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: 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.

Lectures: Tue 1-2pm SW-128
Thur 1-2pm SW-143
Fri 1-2pm SW-309

Lecturer : Dr. Shadi Dalili

Lab Coordinator: Dr. Shadi Dalili (S-155B); Dr. Effie Sauer will be coordinating and supervising Friday labs.

Email: sdalili@utsc.utoronto.ca

Office Hours: Mon 3-5pm (Jan 12th –Apr 3rd) Dr. Shadi Dalili; SW-651
Thurs 2-4pm (Jan 12th –Apr 3rd) Dr. Effie Sauer; SW-506E

Students in this course are supported by facilitated study groups; weekly sessions open to all students in the class who want to improve their study techniques in order to better understand course material. Attendance is voluntary. Each session will be led by a trained facilitator and will provide you with the opportunity to get together with others in your class to compare notes, discuss important concepts, develop study strategies, and prepare for exams and assignments.

Course Website: course site on Blackboard

Communication: via email and Blackboard

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
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

Blackboard Course Website: CHMB41HS will be using Blackboard for its course communication this semester. To access the CHMB41H website, or any other Blackboard-based course website, go to the UofT portal login page at http://portal.utoronto.ca and log in using your UTORid and password, which can be obtained by emailing help.desk@utoronto.ca or through the help desk in Robarts Library on the St.George campus. Once you have logged in to the portal, look for the **My Courses** module, where you will find the link to the CHMB41H course website along with the links to your other courses with active Blackboard sites. All course announcements, lecture notes, and test information will be posted on the CHMB41 website on Blackboard. Your lab, lab quiz, and midterm marks will be posted on the usual intranet site for CHMB41. The CHMB41 site on Blackboard also includes a chat and discussion board functionality which will be discussed further in the first class.

Textbook: Organic Chemistry (5th 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 the ACE access code, a chemistry tutorial and on-line testing access module, will be available, as a package.
If you already have a textbook and only need the ACE access material, you will need to buy it through the bookstore. If you previously purchased the ACE access code, it is good for 12 months from first activation.
The publisher's web site at: http://www.prenhall.com/bruice/ includes media materials, which supplement the text.

Chapters: 1-11 (5^{th} Edition); 1-12 (4^{th} Edition)

Recommended: Study Guide and Solutions Manual (included in package with text)

Online Homework: ACE Organic by Pearson

ACE Organic Online Homework schedule: setup your account using instructions for setting up account in the textbook and ACE code package bought from bookstore. The course code you need is **2321** to register in this semester's course.
The problem sets will be released every Friday evening 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.

The percentage of available marks on an assignment will fall linearly to 0% by 1 am on the Friday due date.

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

Laboratory Schedule:

Odd numbered labs Sections **PRA0001, PRA0003** etc. (**week 1 students**) begin labs week of **January 12, 2009. Even numbered** labs Sections **PRA0002, PRA0004** etc. (**week 2 students**) begin labs week of **January 19, 2009.**
The laboratory component of CHMB41H is compulsory. In order to pass the CHMB41H course, students must pass the lab component of the course.

If you are absent: report it to your TA by phone or e-mail. You may also leave a message with the Lab Coordinator Shadi Dalili in SW651 or by phone 287-7215. Hand in medical note in your next class or ASAP.
The medical note should:
- verify that the student was examined on the day of the test
- if possible, state the illness and
- it MUST indicate the physician's professional opinion as to whether the student should receive special consideration on medical grounds.

Laboratory Rules

Lab Manual:
This must be purchased **from** the UTSC Bookstore ($10).

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 there: 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 first year 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.

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

Term Test-NO MAKE UP	25%	First 6-7 weeks
Final Exam	45%	Entire course work
Online homework	5%	Lowest mark will be dropped from final grade
Laboratory	25%	See lab manual for dates/evaluation

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

Persons who miss a test or exam are expected to contact the S. Dalili immediately. Documentation, for approval, **must be given within one week** (e.g. Doctor's note - which should say that you were seen on the day in question, and that in the Doctor's opinion you were unable to write a test that day). 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 be allowed to be excused OR to write a deferred exam (NO MAKEUP for midterm), AT THE INSTRUCTOR'S DISCRETION.

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 difficulty and presenting data (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. 4th Ed	Ch. 5th Ed	Subject
Jan 5	1	1	Introduction:Electronic structure, Bonding, Acids & Bases
Jan 12	1,2	1,2	Nomenclature, Physical properties, Structure representation
Jan 19	2,3	2,3	Alkene Nomenclature, Structure, reactivity. Thermodynamics & Kinetics
Jan 26	3,4	3,4	Hydrocarbons, Reactions of Alkenes.
Feb 2	4,5	4,5	Stereochemistry: Arrangement of Atoms in Space; Addition reactions
Feb 9	5,6	5,6	Stereochemistry: Arrangement of Atoms in Space
Feb 16	-	-	Reading Week-no classes
Feb 23	6,7	6,7	Alkyne Reactions. Electron delocalization, Resonance.
TERM TEST	90 MINS		**Around this time. Date to be announced. Chapters TBA**
Mar 2	8	7	Reactions of Dienes
Mar 9	10	8	Substitution Reactions of Alkyl Halides
Mar 16	10,11	8,9	Substitution Reactions of Alkyl Halides; Elimination Reactions of Alkyl Halides; Competition.
Mar 23	11,12	9,10	Elimination Reactions of Alkyl Halides; Competition. Other Substitutions & Elimination Reactions; Organometallics
Mar 30	9	11	Alkane Reactions - Radicals
Apr 13-May 1	Winter Term Exam period		**Three hour final exam** Chapters 1 – 12, 4th Ed.; Ch1-11, 5th Ed.

CHAPTERS COVERED AND SUGGESTED PROBLEMS:

The assigned problems are the minimum number suggested for you to try. *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 as soon as you can, and attempting most of the problems within and at the end of each chapter. It is probably best to try these before you try the ACE online problems. The ACE homework assignments should be attempted individually which will benefit you immensely in preparation for the midterm and the final exam in the course.

Chapter	Assigned problems 4th Ed	Chapter	Assigned problems 5th Ed.
1	50a,e,g;51a,b,g;52b;53a,d,f;54c.f;56a,e; 58b,c;59(1,3,5);60a,b,c;62;63a-d;66,69	1	68a,e,g;69a,b,g;70b;71a,d,f;75a,e;76,77b, c;80(1,4,5);81,83,84,88,92,
2	40c,k,m;41d,f,g,j;42a;43;44a,b,c;46b.d, 47;52;53;54a,d,e;56a,b,d,e;57;63	2	45b,k,m;46(4,6,7,10);47a;48;49;51b,d,h; 53;58;59;60a;62a,b,d,e;63;65;68
3	27b,c;28a,b;29a,c;30a,b;31a-f;32;34;35;36;37;38c,d,e,i;39	3	34b,c;35a,b;36a,c;37;38;39;42;44;45;46; 48c,d,e,i;50;
4	34;35;36;37;38;40;41;43;44;45;46;47;50 53	4	37;38;39;41;43;44;46;48;49;50;54;58;60;
5	53;55;56;57a,c,d,e,h,o;58;60b,d,e;61;64 6;69g;70;81;82	5	58;61;62;63a,d,f;64;65;68;69;73;75;77;78;88; 90
6	22;25;26;30;31;32;34;36;37a,b,e;39;40a ;42	6	24;27;28;33;35;36;38;40;41a,b;43;44;46
7	18,21,22(1-6),23, 24,25,26.27,28,29,30,31,33,35. OMIT SECTION 7.11	7	40;42;44;45;49;50;55;58;61;63;68;69;72;75;77,80
8	25-32, 33,34,37,41,42,43, 47,53. OMIT SECTION 8.9-8.13	8	33-40,42,44-5,50,56,61
10	32-41, 44,45,48, 50,54. 8 33-40,42,44-5,49,50,57,61	9	31-33,35,36,37,40,43,47,52,55,57
11	29-34, 35, 38,44a,b, 48, 49.	10	43,44,45,46,47,48,55,56,61,64,67, 68,73,80 OMIT:Arene oxides & Crown Ethers
12	38-42,45,48, 53, 56, 59,60, 65, 67. OMIT: Section 12.8 (Arene Oxides); Section 12.9 (Crown Ethers).	11	20,21,24,28,29,32,39
9	15-18, 20,22,24,25.		