Chemistry 333: Instrumental Analysis
Fall 2008 Course Syllabus
MWF 11:30-12:20 Bilger 335

Instructor: Dr. David Shinn
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Office hours: 12:30-1:30 MWF, or by appointment

Textbook: Skoog, Holler, and Crouch, Principles of Instrumental Analysis, 6th edition, Thomson - Brooks/Cole

Course Description:

Per catalog description: "Methodology and instrumentation; UV/VIS spectrometry, emission and absorption spectrometry, HPLC, potentiometry, voltammetry, and coulometry. Pre: CHEM 274/274L and CHEM 351 (or concurrent)."

In actuality: CHEM 333 is an undergraduate introductory course in the theory and use of instruments for the study of atomic and molecular species and/or processes. A primary goal of this course is to develop a cursory understanding of how electronic and optical components are utilized in the design of both relatively simple and complex instruments. Along the way, issues related to data analysis, electronics, optics, spectroscopy, and separation technologies will be introduced with an emphasis on instrumental developments and applications appropriate to modern laboratories.

Assessments: Three hourly exams and a final exam will be given during the course. The material covered on each of the three hourly exams will incorporate material covered up to one week before each scheduled exam. The final exam will be comprehensive for the entire course.

For exams, calculators (not to be shared during exams) and writing materials are required and must be provided by the student. A single piece of standard 8.5 x 11 inch paper with handwritten notes (typed and/or reduced photocopies NOT allowed) on both sides may be used by students during all hour exams. In addition, problem sets will be assigned but not graded; completion of such work is expected to improve the student's ability to score better on exams.

A brief, formal presentation of an instrumental technique not specifically addressed in class may be presented for a bonus of up to 5 pts added to a student's final average. Students may work in pairs on such presentations. Each presentation should be approximately 15 (individual) to 30 (pairs) minutes long including a few minutes afterwards for class discussion. The presentations will be scheduled during the MW afternoon CHEM 333L laboratory periods the last week of classes when experiments have been completed.

Hour Exams (3)	25% each (75% total)
Final Exam	25% total
Presentation	(up to 5 pts added to final average)

Course Grading:

A	90-100%
B	80-89%
C	65-79%
D	50-65%
F	below 50%

Course Policies: Make-up exams will not be provided. In the case of excused absences during hourly exams, grades for the remaining assessment items will be weighted more heavily. In such cases, the instructor will also request that a medical excuse or other legitimate documentation be provided. Any type of expected but excused absence known in advance should be discussed with the instructor AT LEAST one week prior to any scheduled exam. There will be no make-up for the final exam.

Students with Disabilities: Near the beginning of the term, in accordance with the Americans with Disabilities Act, any student requiring assistance with a particular disability should consult with the instructor so such assistance can be provided as effectively as possible. Further information about the KOKUA Program is available at www.hawaii.edu/kokua

Chemistry 333 Fall 2008
Course Schedule

Dates	Chapters	Topics / Activities
8/25-8/29	1-2, A1	Data Analysis, Basic Electronics
9/1		**LABOR DAY HOLIDAY**
9/3-9/5	2, 3	Electronics, Operational Amplifiers
9/8-9/12	3-5	OpAmps, Computers, Signal/Noise
9/15-9/19	6	Introduction to Spectroscopy
9/22		**EXAM 1**
9/24-9/26	7	Components of Optical Instruments
9/29-10/3	8	Introduction to Atomic Spectroscopy
10/6-10/10	9-10	Selected Issues w/ Atomic Absorption, Atomic Fluorescence, and Atomic Emission
10/13-10/17	13-14	Molecular Absorption Spectroscopy
10/20		**EXAM II**
10/22-10/24	16	IR Spectroscopy
10/27-10/31	16, 18	IR continued, Raman Spectroscopy(brief)
11/3-11/7	19	Nuclear Magnetic Resonance Spectroscopy
11/10-11/14	11, 20	Atomic and Molecular Mass Spectrometry
11/17		**EXAM III**
11/24-11/26	26	MS continued, Separation Methods
11/27-28		**THANKSGIVING BREAK**
12/1-12/5	26-27	Separation Methods
12/8-12/10	27-28	Gas and High-Performance Liquid Chromatographies
12/15		**FINAL EXAM**