Chemistry 234 – Fall 2004

Textbook


Lecture Material, and Essential Reading.

The material that is presented in both the lecture and laboratory parts of the course defines the details and direction of the course content. In general, you should consider that you should be studying the material covered in lecture. In addition, excellence may be achieved if you read other textbooks and articles on instrumental and quantitative analysis, and practice a large number of problems. It is important to note that for statistical and other calculations, there are useful materials on the RGM web site, http://chemweb.chem.uconn.edu and on the publisher’s web site for Harris, http://www.freeman.com/qca. There is no web backup for Skoog.

Lecture Sequence

Approximate number of lectures in parentheses – numbers of lectures may vary. Later parts of the sequence may not be covered depending on progress in the semester.

Introduction (1)
Read Chapter 1 on the classification of instrumental methods

Section I. Measurement Science (5)
Read Chapters 2 – 4, on electrical components, analog, and digital electronics
Read Chapter 5, Signal-to-noise ratio

Section IIA Basic Spectroscopy and instrumentation (5)
Read Chapter 6 on electromagnetic radiation, and Chapter 7 on instrumentation.

Section III. Molecular Spectroscopy (continued from chem. 232) (4)
Glance through Chapters 13-14. Read Chapters 15-18 on molecular fluorescence, infrared and Raman spectroscopies, and Chapter 20 on molecular mass spectrometry.

Section V. Separations (4)
Read Chapters 26-30.

Section IV. Electroanalytical Chemistry (3)
Glance through Chapter 22 (covered in Chem 232)
Read Chapters 23 through 25.

Sections VI. Atomic and Surface Analysis (cont. from chem. 232) (2)
Glance through Chapters 8-10 (covered in Chem 232).
Read Chapter 11 on Atomic Mass Spectrometry, Chapter 12 on X-Ray Spectroscopy.
Read Chapter 32 on Radiochemical Methods and Chapter 21 on Surface Analysis.

Examination Dates, and Times (no classes: Labor day, Thanksgiving week)
You will not usually be tested on material covered in a previous examination, except for statistical and calibration techniques. All examinations will be in class. The midterm will last over two classes. The final examination will have a quiz-type cumulative section, and a section that covers material presented after the third examination. In addition, these details may change depending on the progress of the class during the semester. Help sessions will be provided immediately before examinations upon request by the class. Pop quizzes may be given at any time.

First Examination (Measurement science)
Wednesday, Sept. 15, 2004. In class, Chemistry T309 (section 01) and T215 (section 02)

Midterm Examination (Spectroscopy)
Mon. Oct. 4, 2004, Part 1 during class, Chemistry T309 (section 01) and T215 (section 02)
Wed. Oct. 6, 2004, Part 2 during class, Chemistry T309 (section 01) and T215 (section 02)

Third Examination (Spectroscopy and Separations)
Wednesday, Nov. 3, 2004, Chemistry T309 (section 01) and T215 (section 02)

Final Examination (Quiz, electroanalytical, atomic spectroscopy, surface analysis)
Dec. 13-18, 2004, Chemistry T309 and T215 (Exact time not yet available)

Homework
Homework will be assigned, approximately once every two weeks, and you will be asked to hand it in, electronically, for grading, at ftp://chemweb.chem.uconn.edu/pub. Some homework may be based on the quizzes on the Freeman website. Your username and password will be your last name and your peoplesoft ID. This homework does not represent the full extent of the studying that is expected of you. In addition, you should attempt to do as many as possible of the relevant problems at the end of each assigned chapter, in both textbooks, as we progress through the semester. Reliance on the biweekly homework assignments for practice of problems will not be enough to allow you to do well in the examinations. You must set you own goals for studying, or risk poor examination performance. If class attendance is insufficient, random homework will be set with very short lead times for completion.

Grading
The course grade will be based on the examinations (40%), quizzes and graded homework assignments (10%), 45% on the laboratory reports, and 5% on the laboratory notebook.

Professor Robert G. Michel; Chemistry A319
Preferred method of communication for appointments, discussion of course work, etc. is by E-mail: robert.g.michel@uconn.edu, OR rgmichel@mac.com. You can use either of these e-mail addresses. They both work, and you don’t need to send e-mail to multiple addresses. E-mail will be answered 8:00 am to 8:30 pm most days. Office hours are Monday and Wednesday afternoons, after lecture, and finishing at 3:30 PM. Otherwise, you can come to Chemistry A319 anytime. If you wish to be sure of a meeting you should make an appointment in advance by e-mail. For emergencies, you may phone at 486 3143.