Chemistry 3131: Analytical Chemistry II

(Instrumental Analysis)

Course Outline, Winter 2005

Contact Information

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Overview

MaterialsMaterials can be analysedMaterials can be analysed eitherMaterials can be analysed either by their chemi coursecourse deals with the latter,course deals with the latter, *i.e.*, th, the isolation and identification of unl analytical instrumentation. Bothanalytical instrumentation. Both identification of unknown and quantitation ofa important, depending on the situation, so both aspects will be covered.

Prerequisite: Chemistry 1101; Recommended: Chemistry 2411
Text: Analytical Chemistry: An Introduction, Skoog, West, Holler, and Crouch, 7th Edition
Lab Manual: Chemistry 3131 Laboratory Manual

Course Material

The course can be divided into roughly 5 sections, as follows:

1. Statistical Analysis (Chapter 7 and Section 21C)
   Calibration curves, confidence intervals
2. Absorption and Fluorescence Spectroscopy (Chapters 21 - 23)
   InteInteractionInteraction of light with matter, comparison of visible light spectroIntera experiments,experiments, spectrometers, Beer's Law, method of standard addexperiments, sp spectroscopy
3. Separation Methods (Chapters 24 - 26)
   Extractions,Extractions, comparisonExtractions, comparison of cExtractions, comparison c chromatographychromatography (GC) instrumentation, high-performance liquid chromatograph (HPLC) instrumentation, capillary electrophoresis instrumentation
4. Electrochemical Methods (Chapters 16 - 20)
   RedoxRedox equationsRedox equations and electrochemicalRedox equations and electrochemical c potentiometry, coulometry, voltammetry, and stripping methods
5. Mass Spectroscopy (Supplemental Material)
   IsotopeIsotope patterns, inductivIsotope patterns, inductivelyIsotope patterns, inductively-cou detectors, qualitative organic analysis

The **method of evaluation** is as follows:
30% laboratory (5% each experiment + 5% technique mark)
30% final exam (to be scheduled by registrar)
25% 3 assignments (one worth 5%, two worth 10%)
15% midterm

week of	Monday class	Wednesday class	Thursday lab	Friday class
January 3			check-in and introductory lab	
January 10				Assignment 1 due
January 17				
January 24			1st lab due	
January 31				Assignment 2 due
February 7			2nd lab due	
February 14	S T U D Y B R E A K			
February 21			3rd lab due	
February 28		Midterm Exam		
March 7			4th lab due	
March 14				
March 21			5th lab due	Good Friday, no class
March 28	Easter Monday, no class			Assignment 3 due
April 4		Make-up classes: Tues, Apr. 5 Wed, Apr. 6		