Organic Structural Methods

Chemistry 136, Spring 2007

Intructor: Dr. Yves Rubin (yrubin.ucla@gmail.com)

Lecture: **Thursday, 11:00 a.m. - 12:40 PM, Young Hall, Room 1044**
Lab: **Section 1:** Tuesday / Thursday, 1 - 5 p.m., Young Hall, Room 6110
Section 2: Wednesday / Friday, 1 - 5 p.m., Young Hall, Room 6110

Text: "*Introduction to Spectroscopy*" by Pavia, Lampman, Kriz,
3rd Edition, Harcourt College Publishers, 2001

Office Hours: In lab or by appointment. **E-mail** questions are encouraged to the extent possible.

Course Topics, Reading Assignments, and Homework Problems

Topic	Reading
Introduction, Purification, Lab Techniques	Lecture and handouts
Infrared Spectroscopy, Example Problems	PLK Chapter 2
Introduction to NMR	PLK Chapter 3
NMR Coupling Constants and Advanced Techniques	PLK Chapters 5, 6
NMR Carbon-13	PLK Chapter 4
MIDTERM EXAM (*take-home, due before class on Thursday May 24*)	
2 Dimensional NMR:	PLK Chapter 10
Mass Spectrometry:	PLK Chapters 8
FINAL EXAM (*take-home, due in my Young Hall mailbox by 5 pm on Friday, June 8*)	

Grading:		
	Lab Reports (50 for 1st, 75 ea for 2nd to 5th)	350 points
	Midterm Exam	100 points
	Final Exam	200 points
	Total	650 points

Other texts used as reference (Handouts, and also available at Chemistry Library):
(1) "*Organic Structure Analysis*" by Crews, Rodriguez, and Jaspars, Oxford University Press, 1998.
(2) "*Spectrometric Identification of Organic Compounds*" 6th Edition by Silverstein and Webster, Wiley, 1998.

Laboratory Guidelines

The laboratory component of this course will focus on the determination of the structure of unknown samples by physical and spectroscopic methods. The lab reports will consist of the completed "Unknown Report Sheet", all relevant original spectra, and samples of any derivatives synthesized. The schedule for distribution of unknowns and submission of lab reports is shown below. Although the central goal of this course is the characterization of unknown samples, a closely related goal is the development of synthetic laboratory skills for the derivatization of your unknowns. You should already be familiar with some micro-scale techniques through 30BL and CL. As the quarter proceeds, you will be exposed to additional techniques through handouts and lectures.

Teaching Assistants: Christopher Day (day@chem.ucla.edu)
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Schedule of Unknowns and Lab Reports:

Unknown	Type	Distribution Date	**Report Due Date[1]**
increased complexity ↓			
1	Analytical Tests (1 g)	April 3/4	**Thursday, April 19[2]**
2	1 Unknown (solid, 500 mg)	April 10/11	**Thursday, May 3**
3	Mixture of 2 (500 mg)	April 24/25	**Thursday, May 17[3]**
4	Natural Product Extraction	May 8/9	**Thursday, May 31**
5	Flavor Synthesis	May 22/23	**Monday, June 11** (in my Young Hall mailbox by 5 pm)

Notes:

[1] All reports are due in class *at the beginning of lecture*, **10 pts will be taken off if late**

[2] This is not a full lab report, use the **"Organic Qualitative Analysis"** handout to prepare this report, it is available online in Word form as well.

[3] In addition to standard characterization, you will be expected to run one more complex NMR spectroscopic analysis, including one of your own 2D experiments.