

CHEMISTRY 621**FALL, 2017****John Wright, Rob McClain, Ann Lindberg, and Keith Sunden**

DATE	TOPIC
9/4	Labor Day
9/6	Light and Simple Optics
9/8	Photomultipliers and Absorption Measurements
9/11	Emission measurements; Instruments; Lineshapes
9/13	Nature of Light
9/15	Diffraction and Interference
9/18	Laser beams and diffraction gratings
9/20	Gratings and Monochromators
9/22	Monochromators
9/25	Microscopes, laser beam profiles, focusing lasers
9/27	FTIR and Fourier transforms
9/29	Fourier transforms and resolution
10/2	Introduction to Electronic and Vibrational Spectroscopy
10/4	Vibrational and Electronic Spectroscopy
10/6	Molecular dynamics
10/9	Infrared and Raman Spectroscopy; X-Ray and Photoelectron Spectroscopies
10/11	X-Ray and Photoelectron Spectroscopies and Electrochemistry
10/13	Potentiometry and Voltammetry
10/16	Fundamentals of Potentiometry
10/18	Fundamentals of Voltammetry
10/20	Voltammetry- Diffusion Controlled
10/23	Voltammetry- Kinetic Controlled, Marcus Theory
10/25	Pulsed Voltammetry, Photovoltaics and Photocatalysis
10/27	Chromatographic Fundamentals and Gas Chromatography
10/30	Gas Chromatography and HPLC
11/1	HPLC and Electrophoresis
11/3	Electrophoresis
11/6	Quadrupole Mass Spectroscopy
11/8	TOF & Quadrupole MS
11/10	Time of Flight Mass Spectroscopy
11/13	FTMS & Magnetic and Electric Sector MS
11/15	MS3 & Ionization Methods
11/17	Introduction to NMR
11/20	Rotating Frame
11/22	NMR Exercises, J-J coupling
11/24	Thanksgiving Break
11/27	Decoupling, inversion recovery, spin echo
11/29	J modulation and population transfer
12/1	Population transfer, INEPT
12/4	2D NMR, COSY, HMQC, HSQC
12/6	2D Heteronuclear NMR and Nuclear Overhauser effects
12/8	Example Applications of NMR
12/11	Details of NMR Instrumentation and MRI
12/13	Review
12/19	Final Examination- 5:05-7:05 PM