The goal of this class is to give you some basic experience associated with preparative inorganic chemistry. These observations are designed to prepare you for additional coursework, either in chemistry or in other disciplines, and to help you function in a technological society. This goal assumes that you have passed chemistry 133 and 134 (or their equivalents).

**COURSE OBJECTIVE:**
The objective of this course is to introduce the student to some methods for the synthesis and characterization of inorganic materials. This will be done through three experiments. These observations will prepare the student for additional coursework, either in chemistry or in other disciplines, and will help the student function in a technological society. This objective assumes that the student has passed chemistry 133 and 134 (or their equivalents).

**STUDENT LEARNING OUTCOMES:** The student will need to learn and apply the following basic principles to problem solving:
1. On completion of this course, students should master and apply chemistry concepts to problem solving. The report for Experiment 3 will be used to evaluate this objective.
2. On completion of this course, students should master and apply quantitative methods to problem solving. The calculations for Experiment 1 will be used to access this objective.
3. On completion of this course, students will exhibit the ability of problem solving, demonstrate the knowledge of issues facing modern science, and have the confidence and laboratory skills needed to complete routine experiments. The third lab report is to be in a format suitable for submission to a professional journal.
4. On completion of this course, students will demonstrate the knowledge of influence of modern technology on chemistry by using instrumentation to collect data during laboratory experiments. The experimental section of the third lab report will be used to access this learning outcome.

The third experiment is worth 200 points. The other two experiments are worth 100 points. A minimum of 360 points will be required for an A.

The lab is an open lab; as such, you will be given the maximum amount of freedom in scheduling your work. One hour per week will be set aside, when necessary, to discuss the experiments and to make suggestions. The following is a suggested schedule:

<table>
<thead>
<tr>
<th>Week</th>
<th>Lab Assignment</th>
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<tbody>
<tr>
<td>1</td>
<td>Do solid-state preparation</td>
</tr>
<tr>
<td>2</td>
<td>Do X-ray analysis of sample</td>
</tr>
<tr>
<td>3</td>
<td>Determine density and magnetic susceptibility measurements</td>
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</tbody>
</table>
4 Prepare report on Experiment 1 (Due at noon on Friday)
5 Begin metallocene preparation
6 Finish preparation and collect spectral data on metallocene
7 Prepare report on Experiment 2 (Due at noon on Friday)
8 Prepare oxalate complex
9 Collect spectral data on complex
10 Continue collecting spectral data
11 Begin analysis of sample for the metals present
12 Finish metal analysis and begin oxalate and water determinations
13 Finish oxalate and water determinations
14 Open
15 Prepare report on Experiment 3 (Due at noon on Friday)

The above schedule is only a guide. Only the report due dates are fixed. At least a preliminary report must be submitted by the report due dates. A penalty of 25% will be accessed for any late reports. Except under unusual circumstances, reports more than two weeks late will receive a 0. Guidelines for the reports are in the lab manual.

You must maintain a bound laboratory notebook. You will not need to turn in the notebook, but a spot check, at any time, may occur to make sure that you are keeping it up to date. If it is not up to date, a 10% penalty on the experiment will be accessed. Remember: a laboratory notebook is a legal document, and as such, it is necessary to follow certain rules. To maintain the legal status no items are to be recorded elsewhere, no items are to be deleted or covered up in any way, and no pages are to be removed. Anything that threatens the integrity of the notebook as a legal document will result in a 50% penalty on the experiment. A student will not receive a passing grade in the course if he/she does not submit the notebook when requested.

Any student who is taking this course for graduate credit must achieve a higher level of expertise. In order to reach this level, the reports will need to be of higher quality. Expect the application of a more rigorous standard in these cases. Thus, an undergraduate who obtains a 90 on a particular report might expect no better than an 80 as a graduate student.

Anyone repeating this course must prepare different compounds this time. No previous work for this course is acceptable.

If you should have any questions dealing with grades, study habits, etc., you should see the instructor. Any type of special accommodations will be arranged only after a consultation in the instructor's office. (Special accommodations must be arranged so that all students are treated equally.) If you feel that you need to do better in class, then you must see the instructor during the term (before Finals Week), if you wait until after the final there is nothing that can be done about helping your grade. The instructor is available to discuss study habits and any other general consultation. The instructor is available during office hours, and at other times of mutual convenience. The instructor is willing to work with you to insure that you pass the class.