

CHEMISTRY 450: INSTRUMENTAL ANALYSIS
Fall 2008 Semester
Meets MWF 10:10-11:00 AM (Lecture, SCI206)
W (Lab, SCI319)



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Text: D.A. Skoog, F. J. Holler, and S.R. Crouch, *Principles of Instrumental Analysis*. Thomson Brooks/Cole: 2006(6th edition). ISBN-13: 978-0-495-01201-6
ISBN-10: 0-495-01201-7

Requirements: A 2" binder, scientific calculator, safety goggles and a composition notebook (lab)

Grading system: Your final grade for the course will be based on the following:
70 % *Lecture grade*
 40 % from 3 exams (includes 1 final)
 20 % from problem sets
 10 % from individual/group oral and written report
30 % *Laboratory*
 20 % Laboratory reports
 10 % Lab notebook and lab performance

Class Policy

Attendance: *Class attendance is strongly encouraged!* You are expected to arrive on time for class. Class attendance will be taken on a daily basis. You are responsible for obtaining missed lecture notes and assignments. *Students who are regularly absent will be withdrawn from the class.*

Seating arrangements during an exam: I reserve the right to decide on your seating arrangement during an exam, including the final.

Class Policy (Cont.)

Making up missed work: A makeup exam or lab *will only be given if* you have a valid excuse for your absence, provided that I have been notified within 24 hours of your absence and a written, supporting documentation (e.g. a doctor's note) of your absence has been provided soon after you come back to class. If you failed to provide me with valid documentation of your absence a grade of zero will be assigned for the missed exam or lab. Unless I decided otherwise, *you have until the following meeting to makeup for a missed exam or lab*; otherwise a grade of zero will be assigned for that exam/lab. In addition, *only one makeup lab is allowed per student*, regardless of the reason for your absence.

Late problem sets will be accepted up to one meeting following the deadline, but with a corresponding 20 to 30 % deduction. Problems sets not turned in one meeting following the deadline will be assigned a grade of zero.

While discussion of ideas related to an assigned problem is acceptable, copying one's work or copying each other either word for word or by rephrasing someone's statement will be considered a form of cheating, thus will be treated as an academic misconduct. I expect you to write your own ideas and responses to assigned problems as an individual, not as a group. At this point, I also expect you to know how to use quotations if a response is quoted from the text or another source, and to list that text or any other sources used, including those taken from internet sites, towards the end of your problem set. Likewise, if you derived the ideas/ responses from the text or another source, cite these references as well. In summary, *problem sets that I have deemed identical or close to being identical will receive a grade of zero!* Read the section below about academic integrity for more details.

Academic Integrity:

From the College Handbook: "At Bridgewater State College, academic honesty is expected of all students; plagiarism and cheating are not condoned and are subject to academic penalty, which may result in a failure for the course in which the violation took place. A record of the violation is kept and may result in suspension or dismissal from the college". Academic dishonesty may include cheating on exams; plagiarism; the blatant copying of problem assignments or projects; and removal of documents from the course binder. Any one of these examples may result in dismissal from the course with an F grade.

For more information please read the college's policy on academic dishonesty at:

http://www.bridgew.edu/Handbook/academic_misconduct.pdf

Email as an Official Means of Communication to Students

<http://it.bridgew.edu/Policy/EmailCommPolicy.cfm>

The following policy on email communication has been taken from the BSC website (see URL above). As I will be making announcements regarding classes, including possible changes in the lab schedule, I strongly urge everyone to check your email (the one with your BSC account) everyday.

Purpose: This policy is designed to identify and describe the use of electronic mail as an official means of communications to Bridgewater State College (BSC) students.

Policy Statement: The College provides a BSC user account and email address to all matriculated BSC students and uses email as an official means of sending information to students.

Email ... (Cont.)

Student Responsibilities:

- Students are responsible for activating their BSC user accounts.
- Students are required to access and review BSC email on a frequent and consistent basis in order to stay current with College-related communications.
- Students must be aware of mailbox capacity and ensure that there is sufficient space in their accounts for email to be delivered.
- Students must recognize that certain communications may be time-critical.
- Students may forward email from their official BSC address (student email address@bridgew.edu) to another email address at their own risk. The College is not responsible for the handling of email by outside vendors. Information on forwarding email is available from IT Support Services.
- Students will not be held responsible for an interruption in their ability to access a message if the College email system malfunctions or other College system-related problems prevent timely delivery of, or access to, that message (e.g., power outages or email system viruses).

Course objectives

My primary *teaching goals for CHEM450* are: (1) To provide students with a solid foundation in chemical analysis using modern instrumental methods, (2) To help them become excellent problem solvers in the field of chemistry, and (3) To provide extensive hands-on experience on the use of modern analytical instruments. To fulfill these goals, homework and problem sets will be assigned throughout the semester on top of three examinations, to help students retain the materials covered. The lab experiments were carefully selected and implemented, most of which are based on recent developments in modern instrumentation (such as those obtained from the Journal of Chemical Education).

COURSE OUTLINE AND TENTATIVE SCHEDULE

Week/Date	Lecture Topic
1 9/03	Ch 1 Introduction; Review – Data Handling and Statistical Analysis (App. 1); Significant Figures
2 9/08	Continue Ch 1; Ch 2-5 (Parts) Measurement Basics
3 9/15	Ch 6 Introduction to Spectrometry; Ch 7 Optical Instruments
4 9/22	Ch 13 & 14 Molecular UV/Vis Spectrometry
5 9/29	Oct. 1 (W) - Exam 1: Intro (Ch 1) to Molecular UV/Vis Ch 7-10 (parts) Atomic Spectrometry (AS)
6 10/06	Continue Ch 7-10 (parts)
7 10/13	Ch 16 & 17 Infrared (IR) Spectroscopy
8 10/20	Continue Ch 16 & 17; Ch 19 NMR Spectroscopy
9 10/27	Cont. Ch 19; Ch 19 Atomic Mass Spectrometry (MS) Oct. 29 (W) - Exam 2: AS, IR & NMR
10 11/03	Ch 20 Molecular Mass Spectrometry (MS)
11 11/10	Continue MS
12 11/17	Ch 26 Intro to Chromatographic Separations Nov. 19 (W) - Exam 3: IR, NMR and MS
13 11/24	Ch 27-30 (parts) Gas and Liquid Chromatography
14 12/01	Continue Ch 27-30 Group Presentations
15 12/08	Catch up

Final Exam: Mon., Dec. 15, 8-10 AM; Semi-comprehensive, with emphasis on Chromatography

Other important dates:

Sept. 10 (W): Last day to ADD/DROP courses

Sept. 17 (W): Senior Convocation at noon (**Lab starts at 2 pm**)

Oct. 13 (M): Columbus Day (No classes)

Nov. 11 (T): Veterans' Day (No classes)

Nov. 12 (W): Tuesday schedule; NO LAB

Nov. 14 (F): Last day to withdraw from courses

Nov. 26 (W): Thanksgiving recess begins at 4 pm

Dec. 11 (R): Reading Day

Dec. 12-18: Final Exams