Chemistry 458
Organic Spectroscopy

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Course delivery modes:

Face-to-face, remote synchronous and remote asynchronous. In-person lectures will be streamed on Zoom and recorded on Panopto.

Texts:

R. M. Silverstein, F. X. Webster, D. J. Kiemle, "Spectrometer Identification of Organic Compounds," >=7th Ed., Wiley: New York, 2005. Supplemental readings will be assigned during the course.

Grading:

§Tests	2	@	250 pts ea		500
Problem Sets	10	@	50 pts ea		500
				Total	1000

§in-class portion @ 100 pts ea; take-home portion @ 150 pts ea

Letter grades will be based on a standard scale – 90, 80, 70, 60 – with +/- cutoffs being ± 2.5. Tests will cover both knowledge and application of the covered material. Students will have access to the tables in SWK for structure elucidation problems. Problem sets will be composed of problems from SWK as well as from outside sources. They will be assigned at the end of each information unit and will be due one week after assignment. You may work in groups for the problem sets but not for the take-home or in-class exams.

Coverage:

This course is divided into two parts: The first half will cover the theory and instrumental aspects of *nuclear magnetic spectroscopy*, *mass spectrometry*, *uv/vis spectroscopy* and *infrared spectroscopy* and the application of these techniques in organic structure elucidation at the intermediate level. The second half will cover two-dimensional Fourier transform nuclear magnetic spectroscopy, both theory and application.

Office Hours:

By appointment. In-person, remote (Zoom) or email are all okay.

Dates	Topic	Readings
8/19 - 8/26	Mass Spectrometry	SWK, Chapter 1
8/28	*Last day of add/drop*	
8/28 - 9/2	Infrared Spectroscopy	SWK, Chapter 2
9/4 - 9/14	Proton Nuclear Magnetic Spectroscopy	SWK, Chapter 3
9/16 - 9/23	Carbon Nuclear Magnetic Spectroscopy	SWK, Chapter 4
9/25 – 9/28	UV/VIS Spectroscopy	
10/2	**Test 1**	
10/12	*Last day to withdraw*	
10/5 - 10/14	One-pulse Fourier Transform NMR	Keeler†, Chapter 3 & 4
10/16 - 10/26	Multi-pulse FT NMR	
10/28 - 11/9	Two-dimensional FT NMR	SWK, Chapter 5
		Keeler†, Chapter 7
11/11 - 11/13	Worked Problems	SWK, Chapter 7
11/19	**Test 2**	**9 – 12 pm**

†http://www-keeler.ch.cam.ac.uk/lectures/

Three lectures will be given asynchronously to complete the requisite hours of instruction and to keep on schedule.