

84.514 Advanced Analytical Chemistry

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Syllabus

- Class 1 Course overview, Potentiometry: Reference & Indicator Electrodes
 - Class 2 Potentiometry (continued), Membrane electrodes
 - Class 3 Potentiometry (continued)
 - Class 4 Electrochemistry (Voltammetry) - Electrode Kinetics, Mass Transport
 - Class 5 Electrochemistry - Mass Transport, Other Fundamentals
 - Class 6 Electrochemical Techniques - Overview
 - Class 7 Electrogravimetry
 - Class 8 Chronoamperometry, Chronopotentiometry, Coulometry
 - Class 9 Voltammetry (stirred), Voltammetry (unstirred), Cyclic Voltammetry
 - Class 10 Polarography (Direct Current)
 - Class 11 Polarography (DC, AC, Normal Pulse, Differential Pulse)
 - Class 12 Anodic Stripping Voltammetry, Square Wave Voltammetry, Concluding remarks
 - Class 13 Molecular Spectroscopy - Properties of Electromagnetic Radiation
 - Class 14 Exam #1
 - Class 15 Properties of Electromagnetic Radiation (continued)
 - Class 16 Quantitative Aspects of Absorption
 - Class 17 Types of Spectroscopy, Sources
 - Class 18 Wavelength Selection (Filters, Monochromators)
 - Class 19 Prisms, Gratings (Tuesday)
 - Class 20 Gratings (continued), Interferometer, Detectors
 - Class 21 Detectors (PMT, Noise, Image Detectors, IR)
 - Class 22 Exam #2
 - Class 23 Student Presentations
 - Class 24 Theory of Molecular Absorption
 - Class 25 Absorption by Organic Molecules
 - Class 26 Inorganic Absorption (Charge Transfer, Ligand Field)
 - Class 27 Applying UV-vis Spectroscopy (Qualitative, Quantitative)
 - Class 28 Luminescence & Fluorescence Spectroscopy
- Exam #3 will be given in the final exam slot scheduled by the University