Instructor: Dr. Michael Zehfus
Office: BSB 108
Phone 642-6028
Campus P.O. Box 9088
Office Hours: Posted on door
Email: Michael.Zehfus@bhsu.edu

Text and material:
I have assembled the labs into a single complete manual that is available at the bookstore.

Catalog Description:
Laboratory designed to accompany CHEM 434.

Co-Requisite: Chem 434

Course Objectives:
To gain a working knowledge of many of the instrumental analysis methods used in a modern chemistry lab. Course material will expose student both to the physical explanation of the phenomena being observed, and to the practical aspect of the various kinds of instruments. Where possible, practical, hands-on lab experiences will be provided to help the students understand the material.

Attendance:
Attendance at lab is required. If you have a conflict with a lab, please notify me before the lab so we can resolve the problem. If you have to miss a lab due to illness or other emergency, please let me know within 24 hours so we can reschedule. I only keep lab materials on hand for one week. If you miss a lab and wish to make it up, you have 1 week to do so or to make special arrangements to keep materials for a longer period.

Academic Dishonesty:
A student who, in connection with his or her studies, disrupts a class, plagiarizes, cheats, or otherwise violates reasonable standards of academic behavior may, at my discretion, have his or her enrollment canceled and/or be given a reduced or failing grade. For more information on specific acts that can constitute academic dishonesty, see your student handbook.
ADA Statement:
Reasonable accommodations, as arranged through the Disabilities Services Coordinator, will be provided students with documented disabilities. Contact the BHSU Disabilities Services Coordinator, Mike McNeil, at 605-642-6099, (Woodburn 134), fax number 605-642-6095 or via email at mike.mcneil@bhsu.edu for more information. Additional information can also be found at http://www.bhsu.edu/StudentLife/Learning/DisabilityServices/tabid/162/Default.aspx

Academic Freedom and Responsibility:
Under Board of Regents and University policy student academic performance may be evaluated solely on an academic basis, not on opinions or conduct in matters unrelated to academic standards. Students should be free to take reasoned exception to the data or views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled. Students who believe that an academic evaluation reflects prejudiced or capricious consideration of student opinions or conduct unrelated to academic standards should contact the chair of the department in which the course is being taught to initiate a review of the evaluation.

Course Outline:
0 Tuesday classes don’t meet this week
1 Jan 15 Computer Experiment 1
2 Jan 22 Experimental Lab 2 Introduction to Measurements Involving Light
   Computer Lab 2 on your own (Fits in with Chapter 6 of book)
3 Jan 29 Experimental Lab 1 Atomic Absorption & Emission - Absorption
4 Feb 5 Experimental Lab 1 Atomic Absorption & Emission - Emission
5 Feb 12 Experimental Lab 3 UV/Visible Spectroscopy
6 Feb 19 Experimental Lab 4 Fluorescence Lab
7 Feb 26 Computer Experiment 3
   March 5 Spring Break
8 March 12 Experimental Lab 5 - IR Spectroscopy
9 March 19 Experimental Lab 6 - NMR
10 March 26 Experimental Lab 7 - Mass Spectroscopy (Hot & Spicy I)
11 April 2 Electron Microscopy or organic identification lab
12 April 9 Experimental Lab 8- GC (Hot & Spicy II)
13 April 16 Experimental Lab 9 - Caffeine in Popular Drinks II
14 April 23 Finish up, clean up, check out

The above schedule represents a first guess. Be ready to change and be flexible as the semester progresses

Lab nominally meets at 2:00 on Tuesdays. Everyone is expected to attend about the first hour of this lab to get the general information and procedures for the week’s lab. The remainder of the lab time will be scheduled flexibly throughout the rest of the week so each student can get personal time on the instrument being studied that week. Since Dr. Z. can’t be available at all times to help out running instruments, students who learn how to run instruments early in the week may be asked to act a tutors and help out other students.
**Evaluation:**
Since these are NOT simple well established labs with standard report sheets, the evaluation for each lab will be flexible. There will be no lab final, and I will not be collecting lab notebooks to see what you have recorded in them. However, I do expect you to keep lab notebooks, because there will be some kind of write-up for each lab, and you will need to be able to go back and analyze your data.

As part of the writing intensive part of this class, be prepared to do one or two formal written lab reports, as well as several informal results summaries. I will give you the format that I want and more details with each. There is also the possibility that I may weekly assign one group to write a ‘Lab manual’ or ‘Instrument Cookbook’ for the use of the given instrument.

Each lab will be worth 100 points. Grading in the lab will be:

- 90-100 A
- 80-89.999 B
- 70-79.999 C
- 60-69.999 D
- <59.99 F

The student has the option of having separate grades for lecture (Chem 434) and lab (Chem 434L) or averaging the grades together for a single overall grade that will be given in both courses. The overall average grade will be calculated as:

\[
\text{Average grade} = \frac{(\text{Lecture average} \times 3) + (\text{lab average} \times 1)}{4}
\]

I will automatically use the grading system that gives the student the higher GPA. If this is not satisfactory, please contact Dr. Zehfus **before** finals week.

**Group Work**
You may do labs either as individuals, or as small groups. Lab reports that are simple report summaries may be done as a group. Instrument ‘Manuals’ or ‘Cookbooks’ may also be done as group efforts. However formal lab reports must be handed in as individual efforts. If there is any question as to whether a lab report should be a group or individual effort, please see Dr. Z.