

Organic Chemistry

Chemistry 42

Spring 2012

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Lectures: 9:35AM-10:25AM M/W/F
Office Hours: 10:30AM- 11:30AM, M/W/F or by appt.

Welcome to Organic Chemistry. The reactions and structures you learn throughout this semester are cumulative and will be applied to discussions later in the semester and into the spring.

Outline of Lecture Material:

Chapter	Material
1	Bonding and Isomerism
2	Alkanes and Cycloalkanes
3	Alkenes and Alkynes
4	Aromatics
5	Stereoisomers
6	Organic Halogen Compounds: Substitution and Elimination
7	Alcohols and Phenols
8	Ethers and Epoxides
9	Aldehydes and Ketones
10	Carboxylic Acids and Derivatives
11	Amines
	Overview of Polymers, Lipids, Amino Acids, Peptides and Proteins

This course will address the following learning goals:

1. Students will demonstrate general knowledge of chemistry and will be able to apply chemical and physical principles to the solution of qualitative and quantitative problems.
2. Students will understand the interplay of observation, data collection, and hypothesis formulation and testing.
3. Students will become proficient in chemical laboratory techniques and be able to apply these to practical problems.
4. Students will learn the written and verbal communication skills necessary to present scientific data clearly and effectively.

Texts: "*Organic Chemistry*", Hart et al, 13th ed., Brookes/Cole (required)
"*Organic Chemistry*", Study guide by same author (strongly recommended)
"*Organic Chemistry I*" As a Second Language, David Klein, 2nd Edition, Wiley Publishers (recommended)
Lab Manual available from 1st floor stockroom of Cook Building (required)

Equipment: Molecular Structure Model Kit, HGS (strongly recommended)
Lab Notebook (required)
Lab coat (optional)
Lab safety glasses (required)
Pencil, and Extra fine permanent marker (“Sharpie”) (recommended)
Ruler, calculator.

Lab Schedule:

Week Beginning	Experiment	Page
Jan 30	Molecular Models	9
Feb 6	Determination of Alcohol Content of Wine http://www.uvm.edu/~awurthma/LabVideos/FractionalDistillation.mp4	13
Feb 13	Component Analysis of Common Analgesic Tablets http://www.uvm.edu/~awurthma/LabVideos/ComponentAnalysis.mp4	16
Feb 27	Extraction of an Antibiotic http://www.uvm.edu/~awurthma/LabVideos/ExtractionAntibiotic.mp4	20
Mar 12	Extraction and Recrystallization http://www.uvm.edu/~awurthma/LabVideos/ExtractionRecrystallization.mp4	22
Mar 19	Synthesis of 1-bromobutane (S_N2) http://www.uvm.edu/ctlmedia/chem141/7_ch141.html	26
Mar 26	Alkenes by Acid-catalyzed Dehydration of Alcohol http://www.uvm.edu/ctlmedia/chem141/5_ch141.html	29
Apr 2 no video	Reduction of Vanillin	32
Apr 9 no video	Production of Biodiesel	34
Apr 16 no video	Polymers	36
Apr 22	Check-out	

LAB: Confirm your lab time and bring any scheduling conflicts to me as soon as possible.

Attendance: Students must attend the lab section to which you are assigned. Unexcused absences will result in a ZERO graded for the lab experiment. If more than 2 labs are missed, for any reason (even excused absences), you will receive an **F** for the whole course. An incomplete can only be granted by the Dean of the college in which you are enrolled.

Breakage Card: A breakage card (\$40.00) must be purchased from the first floor stockroom, A-143 Cook, prior to your first lab. It is advisable to purchase this card as soon as possible in order to avoid having to wait in yet another line. The \$40.00 is refunded at the end of the semester if you don't break anything!! Remember your card as it is your deposit for additional pieces of equipment required week by week.

Safety eyewear: OSHA approved safety glasses or goggles must be worn by everyone once any experiment has started in the bench areas of the lab. Students not observing this rule will receive a ZERO for that experiment. Eye protection is extremely important. Safety eyewear can be purchased at the UVM bookstore. CONTACT LENSES are a potential health hazard and should only be worn in the lab if you have no other type of corrective lenses. If you wear contact lenses you must wear goggles with them, and inform your TA.

Footwear: Only shoes that cover the toes are permitted in the lab. Sandals and open-toed shoes are not permitted.

Exam Dates and Times:

Wednesday 22nd February **EXAM 1, 6:15-9:15PM. Angell B106 and Lafayette 403**

Wednesday 28th March **EXAM 2, 6:15-9:15PM Angell B106 and Stafford 101**

Wednesday 18th April **EXAM 3, 6:15-9:15PM Angell B106 and Stafford 101**

FINAL EXAM TBA

Any conflicts with an exam date or time must be resolved a week in advance. Alternate exam times must be prior to scheduled exam dates and times.

Course Grade:

The course grade will be based on three mid-semester exams and a compulsory, cumulative final exam. Of the three mid-terms the lowest grade will be dropped. The final exam grade will not be dropped. No curves will be applied to mid-semester exams. Each exam will constitute 25% of your grade, providing 75% of your course grade. The lab component of the course will deliver the remaining 25%.

3 exams (2 mid-terms and the final)	75%
lab grade	<u>25%</u>
	100%

Wednesday Evening Review:

Each Friday I will email a few problems to be discussed at the following Wednesday Evening Review. This is a perfect opportunity to practice problems and work through some of the tricky points in regards to the new concepts. The questions are not graded but many students find these review sessions very helpful. I usually bring donuts/cookies and "organic" fruit for volunteers!! The atmosphere is a little less formal and more conversational 6:15pm~7:15pm (approx. 1hr).