CHEM 308: Inorganic Chemistry Lab, Spring 2015

Instructor: Cheng-Yu Lai
Email: cylai@desu.edu
Office: SCS 306
Lab: Thursday 14:00 - 16:45 PM
Laboratory: SCN Room 242

Lab Manual (Required): Please find it from websites

Course Information and Requirements

Student Learning Outcomes:

- Demonstrate the ability to apply basic mathematics (arithmetic and algebra) and basic chemical principles to find solutions to simple quantitative problems and situations.
- Enhance and broaden your repertoire of synthesis and characterization techniques as related to inorganic chemistry.
- Perform laboratory experiments that are based on fundamental chemical principles and adhere to departmental standards of laboratory safety.

<table>
<thead>
<tr>
<th>Course learning goal/objective/outcome:</th>
<th>Assessment method</th>
<th>Alignment to program(s) learning goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will (i) develop general chemistry laboratory techniques and perform experiments safely.</td>
<td>Students’ performance will be assessed by the instructor and recorded for each lab based on the following standards.</td>
<td>Department goal 3.</td>
</tr>
<tr>
<td>(1) <strong>Excellent</strong> --- Proficiently use various experimental devices/equipment/apparatus in a correct way which is required based on lab manual or instructed by the instructor. Conduct experiment exactly based on designed procedures. No safety issues.</td>
<td></td>
<td>College goal II and IV.</td>
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<tr>
<td>(2) <strong>Acceptable</strong> --- Use various experimental devices/equipment/apparatus in a correct way which is required based on lab manual or instructed by the instructor, but not yet proficiently. Conduct experiment based on designed procedures, but not exactly. No safety issues.</td>
<td></td>
<td>University goal II and VI</td>
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<tr>
<td>(3) <strong>Unacceptable</strong> --- Repeatedly use experimental devices/equipment/apparatus in an incorrect way. Conduct experiment not based on designed procedures. Some safety issues or incidents occur.</td>
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<td>Students will (ii) be able record data and observation correctly and do necessary calculations correctly.</td>
<td>Assessed based on lab reports submitted by students.</td>
<td>Department goal 2 and 3.</td>
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<td></td>
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<td>College goal I.</td>
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<td>University goal I and V.</td>
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<td>Course learning goal/objective/outcome:</td>
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<tr>
<td>(iii) use chemical principles to explain phenomena observed in</td>
<td>Assessed based on lab reports submitted by students.</td>
<td>Department goal</td>
</tr>
</tbody>
</table>

Students’ performance will be assessed by the instructor and recorded for each lab based on the following standards.

1. **Excellent**---Actively participate in the group, cooperatively work with lab partner(s), and diligently perform the experiment.

2. **Acceptable**---Somewhat actively participate in the group, somewhat cooperatively work with lab partner(s), and somewhat diligently perform the experiment.

3. **Unacceptable**---Reluctantly participate in the group, uncooperatively work with lab partner(s), and reluctantly perform the experiment.

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**Critical Thinking**

- Apply logical thought processes and background knowledge to draw appropriate conclusions from chemically related information and data.
- Infer conclusions and consequences from experimental data.

**Communication**

- Write professional papers in a style consistent with currently accepted scientific report structure to include proper grammar and spelling.

**Required Materials:**

- In pursuit of the objectives outlined above, the course will utilize the following:

**Lab Resources: Handouts will be used for the laboratory course.**

**Course Web Site:**

[http://www.desu.edu/~cylai/teaching](http://www.desu.edu/~cylai/teaching)

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**Evaluation**

Grades are assigned according to the college-wide grading system.

- 100-90=A (GPA=4.0)
- 89-80=B (GPA=3.0)
- 79-70=C (GPA=2.0)
- 69-60=D (GPA=1.0)
- 59-0=F (GPA=0.0)

Grades will be assigned based on attendance, quizzes, and lab reports (50 points/Lab).

- **Attendance and lab performance**: 20%
- **Pre-Lab Quizzes**: 20%
- **Lab Reports**: 60%

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**Lab Safety**
CHEM 308 Inorganic Chemistry Lab

(Department Safety Rules are posted on the door.)

1. Students will participate in the Right-to-Know training and complete a form indicating comprehension and anticipated compliance. Students will be informed and properly trained to use any potentially hazardous equipment or materials in the laboratory component of this course.

2. Safety glasses must be worn at all times in the laboratory, unless a dry lab (no chemicals/glassware/fire) is the only lab scheduled.

3. No undergraduate students are allowed to conduct any experiments without supervision.

4. No food, drink, and smoking/tobacco products is permitted in the laboratory at any time.

5. All accidents/spills must be immediately reported to the instructor and, if necessary, an accident report filled out in SC257.

6. Students are responsible for their assigned work area and equipment. Excessive breakage or items returned in an unacceptable condition may result in a charge to the student.

7. Long pants and long-sleeves/should-covering shirts are required for doing experiments.

8. No sandals and open-toe shoes are allowed to work in the lab.

9. Never dump chemical waste into the sink unless it is instructed otherwise for certain experiments.


11. Handicapped students will be helped as follows:

12. Assistance in recording lectures and/or securing lecture notes.

13. Offering additional faculty instruction.

14. Offering special tutoring.

15. Providing suitable methods of evaluation.

16. Statement on Pregnant Students Taking Laboratory Courses:

By maintaining the safety rules, we expect that all students, including a pregnant student, should be able to carry out lab procedures safely. However, it is the Department’s professional advice that pregnant students should be advised NOT to take a lab course unless she is willing to understand and assume the risks. She should certainly be seeking and following proper medical advice from her physician and consultation with Office of Accessibility Services.

Student Conduct and Behavior

(This call will adhere to the university’s policy on student conduct and behavior including the use of cell phones found at http://www.desu.edu/sites/default/files/JudicialProcedures(2).pdf). Some specific rules for this class are listed below.

1. Tutorial Lab Video or tutorial info posted on web is required to watch prior coming into lab to perform the experiment.

2. Attendance for lab is mandatory. Submitting a lab report for an unattended lab is not acceptable and will be regarded as cheating.

3. There is no makeup session in this lab. Students must have an acceptable excuse to justify. The acceptable excuses include university business (signed official document is required), medical emergency (medical doctor certificate is required, general medical appointment will not be counted as emergency), and other physical emergencies (certain official certificate is required). If student has to miss labs with legitimate reasons (university business, jury duty, and medical emergency, exclusively)), up to 3 (three) labs, an instructor-described project or a comparable exam based on the missed experiments can be given to student in order to make up missed work. Legitimate notes that cover the period must be submitted in order to make such arrangement. If student has to miss labs more than 3 times due to university business, student needs to get Dean’s approval in order for the instructor to make arrangements to make up missed work. An absence due to a non-acute medical service or appointment (such as a regular checkup) is not an excused absence.

4. The Pre-lab section in the lab report is recommended to be completed prior coming into lab to perform the experiment.

5. Lab Performance is based on lab activity.
6. The **Lab Report** must be submitted at the beginning of next lab period. Late submissions will not be accepted. 30% off that lab grade for late report.

7. **Late arrival/early leaving** will impact your lab grade for the day in the following way: a) 10 min or less, no impact; b) 10-30 minutes 20% off that lab grade; c) **more than 30 minutes** and leaving without finishing the experiments are counted as absence. d) absent during the lab without permission will greatly affect evaluation of lab performance, up to 50%.

8. **Cheating** in any pre-study/quizzes/exams/reports may directly result in F for the pre-study/quiz/exam/report and may be reported to the department chairperson of chemistry.

9. **No cell phone calls/rings** in the lab. Each time of violation may cause 5 points decrease in the final grade.

10. **Disturbing** others by talking and making noises during the lab time will prompt the instructor to ask student to adjust his/her behavior or leave the lab and in the later case, this will be counted as absence for that lab. The instructor may call campus security to come to take that student out.

11. Students **not following safety rules** may be required to leave the lab immediately. Rejection of leaving may result in F for this course. This instructor may call security to come to take that student out.

12. Students are not allowed to leave the lab without permission before finishing the experiment. Each violation may result in **10 point** off in the final grade. Lab performance will be monitored during the experiment.

### 2015 Spring Tentative Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Title of Experiment</th>
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<tbody>
<tr>
<td>01/15/15</td>
<td>Introduction and Inorganic Lab Safety</td>
</tr>
<tr>
<td>01/22/15</td>
<td>Instrument Introduction – UV/IR and Furnace/Vaccum</td>
</tr>
<tr>
<td>01/29/15</td>
<td>Ethylenediamine Complexes of Cobalt</td>
</tr>
<tr>
<td>02/05/15</td>
<td>Ethylenediamine Complexes of Nickel</td>
</tr>
<tr>
<td>02/12/15</td>
<td>Characterization of Nickle/Cobalt Complex</td>
</tr>
<tr>
<td>02/19/15</td>
<td>Open Lab</td>
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<tr>
<td>02/26/15</td>
<td><strong>SYNTHESIS OF A SOLID ACID, 12-Tungstosilicic acid, H4SiW12O40-7H2O</strong></td>
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<tr>
<td>03/05/15</td>
<td><strong>APPLICATION OF A SOLID ACID,12-Tungstosilicic acid, H4SiW12O40-7H2O</strong></td>
</tr>
<tr>
<td>03/12/15</td>
<td>Spring Break</td>
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<tr>
<td>03/19/15</td>
<td>Characterization of Solid Samples of Fe2O3 / Fe3O4 by XRD,</td>
</tr>
<tr>
<td>03/26/15</td>
<td>Open Lab</td>
</tr>
<tr>
<td>04/02/15</td>
<td>Synthesis of the ligand field strengths of a series of chromium(III) complexes-</td>
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<tr>
<td>04/09/15</td>
<td>Synthesis of the ligand field strengths of a series of chromium(III) complexes</td>
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<tr>
<td>04/16/15</td>
<td>Characterization of the ligand field strengths of a series of chromium(III) complexes</td>
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<tr>
<td>04/23/15</td>
<td><strong>Clean-up and Checkout</strong></td>
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</tbody>
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### Always Safety Dress Code / Safety Googles

Please read the document and then, sign the portion below; fold and tear along the line and return this lower portion to your instructor.

I have received a syllabus of General Chemistry 308 Lab, containing the grading policies, safety rules, and special class requirements. I understand those policies and agree to follow those rules and requirements.

PRINT your name here: ______________________.

SIGN here: ______________________. Date: ______________________.