

Introductory Instrumental Analysis

Chemistry 316

Section: D100

Term: 2005 Spring

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Discussion Topics: This course offers an in-depth introduction to the main spectroscopic and chromatographic techniques that are in widespread use today. A limited selection of laboratory assignments amplify theoretical concepts. The principles of signal generation by chemical species, and detailed descriptions of the components of instruments are given. The importance of optimization at all stages of an analysis, from sampling and sample preparation to signal detection and data analysis, is discussed.

2 lecture hours/week; 4 lab hours.

Lecture Topics:

Instrument based chemical measurement; atomic & molecular spectroscopic techniques - AAS, AES, ICPS, molecular absorption, molecular fluorescence; Beer's Law; chromatographic techniques - GC, LC, HPLC, IEC, SEC, TLC, CE; separation theory; detector systems; van Deemter equation.

Laboratory Assignments:

Assignments include gas chromatography (GC), high performance liquid chromatography (HPLC), atomic absorption & emission spectroscopy (AAS & AES) molecular absorption & fluorescence spectroscopy, and literature study.

Grading: 15% Midterm Exam; 45% Final Exam; 40% Laboratory.

Required Texts: Skoog, Holler and Nieman, "Principles of Instrumental Analysis" 5th Ed. 1998. Publishers: Holt Rinehart.

Recommended Texts: None

Materials/Supplies: None

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Prerequisite/Corequisite: Prerequisite CHEM 215 (or 218), with a minimum grade of C-.

Students may not count both Chem 316 and Chem 416 for credit.

Notes: To pass this course, students must pass BOTH the exam portion and the laboratory portion.

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