Lab Packet: All printed material for this lab will be available on D2L under the heading labeled “Course Content” OR may be purchased at Smart Copy (1915 SW 6th Avenue).

Prelab Exercises: Prelab instructions are included in the lab packet. You should answer any questions presented and prepare for the weeks lab before your lab meeting. Pre-labs are due at the beginning of the lab period.

Materials: You will need chemical splash safety goggles. These are available from the chemistry stockroom (Room 280 SRTC) or at the campus bookstore. You will need a bound carbonless copy notebook (not loose paper) for recording data. You are responsible for all laboratory equipment checked out to you. If you break glassware, you will pay the replacement cost of the glassware.

Dress for lab: You must wear shoes that cover your entire foot, including the heel. They should fit up near your ankle; leather is preferred but any non-porous material is okay. Short shorts and short skirts are not allowed. Your clothing must cover your torso and legs down to your knees.

Grading: The laboratory is graded on a Pass/No Pass basis. An average of 75% of all points available in the lab is required to pass.

Late Work: Laboratory reports are due at the beginning of the lab period following completion of the experiment. Lab reports should be typed. Late reports will be docked 5 points per day late.

Attendance: Attendance in this lab is mandatory.
YOU MUST ATTEND ALL SCHEDULED LABORATORY MEETINGS. If you are not able to attend lab you must notify your laboratory instructor as soon as possible. Students are responsible for completing the lab report for the missed lab. Data can be obtained from a lab partner or the lab TA. The made up work should be clearly labeled and indicate the origin of the data reported. Reports are due the class meeting following the syllabus deadline. In addition to completing the make-up lab you must make up the missed lab time. The make-up laboratory will not be the same lab you missed but will be a unique activity that will take place during week 10 of the quarter, during the regularly scheduled lab period. FAILURE TO DO BOTH WILL RESULT IN A NO PASS GRADE. If you miss two or more labs your grade will be a NO PASS.

NOTE: If you are more than 15 minutes late to lab you will be marked late. Two late arrivals during the term will be counted as a missed lab. In addition, late students may
be assigned to lab clean up duties at the conclusion of the lab period. If you are chronically late you will be given a NO PASS.

Plagiarism: Experiments will be done in groups sharing the computer for data analysis and acquisition. You may compare data with other groups, but the content of your lab reports MUST be written individually. It will be considered an act of plagiarism if you borrow tables or graphs from another student (learning how to properly create a table or graph is an important skill, learn how to do it on your own!). You cannot paraphrase the internet, your book or any other source without the proper reference. Additionally, it will be considered an act of plagiarism if you borrow data without prior approval from your TA. There are additional resources online to help you avoid plagiarism. Please be sure to check http://www.lib.pdx.edu/instruction/survivalguide/writeandcitemain.htm or http://web.pdx.edu/~b5mg/plagweb.html, and feel free to discuss the issue with your TA or the lab coordinator.

Depending on the severity of the offense(s), you will receive, at a minimum, a zero score for the report. Additionally, a report may be made to the Office of Student Affairs.

Grading Criteria

Unless otherwise noted, every lab report is worth 90 points, including the prelab, notebook and technique. Each lab report will be graded according to the following point distribution:

- Prelab: 10 points
- Abstract: 10 points
- Introduction: 10 points
- Data: 10 points
- Results: 15 points
- Discussion: 15 points

In addition to the above points each lab meeting will have an additional 20 points assigned on the following basis:

- Notebook: 10 points
  These points are awarded by the TA based upon the quality of your lab notebook. Your TA will be looking to see that you are including a title, a statement of purpose, the procedures, data tables and that all data is present.

- Lab technique: 10 points
  The basis for assigning these points includes (but is not limited to) general lab technique and methods, safety, general mannerism in lab and cleanliness.

Both of these criteria will be evaluated by your TA during each lab meeting. At the end of each lab you must check out with your TA so that he or she can assess your lab notebook and verify that you have cleaned your work area.
Check-in.
Announcements and registration adjustments and Lab Safety
View the Lab Safety Video. A link is available on D2L. Complete the quiz, also available on D2L, before returning Tuesday or you will not be able to participate in the lab.

**Units and Measurements.** Handout. Due at the end of the lab session.

**June 24**

**Who has the same solid that I have?** (90 pts)

**June 26** (Who has the same solid that I have? report due)

**How much sugar is in a can of coke?** (Submit your results before leaving 60 pts)

**June 30**

**Copper Cycle** (90 pts)

**July 1** (Copper Cycle report due)

**Alkali Metal Project - Simple Weight Loss and Gravimetric Analysis** (90 pts)

**July 3** (Alkali Metal Project report due)

**Using Conductivity to find an Equivalence Point** (Submit your results before leaving 60 pts)

**July 7**

**Atomic Emission Spectra** (70 pts)

**July 8** (Spectra report due)

**Beer’s Law: How much dye?** (90 pts)

**July 10** (Beer’s Law report due)

Check out of your drawer if you are changing sections.

**Web Assignment: Electron Density Explorations** (25 pts)
Chemistry 228
Schedule – Summer 2014

July 14
Check-in.
Announcements and registration adjustments and Lab Safety
View the Lab Safety Video. A link is available on D2L. Complete the quiz, also available on D2L, before returning week 2 or you will not be able to participate in the lab.

Enthalpy of Neutralization of Phosphoric Acid (90 pts)

July 15 (Enthalpy of Neutralization of Phosphoric Acid report due)

Enthalpy of Reaction and Hess’s Law (90 pts)

July 17 (Hess’s Law report due. Please write your TA’s name on the report and deposit it in the mailbox located outside of the door to the chemistry office on the second floor of SRTC)

Gas Laws – Online Lab. (60 pts) All lab sections do not meet.

July 21 (Gas Laws – online report due)

Decomposition of Hydrogen Peroxide (90 pts)

July 22 (Decomposition of Hydrogen Peroxide report due)

Vapor Pressure and Heat of Vaporization (90 pts)

July 24 (Vapor Pressure and Heat of Vaporization report due)

Using Freezing Point Depression to Find Molecular Weight (90 pts)

July 28 (Molecular Weight by Freezing Point Depression Report Due)

Kinetics: Rate and Order of a Chemical Reaction (90 pts)

July 29 (Kinetics: Rate and Order of a Chemical Reaction report due)

Chemical Equilibrium: Finding a Constant Kc (90 pts)

July 31 (Chemical Equilibrium: Finding a Constant Kc report due)

Le Chatelier’s Principle in a Cobalt Complex (30 pts) (due at the end of class)
Check out of your drawer if you are changing sections.
Chemistry 229  
Schedule – Summer 2014

Aug. 4  
Check-in.  
Announcements and registration adjustments and Lab Safety  
View the Lab Safety Video. A link is available on D2L. Complete the quiz, also available on D2L, before returning week 2 or you will not be able to participate in the lab.  
Lab 1: Acid Rain (90 pts)

Aug. 5 (Acid Rain Report Due)  
Acid Dissociation Constant (90 pts)

Aug. 7 (Acid Dissociation Constant Report Due)  
Titration of a Diprotic Acid: Identifying an Unknown (90 pts)

Aug. 11 (Titration of a Diprotic Acid: Identifying an Unknown Report Due)  
Buffers (90 pts)

Aug. 12 (Buffers Report Due)  
Determination of the $K_{sp}$ of Calcium Hydroxide (90 pts)

Aug. 14 (Determining of the $K_{sp}$ of Calcium Hydroxide Report Due)  
Thermodynamics of the Solubility of Potassium Nitrate (90 pts)

Aug. 18 (Thermodynamics of the Solubility of Potassium Nitrate Report Due)  
Redox Titration: Analysis of Commercial Bleach (90 pts)

Aug. 19 (Redox Titration Report Due)  
Voltaic Cells (90 pts)

Aug. 21 (Voltaic cells due)  
Synthesis of Acetaminophen (handout is due at the end of class) (30 pts)  
Check-out  
Make-up lab

Labs are graded on a Pass/No Pass basis.  
In order to pass the lab you must turn in every lab report.  
More than one absence will result in a No Pass for the class.  
You must receive 75% or greater of all the points available to pass.