, student number and score (you can do a screenshot of your Blackboard page) to your lab TA AT LEAST 24 hours prior to your first lab period. Alternatively, you can print out your score on the quiz, with your student number and name on it, and bring to give to your TA on the first day of your lab; NOTE: IF YOU FAIL THE QUIZ OR FAILURE TO PROVIDE PROOF OF A PASS ON YOUR ONLINE SAFETY QUIZ MEANS YOU WILL NOT BE ALLOWED TO DO ANY LABS UNTIL YOU PROVIDE PROOF OF YOUR PASS TO YOUR LAB TA
5. 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.

Lab Coats: They are required. They may be purchased from most Hardware Stores or from the UTSC Bookstore.

Safety Glasses: Safety glasses must be worn at all times in the lab. Students who do wear glasses should purchase a pair of goggles which must be worn over their glasses at all times. **Contact lenses must not be worn in the laboratory. NO STUDENT WILL BE ALLOWED TO WORK IN THE LABORATORY UNLESS HE/SHE IS WEARING APPROVED EYE PROTECTION.**

Be punctual: The introductory explanations for the experiments and/or quizzes will begin at 10 minutes past the hour.

Be prepared: Each student will be expected to have a good knowledge of the assigned experiment **before** entering the laboratory. **It will be helpful to prepare a point-form pre-lab procedure before coming to the lab.**

Be present: Your term mark from the lab is worth a large percentage of your mark. It is based not only on the reports which you submit, but also on your ability to answer, with competence, the questions of the demonstrators and instructor.

- **PLEASE NOTE that students will not be allowed to re-schedule or miss labs on the days of any term test or exam. This is a Chemistry Discipline Policy.**

E-mail policy:

- Use UTSC 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 material should be directed first to your TA. If you still do need to, you can contact the instructor for lab questions.

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

Term Test*	25%	Mid to late-February
Final Exam	42%	Entire course work
Online homework	5%	Lowest mark will be dropped from final grade
Clicker Participation	3%	See clicker section of syllabus for full mark breakdown
Laboratory**	25%	See lab manual for dates/evaluation
Extra Credit Project	1.5%	Details to be announced in class

* If you have appropriate medical documentation for a missed midterm, there will be a makeup midterm given AT MY OWN CONVENIENCE. THUS, IF YOU HAVE TO MISS A CLASS OR RESCHEDULE A LAB TO WRITE THE MAKEUP MIDTERM, YOU WILL HAVE TO MAKE THESE ARRANGEMENTS WITH ANY CONFLICTING COURSES OR LABS.

** lab component must be passed in order to pass course

NOTE: In order to pass the course, you MUST pass the laboratory component and at least one of the midterm and final exam.

Online Grades:

Individual grades will be posted on Blackboard 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.

No calculators, models, pagers, cell phones or other aids will be allowed during any quizzes, lecture tests or exams, unless announced previously.

Persons who miss a test or exam are expected to contact Dr. Dalili immediately. Documentation, which is the UTSC medical note, **must be given within one week** for approval. The same rules apply to medical notes for missed term work as for missed labs (see section on laboratories). If the documentation is insufficient, you may be required to

obtain further, signed, paperwork. Those presenting a valid, documented reason for absence, in writing, within this time frame, will have the percentage of the missed work added to the final exam percentage, AT THE INSTRUCTOR'S DISCRETION.

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.

Marked Term Tests - an announcement will be made, in lecture and/or on the intranet and Blackboard, when tests are marked. You have one week to check your test with Shadi 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.

Lecture Schedule: This is a ROUGH GUIDE only and may change throughout the term. Check for updated lecture schedule based on notes posted on Blackboard and announcements in class.

Week of:	Ch. 7 th Ed	Ch. 6 th Ed	Subject
Jan 6,13	1,2	1	Introduction:Electronic structure, Bonding, Acids & Bases
Jan 20	3	2	Nomenclature, Physical properties, Structure representation
Jan 27	4	5 (excluding 5.14-5.15, 5.18-5.21)	Stereochemistry: Arrangement of Atoms in Space
Feb 3	5	3	Alkene Nomenclature, Structure, reactivity. Thermodynamics & Kinetics
Feb 10	6	4,5 (Sections 5.14-5.15, 5.18-5.21)	Reactions of Alkenes; Stereochemistry of Addition Reactions
Feb 24	7	6	Alkyne Reactions, Retrosynthesis, Intro to Multistep Synthesis
TERM TEST	60 MINS		Around this time. MAY BE BEFORE OR AFTER READING WEEK. Date to be announced. Chapters TBA
Mar 3	8	7	Electron delocalization, Resonance.
Mar 10	9	8	Substitution Rxns of Alkyl Halides
Mar 17	10	9	Elimination Rxns of Alkyl Halides
Mar 24	11	10	Elimination Rxns; Rxns of alcohols, ethers, epoxides, amines
Mar 31	13	12	Radical reactions; Rxns of Alkanes

Apr 10 th -Apr 26 th	Fall Term Exam period	Three hour final exam (Entire course work)
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SUGGESTED PROBLEMS:

A separate document listing the assigned problems will be posted on Blackboard. The assigned problems are the minimum number suggested for you to try and you should be attempting all of the problems within and at the end of each chapter. *OMIT any questions pertaining to material that is not covered in lectures as you will not be responsible for it unless told otherwise.* You should always attempt as many problems as possible, as Organic Chemistry is mainly learned by "doing". The best way to do this is to keep up with the lecture material as much as possible, getting help with any problems during office hours, attending FSGs and/or utilizing the services of the ChemAid Center. It is probably best to try these before you try the online homework problems. The online homework assignments should be attempted individually, which will benefit you immensely in preparation for the midterm and the final exam in the course.

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. 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 lectures, 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

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 if you use multiple clickers or bring other students' clickers to class and use them to vote. I will be enforcing this policy strictly in class. Any student in violation of this rule and using multiple clickers will have them confiscated and will forfeit the 5% mark for the participation mark for the clickers. If the offence is repeated, the student will be reported to the Chair and Dean for academic offenses and will have to meet with them in person to explain their actions.