

Instructor: Dr. Grant Edwards
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Please contact me via email when possible.

Office Hours: Office hours are by appointment, please email to schedule a specific appointment. In addition, I have an open door policy: feel free to stop by and ask questions if I am in my office.

Prerequisite: A Math ACT score of 20 or above and high school chemistry or placement or grade of C or better in CHE 102 or the equivalent.

Corequisite: CHE 120 – **If you drop CHE 120, you will also be dropped from the lab.**

Required Items:

1. *Laboratory Manual for General Chemistry I 120L (6th Edition)*, by Hicks, Niewahner, Padolik, and Walters, 2008.
2. Lab Notebook, Hayden McNeil Publishing
3. Safety Goggles (available through SAACS or bookstore), they must meet ANSI Z87.1-1989 standards when in doubt get them from the bookstore.

Internet Resources:

1. The blackboard website for this course (<http://learnonline.nku.edu>) will be utilized for this course. You are responsible all materials posted to the site.
2. The NKU General Chemistry website (http://www.nku.edu/~chemistry/general_chem/) contains course objectives, comprehensive schedules, handouts and pre- or post-lab pages.

Before Lab: You are expected to come to lab with an understanding of the principles involved in the experiment and the procedures to be followed. This level of preparation requires you to read the experiment and all recommended reading materials assigned by me or specified in the lab manual **before coming to lab** and completing any pre-lab questions found in the lab manual (they will be collected!). You can either use the page directly from the manual or you can print out the prelab questions from the general chemistry website (http://www.nku.edu/~chemistry/general_chem/). Furthermore, the title, safety precautions, objectives, and protocol must be written in your lab notebook before you come to lab! Please write your protocol on the left half of the page and leave plenty of room for your data and observations on the right half of the page. The protocol should consist of individually numbered steps and **use complete sentences**. More information, including an example, is in your lab manual. You must have enough information present in your lab notebook so that you could perform the experiment without using the lab manual, because **you will only be allowed to use your lab notebook and a calculator during the lab period!** Students who are not prepared for lab will not be allowed to complete the experiment will be given a zero for the entire lab.

During Lab: At the beginning of lab, you must turn in the lab report from the previous experiment and any formal report that is due. Also you must turn in the prelab questions. After a short prelab discussion, you will begin your experiment. You are allowed to use your lab notebook and calculator only. You will be recording your data and observations in the right hand column of the lab notebook directly adjacent to the protocol steps. The overall specifications for the lab notebook is described in the "Record Keeping" section of your lab manual. **All entries should be made in pen.** Always clearly record experiment data to the correct number of significant figures and use appropriate labels. You will be penalized greatly for not following these instructions. **You are expected to complete your experiment in the allotted time and then stay during the remaining lab period to work on completing your lab report. Do not plan to leave early.**

After Lab: After the lab you will complete carefully labeled calculations, write a results section presenting your results, and then a conclusions section presenting the final results in the notebook. This completes the lab notebook. **Now you must also complete the pertinent postlab questions found in the lab manual.** You can either use the pages directly from the manual or you can print out the postlab questions from the general chemistry website (http://www.nku.edu/~chemistry/general_chem/). Once these two portions are complete you are to remove the carbon copies of the lab notebook pages and staple them on top of the postlab questions. This is now considered your lab report. **The reports are due at the beginning of the lab period following the completion of the experiment, and will not be accepted late.** You will also write formal report section for certain experiments, for more information see the section entitled Formal Reports below.

Formal Reports Throughout the semester you will have two formal introductions and two formal discussions to write over specific experiments as outlined on page 4 of the syllabus. This writing exercise helps prepare you to write full formal reports in General Chemistry II Lab, CHE 121. Guidelines for these sections are on pp. xviii and xix of the lab manual. These sections are to be typed or written on a computer. You will be graded on your quality of writing. **The formal report is due at the beginning of the lab period following the completion of the experiment. Reports will not be accepted late.**

Safety: **All safety rules in the lab manual and discussed during the first lab period must be obeyed. No food or drink is allowed in lab. Violation of these rules will result in dismissal from the lab and a grade of zero for that experiment. Habitual violation of the rules during the semester will result in dismissal from the course and a failing grade. Proper clothing (LONG PANTS AND CLOSED TOE SHOES) and SAFETY GOGGLES must be worn at all times, or you will not be allowed to enter the lab (and receive no makeup opportunity). You are not to take your goggles off during the lab period.**

Exams: There will be two exams given during the semester as indicated below. These exams will consist of both practical and written portions. The practical portion of the exam will be worth between 20 and 35% of the overall test score. The exams are not cumulative.

Calculators: **Programmable and graphing calculators are not permitted during exams.**

Electronic Devices: **Use of a cell phone or pager during an exam will be considered cheating, and appropriate actions will be taken by the instructor.**

Course Grade: Each experiment will be worth 100 pts and will be composed of prelab questions, lab notebook, participation, calculations, results and post lab questions. Additional points will be composed of the two exams and the 4 formal reports each weighted as follows.

Experiments: 65% of final grade
Formal Reports: 10% of Final Grade
Exams: 25% of final grade

| <u>Score</u> | <u>Grade</u> |
|--------------|--------------|
| 90% – 100% | A |
| 80% – 89% | B |
| 70% – 79% | C |
| 60% – 69% | D |
| 0% – 59% | F |

Remember A 'C' or better is needed in this course to enroll in CHE 121L!

Attendance: The **departmental policy** with regard to makeup labs is as follows:

Each student in a General Chemistry Lab will be allowed to make up the experiment for two excused absences during the semester. An excused absence is one for which the student has a good reason (something beyond the student's control) for not being able to attend the regularly scheduled lab period. The student must contact their laboratory instructor either in person, by phone, e-mail or letter within 2 weekdays (M,T,W,R,F) of the missed lab. A student who waits longer than 2 weekdays after a missed lab to request a make up will normally not be allowed to make up the lab experiment and will be assigned a grade of zero for that experiment. The student will be expected to verify their reason for requesting an excused absence. The lab must be made up no later than the last lab period of the week following the scheduled experiment. The student must also obtain permission from the make up lab instructor. Absences beyond two will each be assigned a grade of zero.

Since this is a departmental policy, there can be no exceptions!

Course Objectives

- Use laboratory equipment, how to make measurements using appropriate precision and make observations to identify chemical and physical changes.
- Use a laboratory record book, record data, analyze data and write lab reports including introductions and discussions.
- Carry out syntheses; calculate theoretical yield, percent yield and percent errors.
- Carry out qualitative and quantitative analyses using techniques such as precipitation, titration, calorimetry and spectroscopy.
- Determine and evaluate experimental errors and their impact on results.
- Use computer programs to analyze data.

Student Learning Objectives

- Explain the major concepts and experimental findings in the chemical sciences.
- Demonstrate the ability to carry out experimental protocols using modern instrumentation and methods.
- Compile, critically evaluate, and interpret scientific information and data.
- Effectively communicate scientific information through written and oral means.
- Apply effective group strategies to solve scientific problems.
- Apply computer technology and other technologies in the comprehension, interpretation, and presentation of the chemical sciences.

Department Policies:

- All items on syllabi are subject to change by the instructor.
- Students are responsible for reading and understanding all items on the syllabi. Any items not understood must be brought to the attention of the instructor within the first two weeks of class.
- The work you will do in any course is subject to the Student Honor Code. The Honor Code is a commitment to the highest degree of ethical integrity in academic conduct, a commitment that, individually and collectively, the students of Northern Kentucky University will not lie, cheat, or plagiarize to gain an academic advantage over fellow students or avoid academic requirements. The Honor Code can be accessed at http://www.nku.edu/~deanstudents/student_rights/honor_code/htm.
- Students with disabilities who require accommodations (academic adjustments, auxiliary aids or services) for this course must register with the Office of Disability Services. Please contact the Disability Service Office immediately in the University Center, Suite 320, or call (859) 572-6373 for more information. Verification of your disability is required in the Office of Disability Services for you to receive reasonable academic accommodations. Visit the Disability Services website at www.nku.edu/~disability/.
- Cheating will not be tolerated. In accordance with the Code of Student Rights and Responsibilities, faculty members have the right to determine actions to be taken when a student is caught cheating.
- Faculty members reserve the right to dismiss or to have removed a disruptive student from their classrooms.
- A grade of C or better is required in CHE 120 and CHE 120L to enter CHE 121 and CHE 121L.
- This is a web enhanced course. Students meet at regularly scheduled class time and will need access to the internet to fulfill course requirements.

CHE 120L-013 Spring 2009 Schedule

| Date | Manual Page # | Experiment Title | Required Formal Report |
|------|---------------|---|--------------------------------------|
| 1/14 | – | Lab Check-in and Safety Lecture Lab Measurement Primer | |
| 1/21 | 59 | Introduction to Chromatography | |
| 1/28 | 67 | Laboratory Measurements | |
| 2/4 | 93 | Physical and Chemical Properties | |
| 2/11 | 53 | The Empirical Formula of Zinc Iodide | Introduction (25 pts) |
| 2/18 | 99 | Synthesis of Alum | Discussion (25 pts) |
| 2/25 | 33 | Chemical Reactions | |
| 3/4 | – | Exam #1 | |
| 3/11 | – | Spring Break No Lab | |
| 3/18 | 9 | Acid Base Titration | |
| 3/25 | 19 | Calorimetry and Hess's Law | Introduction and Discussion (50 pts) |
| 4/1 | 45 | Cycle of Copper Reactions | |
| 4/8 | 105 | Titration of Bleach | |
| 4/15 | 1 | Absorption Spectroscopy | |
| 4/22 | 77 | Checkout Lewis Formulas, Formal Charge, and VSEPR | |
| 4/29 | – | Exam #2 | |