

CHEM 392
ADVANCED LABORATORY II

Course Materials:

1. Laboratory Notebook: Permanent bound 11" x 9.25", quadrille-ruled.
2. Safety goggles: Goggles must be worn in the laboratory at all times.
3. No text is required, although frequent reference to the chemical literature will be made.
4. References available in my office:
 - a. *Integrated Experimental Chemistry*, Aikens, et al
 - b. *The Synthesis and Characterization of Inorganic Compounds*, Jolly
 - c. *Practical Inorganic Chemistry*, Pass and Sutcliffe
 - d. *Synthesis and Technique in Inorganic Chemistry*, Angelici

Course Schedule:

1. Synthesis and Complete Characterization of a Cobalt Complex (6 weeks)
2. $\text{Cr}_2(\text{O}_2\text{CCH}_3)_4 \cdot 2\text{H}_2\text{O}$ - Synthesis and Analysis (3 weeks)
Ref: Jolly & J. Chem. Ed., 1988 65 (10), 918.
3. $\text{Cp}^*\text{Mn}(\text{CO})_2\text{PPh}_3$ - Photochemistry, Synthesis and Analysis (3 weeks)
Ref: J. Chem. Ed., 1982, 59 (8) 686.
4. Synthesis of Interhalogens: Iodine Trichloride(2 weeks).
5. Final Exam, Monday April 28 (1 - 3 pm)

Grading:

Lab Reports (4) each)	600 (Expt. 1 - 200 pts.; Expts. 2 & 3 - 150 pts.)
Final Exam	<u>200</u>
Total Points	800

<u>Letter Grade</u>	<u>Percentage</u>	<u>Letter Grade</u>	<u>Percentage</u>
A	90 - 100%	C	70 - 74%
A-	87 - 90%	C-	67 - 70%
B+	84 - 87%	D+	64 - 67%
B	80 - 84%	D	60 - 64%
B-	77 - 80%	D-	57 - 60%
C+	74 - 77%	F	BELOW 57%

Attendance:

Regular attendance at all labs is expected of each student. Absences due to college activities must be discussed with the instructor in advance and arrangements made for making up missed work. If a lab is missed, the absence must be discussed with the instructor as soon as the student returns to school.

Course Policies:

All laboratory work is to be performed during the scheduled laboratory hours. **Under no circumstances may a student work in a laboratory without the supervision of a member of the Chemistry Department faculty.** If additional laboratory time is needed, arrangements must be made with the course instructor.

Laboratory Notebook:

All entries should be in ink, pages numbered, experiments titled and entries dated. Never write on another sheet of paper with the idea of transferring to the notebook. Notebooks should be relatively neat and orderly, however, entries should not be recopied. This is a record of your work **as it is done**. The notebook should be kept in such a way so that anyone can turn to an experiment and tell exactly what you did during the experiment.

Before coming to lab:

1. Title and brief description of what the lab is about.
2. List of all reagents used in the experiment. Include name, formula, how the reagent is used, hazards associated with the reagent and method for proper disposal.
3. Outline of the procedure.
4. List of chemical reactions in the experiment.
5. List of any special safety precautions for the experiment.

During the lab:

1. Record and **label** all experimental data as it is taken. Use data tables when possible. Include all **units**.
2. Record all pertinent experimental conditions.
3. If a mistake is made, draw a single line through the error and include a note describing why this was considered an error. Do not obliterate the data.

After the lab:

1. Show and label all calculations.
2. Include all graphs, spectra, and chromatograms. These must be properly titled and labeled.

Laboratory Report:

Reports should be 3-5 pages(except for expt.#1) of double-spaced type-written text written in the passive voice. Reports should be written using a word processor.

1. Title page: Title, By-line (your name) and date submitted.
2. Abstract: This is a brief (a few sentences) summary of the problem or purpose of the experiment and the results obtained.
3. Introduction: This discusses the problem in detail including the experimental approach. Pertinent chemical reactions should be included and discussed.
4. Experimental: The experimental section includes the detailed laboratory procedure.
5. Results and Discussion: Results should be listed when appropriate in tabular form. The results and the experimental method should be analyzed. This should include a discussion of the confidence that the student has in the results (quantitative when possible) with supporting evidence. Results should be related to studies in the chemical literature when possible.
6. References: References to the chemical literature should be cited using correct bibliographic form.

Attachments:

7. Data Tables: These must be titled, neat, orderly, labeled with the appropriate units. Reference to and explanation of the data contained in the tables should be made in the body of the report, i.e. (" . . . see Table 2 . . .").
8. Graphs: For proper format see the introduction to "Experiments in General Chemistry" by Weiss, Rickard, and Greco.
9. Original spectra and chromatograms should be placed in the laboratory notebook. Copies (photo reduced to standard page size) are titled and labeled. Reference in the text of the report should be made to each included item by (" . . . see Spectrum 3 . . .").