CHEMISTRY E–2a: Organic Chemistry I — Fall 2015

INSTRUCTOR: Dr. Sirinya Matchacheep (matchach@fas.harvard.edu)

HEAD TF: Matt Patton (mpatton@g.harvard.edu)

LECTURES: Thursdays, 6–9pm, Science Center Lecture Hall C. There will be a break during lecture. Lectures will start promptly at 6:00; please make every effort to arrive on time.

BOOKS (available at the Harvard COOP):

Recommended: *Organic Chemistry*, **Fifth Edition**, Maitland Jones; W.W. Norton & Co.

Required: PRS "Clicker" Device (see below)
Molecular model kit (any one is fine; see course website for ordering details).
The Organic Chem Lab Survival Manual, James Zubrick (any recent edition is fine)
Lab Manual (**FlashPrint**, 99 Mt Auburn St., Harvard Sq. M-F 8:30-7; Sa 10-5.)

REVIEW SESSIONS, DISCUSSION SECTIONS, AND LABS:

Review sessions are given every Monday from 5:30-7:00 pm, Science Center Hall A. Attendance is *strongly encouraged.* Please note that reviews will be held on Columbus Day (10/12).

Discussion sections are held each week, Tue. or Wed. from 5-6, 6-7, or 7-8pm. Students will choose a discussion section on the first day of class. Attendance is *strongly encouraged*.

Labs are held roughly every other week, Tue. 7 pm - 11 pm or Sat. 9 am - 1 pm. **Attendance at all laboratory sections is required.** We will post a detailed lab schedule on the course website.

The instructors and TFs will hold **office hours** at a schedule to be announced on the course website. You will need a Harvard ID (HUID#) and PIN to access all resources on the course website.

ASSIGNMENTS:

Each Thursday you will receive a new problem set assignment. You should begin work on the problem set **before** your discussion section, and the completed problem set will generally be due in your TF's mailbox the following Thursday before 6 pm. Beyond that time, solutions will be made available on the course website and no submitted work will be given credit. **There will no exceptions made under any circumstances**. If for some reason you are unable to turn your work in to your TF in person, you must scan (as a PDF) and e-mail your entire problem set to your TF and the Head TF before 6 pm. Smartphone photos of your work are generally illegible and will not be accepted. Make arrangements in advance!

The problems in these problem sets come from many sources; some are new and original, but others may come from old exams or problem sets, or from other textbooks. If you should stumble on the solution to one or more of these problems, **do not copy it**! That will be considered plagiarism, and will result in your dismissal from the course or from the Extension School, or both. The problem sets are very challenging, and you are advised not to wait until the last minute to begin. You are encouraged to work with your classmates on the problem sets, but it is to your benefit to make an effort on all the problems before cooperating with others. Copying another student's solutions will not be tolerated. **You must write the names of your study group partners on your problem set** when you turn it in, and **all work submitted must be entirely your own**.

CLICKERS:

The PRS Device (or "Clicker") that is listed in the "Required Course Materials" section above will be used during lectures to obtain input and feedback from the students. A photo can be found on the last page of this syllabus. These clickers will allow us to present questions to the class and have everyone respond to the questions by pressing buttons on the clicker. We will then immediately be able to see the distribution of answers we received from the class.

Students will be expected to bring their clicker to every lecture, and we will keep track of each student's clicker participation. At the end of the semester, any student who has answered 70% or more of the clicker questions that were presented to the class during the semester will have their one lowest Problem Set grade converted to perfect score. One missed or late problem set, which would have received a score of zero, can be counted among the lowest grade, and thus can be converted to perfect score.

Please bring your clicker to the first lecture; we will be using them at the first lecture. However, we will not begin tabulating clicker participation until the second lecture on September 10. Clicker participation will be tabulated based only on the number of questions answered and will not depend on whether particular answers were correct or not. **Unfortunately, we can only accept responses to clicker questions electronically with the clickers; we cannot give credit for responses submitted on slips of paper or submitted in any other manner**.

EXAMINATIONS AND GRADING:
Your course grade is based on your performance on four examinations, problem sets, and labs:

In-class exam (**Sept 24**)	10%
Midterm exam (**Oct 22**)	20%
In-class exam (**Nov 19**)	10%
Final exam (**Dec 17**)	30%
Laboratory (5 labs)	15%
Problem sets (10 problem sets)	15%
Total	100%

There will be **no makeup examinations** for the in-class or midterm exams. If you miss **one** of these exams for any reason, you must notify Dr. Matchacheep and Matt Patton by email prior to the missed exam or, in the case of an emergency, as soon as possible following the missed exam, with the reason for your absence. In addition, you must provide us with official documentation that justifies such absence. If approved, we will have the percentage weight of your final exam increased to account for the missed exam. **Undocumented missed exams or any *additional* missed exams will receive a grade of zero**. This course is **not graded on a curve**; you will never be in competition with your classmates for a grade. We will assign letter grades using the following scale:

85 – 100	70 – 85	55 – 70	50 – 55	below 50
A– or A	B–, B, or B+	C–, C, or C+	D	F

The cutoffs for the + and – grades are left to our discretion.

HOW TO SUCCEED IN ORGANIC CHEMISTRY:
Do all of the practice problems as soon as you can. Struggle through them without looking at the solutions, as this is where most of the learning will happen! We will post many practice problems on the course website. Doing practice problems is far more important than poring over the textbook trying to understand the meaning of every sentence! Use the textbook as a guide and as a reference, but the majority of your study time should be spent working on practice problems, problem sets, section problems, and review problems. Our lectures will help you with conceptual understanding of the course material, and your teaching fellows can assist you with some aspects of problem-solving, but **most of the learning in this course will come as you work on problems on your own**.
That is the **only** way to succeed in organic chemistry!

BACKGROUND:
We require all students to have completed Chemistry E-1ab, or a comparable general chemistry course with a **grade of B– or better**. If your general chemistry is rusty, the most important topics that you should review are: Lewis structures, hybridization, VSEPR, atomic and molecular orbitals, sigma and pi bonding, acids and bases, and some kinetics and thermodynamics.

ACADEMIC INTEGRITY
You are responsible for understanding Harvard Extension School policies on academic integrity (www.extension.harvard.edu/resources-policies/student-conduct/academic-integrity) and how to use sources responsibly. Not knowing the rules, misunderstanding the rules, running out of time, submitting "the wrong draft", or being overwhelmed with multiple demands are not acceptable excuses. There are no excuses for failure to uphold academic integrity. To support your learning about academic citation rules, please visit the Harvard Extension School Tips to Avoid Plagiarism (www.extension.harvard.edu/resources-policies/resources/tips-avoid-plagiarism), where you'll find links to the Harvard Guide to Using Sources and two, free, online 15-minute tutorials to test your knowledge of academic citation policy. The tutorials are anonymous open-learning tools.

DISABILITY SERVICES
The Extension School is committed to providing an accessible academic community. The Disability Services Office offers a variety of accommodations and services to students with documented disabilities. Please visit www.extension.harvard.edu/resources-policies/resources/disability-services-accessibility for more information.

TENTATIVE LECTURE SCHEDULE:
We will most likely follow the following schedule. **Please read the assigned chapter(s) BEFORE coming to each lecture. In particular, please read Chapters 1 and 2 before the first lecture.** Reading assignments for each lecture will be posted on the course website each week.

3-Sep	Lecture 1	Ch. 1, 2: Fundamental Concepts of Organic Chemistry; Alkanes
10-Sep	Lecture 2	Ch. 3: MO Theory; Reactions & Mechanisms; Acids & Bases
17-Sep	Lecture 3	Ch. 3, 4: Introduction to Alkenes; Introduction to Stereochemistry
24-Sep	**In-class Exam (Lectures 1 – 2, Lecture 3 (no stereochemistry))**	
1-Oct	Lecture 4	Ch. 4, 5, 6: More Stereochemistry; Functional Groups & Reactivity
8-Oct	Lecture 5	Ch. 7, 8: Substitution & Elimination Reactions
15-Oct	Lecture 6	Ch. 7, 21: Alcohols, Ethers, & Sulfur Compounds
22-Oct	**Midterm (Lectures 1– 5)**	
29-Oct	Lecture 7	Ch. 9, 10: Alkenes & Epoxides
5-Nov	Lecture 8	Ch. 10, 11: Radical Chemistry; Alkynes & Organic Synthesis
12-Nov	Lecture 9	Ch. 12: Dienes & Conjugated Systems
19-Nov	**Third Exam (Lectures 1 – 8)**	
26-Nov	**No Lecture:** Thanksgiving Holiday	
3-Dec	Lecture 10	Ch. 15: Spectroscopy
10-Dec	Lecture 11	Final Exam Review
17-Dec	**3-Hour Cumulative Final Exam**	

A FINAL NOTE:
You may fear that organic chemistry is one of the most boring and difficult courses in the science curriculum. We hope to prove you wrong! We hope that you'll emerge from this course as excited about "orgo" as we are. Whether your future involves medicine, science, art, or anything else, you'll find that organic chemistry is everywhere around you. You will see the world differently after taking this course.

PLEASE ASK US IF YOU ARE CONFUSED ABOUT ANYTHING!
Welcome to Chem E-2a!

Your PRS device ("Clicker") must be compatible with TurningPoint software. An example of the correct device is shown below.