

**A316: Methods for Biological and Environmental Chemical Analysis Laboratory
Spring 2009**

Instructor: Dr. Jill Robinson
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Office hours: M (10-11 AM), W (11-12 AM) or by appointment
Course Homepage: <http://www.chem.indiana.edu/>

Lecture:
Friday 9:05-9:55 in CH001

Goal: A316 is a 2 credit hour laboratory course designed to teach the basic principles of analytical chemistry used in modern laboratories. Practical training in quantitative laboratory skills and state of the art instrumentation will be provided. Emphasis will be placed on scientific writing in journal style reports.

Required Materials:

Lab Notebook: Permanently Bound
Laboratory Manual: Experiments can be printed from the course website.
Safety Goggles

Lab Schedule

Week of	Experiment
1/12	Journal Style Lab Report Assignment
1/19	Statistical Analysis of Data Assignment (Monday lab section may attend lab any other day or do the assignment on their own.)
1/26	Comparison of Two Different Protein Assays
2/2	Detection Limits of Absorbance and Fluorescence Instruments
2/9	Fluorescence Anisotropy (Binding of a Flavenoid to a Protein)
2/16	Atomic Absorption
2/23	ELISA Analysis of Triazines in Groundwater
3/2	GC-MS Analysis of Triazines in Groundwater
3/9	Amino Acid Composition of a Protein Powder by HPLC
3/16	Spring Break
3/23	CE Analysis of an Analgesic Tablet
3/30	Proteomics Week 1: SDS PAGE, Gel Staining
4/6	Proteomics Week 2: Gel Imaging, Spot Excision, Tryptic Digestion
4/13	Proteomics Week 3: MALDI-TOF Data Acquisition
4/20	Proteomics Week 4: Data base mining and Identification of Proteins
4/21	Writing evaluation

Grading:

Journal Style Lab Report Writing Assignment	30 pts.
Statistical Analysis of Data Assignment	40 pts.
Comparison of Protein Assays (Abstract and Intro Sections + worksheet)	50 pts.
Detection Limits of Absorbance and Fluorescence Instruments (Worksheet)	40 pts.
Fluorescence Anisotropy (Abstract, Intro, and Experimental Section + Worksheet)	65 pts.
Atomic Absorption (Worksheet)	40 pts.
ELISA-GC/MS Analysis of Triazines in Ground Water (Full report: Abstract, Intro, Experimental, Results, Conclusions)	75 pts.
Amino Acid Composition of a Protein Powder (Worksheet)	40 pts.
CE Analysis of an Analgesic Tablet (Full Report)	75 pts.
Proteomics (Full Report)	75 pts.
Writing Evaluation	20 pts.
Laboratory Notebook	50 pts.
Pre-lab assignments 10 @10 pts. each	100 pts.
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Total	700 pts.