

CHEM 620 – Spectrochemical Analysis

Syllabus for Spring Semester 2008

- Instructor:* Professor M. Cecilia Yappert
Room 205/6 Chem. Bldg. (502) 852-7061
mcyappert@louisville.edu
- Meeting Times:* Mondays and Wednesdays (4:00 to 5:15 p.m.)
- Meeting Place:* Room B16, Chemistry Building
- Office Hours:* Mondays and Wednesdays (5:30 to 6:30 p.m.) in Rm. 206.
- Textbook:* “Spectrochemical Analysis” by J. D. Ingle, Jr. and S. R. Crouch
Literature Handouts
- Grading:*
- | | |
|----------------------------------|-------------------|
| 4 Assignments | 100 points |
| <u>3 Exams (100 points each)</u> | <u>300 points</u> |
| Total | 400 points |
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- | | | |
|---|------------|------------------|
| A | 90 – 100 % | (400-360 points) |
| B | 80 – 89 % | (320-359 points) |
| C | 70 – 79 % | (280-319 points) |
| D | 60 – 69 % | (240-279 points) |
| F | <60 % | <240 points |
- Objectives:* This course focuses on analytical aspects of optical spectroscopy. Specifically, it will cover signal-to-noise ratio considerations, fundamental principles and instrumentation associated with optical rotatory dispersion, circular dichroism, vibrational spectroscopy (infrared and Raman spectroscopy, molecular absorption and photoluminescence (fluorescence, phosphorescence and chemiluminescence). Besides the material covered in the textbook, handouts will be given to discuss current research in these areas.
- Assignments:* Assignments may be take-home exercises, written papers related to the current literature, and/or in-class presentations.
- Exams:* Exams will be based on lectures and assignments.
Tentative schedule for exams: February 6, March 17 and April 21, 2008.
- Withdrawal:* The last day to withdraw from this course is February 25, 2008.
- Note:* The instructor reserves her right to make changes in the syllabus when necessary to meet learning objectives, to compensate for missed classes, or for other similar reasons.

Academic Dishonesty

The **Code of Students Rights and Responsibilities** for students at University of Louisville, defines “academic dishonesty” as "obtaining or seeking to obtain an unfair academic advantage for oneself or for any other student. It includes lying, cheating, stealing, or engaging in otherwise dishonest conduct in the course of or related to any academic exercise." (See <http://www.louisville.edu/edu/handbook/studentcode.html>).

The policies of the University of Louisville on Academic Dishonesty are available at <http://www.louisville.edu/edu/handbook/integrity.html>.

Failure to follow this policy will result in a “F” for the course or dismissal from the Graduate Program.

Tentative Lecture Schedule

<u>DATE</u>	<u>TOPIC</u>
M 1/07	Introduction to Optical Spectrochemical Methods of Analysis
W 1/09	Spectrochemical Measurements
M 1/14	Basic Optical Relationships, Superposition of Waves, Polarization
W 1/16	Filters, Monochromators, Optical Fibers, Sensors
M 1/21	NO CLASS (Martin Luther King's Day)
W 1/23	Interferometers
M 1/28	Optical Rotatory Dispersion (demonstration)
W 1/30	Circular Dichroism (demonstration?)
M 2/04	Applications of ORD and CD (student presentations)
W 2/06	Exam 1 (Assignment 1 Due)
M 2/11	Signal-to-Noise Ratio (S/N) Considerations
W 2/13	S/N Considerations
M 2/18	S/N Expressions for Luminescence and Absorbance Measurements
W 2/20	Sensitivity and Detection Limit
M 2/25	Minimization of Systematic and Random Errors
W 2/27	Introduction to Molecular Spectroscopy
M 3/03	UV-vis Molecular Spectroscopy
W 3/05	UV-vis Molecular Spectroscopy
M 3/10	NO CLASS (Spring Break)
W 3/12	NO CLASS (Spring Break)
M 3/17	Exam 2 (Assignment 2 Due)
W 3/19	Infrared Spectrometry
M 3/24	Infrared Spectrometry (demonstration)
W 3/26	Raman Scattering spectroscopy
M 3/31	Raman Scattering spectroscopy (demonstration)
W 4/02	Molecular Luminescence
M 4/07	Molecular Luminescence
W 4/09	Molecular Luminescence
M 4/14	Molecular Luminescence
W 4/16	Molecular Luminescence (student presentations)
M 4/21	Exam 3
T 4/22	Reading Day
F 4/28	Assignment 4 Due