

Honors Chemistry 207

Introduction to Chemical Analysis I

Dr. John F. Richardson
john.richardson@louisville.edu

Office: Etscorn Honors Center
Phone: 852-6293

Lecture: M 2:00-2:50 CB B16 207-01 A, B, C

Laboratory: W 1:00-4:00, CB 110, 112, OR 114

Office Hours: M 11:00–12:00, T 1:00–2:00 (Honors Center), or appointment, or drop in.

Texts: *CHEMISTRY: The Molecular Nature of Matter and Change*, Silberberg
Introduction to Chemical Analysis lab manual

Course Objectives:

Analytical chemistry is the branch of science that deals with methods, techniques, and instrumentation used to identify and quantify chemical substances. Analytical chemists develop methods of analysis, use and design instrumentation for carrying out analyses, and determine the significance of results obtained from analyses. CHEM 207 is the first of a series of four laboratory courses numbered 207-210. This course is designed to introduce fundamental laboratory procedures from an analytical perspective. The Honors sections include some advanced synthesis and analysis in the form of a project that will be continued into CHEM 208 in the second half of the semester.

Each of the four courses consists of a one hour lecture and a three hour laboratory per week. The lecture is presented by the senior instructor while the laboratory sessions will be under the supervision of Teaching Assistants. The purpose of the lecture is to introduce important concepts and techniques that will be utilized in the laboratory and that are necessary for developing a thorough understanding of the experiments to be performed. Thus, lecture attendance is expected. The final exam will include material covered in the lecture. A schedule of experiments is given on the next page. You must read and understand each experimental procedure before your lab session. Be sure that you (1) know the purpose of the experiment, (2) understand the concepts and procedures to be utilized, and (3) are aware of any safety concerns and special waste disposal.

The experimental procedure must be written before the lab begins and all observations and measurements must be recorded during the experiment in the tables that you prepare beforehand.

Safety is of the utmost importance in this laboratory. You must be familiar with, and adhere to, all safety procedures outlined in the laboratory manual and posted in the lab. Although we have done our best to minimize potential dangers in the laboratory, anything when used improperly can become dangerous. If you are unsure about any aspect of an experiment, discuss it with your Teaching Assistant first.

Grades: Your grade for this course will be based upon your performance on weekly experiments and on the final exam. The final exam will contribute 2/8 (25%) of the final grade; the other 6/8 (75%) will be based on the laboratory reports. A portion of the grade for each report will be based on pre- or post-lab questions.

One lecture exam	200 points
One lab report	200 points
Five lab reports	<u>500 points</u>
Total	900 points

Grading Scale:	720 to 800 points	A
	640 to 719 points	B
	560 to 639 points	C
	480 to 559 points	D
	479 or less	F

Lab make-up policy: No lab periods are set aside for make-up labs. Every effort will be made to provide an opportunity to complete missed labs (or adjust the grade) due to an approved (by senior Instructor) absence.

Laboratory Schedule

<u>Week of:</u>	<u>Lecture</u>	<u>Experiment</u>
1) Aug 20-24	Statistical Analysis	1) Check-in Water Density Determination
2) Aug 26– Aug 31	Molarity/Dilutions Proper use of glassware	2) Preparation of Stock and Dilute Solutions and
3) Sept 3-7	No lecture (Labor day)	3) Calibration Curve Construction
4) Sept 10-14	Cr(acac) ₃	4) Cr(acac) ₃ prep, Fe(acac) ₃ prep
5) Sept 17-21	Acid/Base Rxns Poly-protic Acids	5) Cr(acac) ₃ recrystallization, MPs Acid-Base Titration (NaCO ₃)
6) Sept 24-28	Overview of Rxn. Types Prep for final exam	6) A Reaction Cycle (Cu)
7) Oct 1-5	Final Exam	7) No Lab if taking CHEM 208 [Check-out if <u>not</u> taking CHEM 208]