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 1 week after the last class at 8:00 AM in Olney 518.