

Chemistry 106 - Fundamental Chemistry

Spring 2015

Dr. Erin Speetzen

Contact Information

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Office Hours

Monday 10 a.m. – 11 a.m.
Tuesday 11 a.m. – 12 p.m.
Wednesday 9 a.m. – 10 a.m.
Thursday 11 a.m. – 12 p.m.

The best way to reach me is via my university email. I check my email periodically throughout the workday (8:30 – 5:00). I do not check email at night or during the weekend.

Meeting Times

Lecture: Tuesday, Thursday, Friday 10 – 10:50 a.m. CCC 303.

Lab/Discussion:

Section Number	Discussion (Room)	Lab (Room)	Lab Instructor
4	W 8 – 8:50 (A110)	M 11:00 – 1:50 (C124)	Kaz Wawrzaszek
5	W 10 – 10:50 (A111)	F 11:00 – 1:50 (C124)	Erin Speetzen
6	W 11 – 11:50 (A111)	M 2:00 – 4:50 (C124)	Gary Lueck
7	W 12 – 12:50 (A111)	T 2:00 – 4:50 (C124)	Erin Speetzen

Prerequisites

Chem 105, Math 100 or higher

Required Materials

Textbook

Chemistry – The Central Science Brown, LeMay, Bursten, and Murphy, 12th Edition, Pearson/Prentice Hall, 2011. This book is available for rental at the University Bookstore.

Lab Manual

Chem. 106 Lab Manual – Spring 2015, UW-Stevens Point. This lab manual is available for purchase at the University Bookstore.

Scientific Calculator

Your calculator must be able to do logarithms. You will not be allowed graphing calculators or any calculator with a QWERTY or alphabetical keyboard. Calculators that meet these requirements can be purchased at the University Bookstore, office supply stores such as Staples or Office Depot, or at other stores such as Target, Walmart, etc. for around \$10.

Optional Materials

3-Ring Binder

In order to better keep track of course materials, some students may find that using a 3 ring binder is beneficial as it allows you to more easily incorporate handouts or figures into your notes.

Laptop Computer

Students wishing to take their notes electronically are more than welcome to do so. One warning, we will be using many mathematical equations and expressions in this course, which may be hard to accurately incorporate into a Word or OneNote document. I reserve the right to ban laptops if students are using them for inappropriate activities.

Course Description

Fundamental principles and theories of chemistry, including stoichiometry, atomic and molecular structure and bonding, nuclear chemistry, thermodynamics, descriptive chemistry of nonmetals and transition metals, chemical kinetics and equilibria, introduction to organic chemistry. A continuation of Chemistry 105.

Course Learning Outcomes

1. Be able to use qualitative and quantitative skills to solve chemistry problems.
2. Be able to use the theories of chemistry to explain chemical and/or physical phenomena.
3. Be able to organize and present data in such a way as to draw reasonable and defensible conclusions.
4. Be able to demonstrate appropriate and safe laboratory procedures within the chemistry lab.

Classroom procedures

This course consists of a lecture, discussion, and laboratory. Time spent during lecture may be used in a variety of ways including lecture, small and large group discussion, and group activities. Discussion will be devoted to smaller group discussions/activities aimed to improve your understanding of the material, as well as time for you to ask questions about things that you are struggling with or things that you are interested in. The laboratory period will be used to build and assess your skills in the laboratory.

So, what can you expect from me? I promise I will

- Show up on time and prepared for each meeting.
- Listen to your questions and concerns and respond to them to the best of my abilities.
- Be fair and impartial in all of my grading.
- Hold everyone in the class to the same set of standards with regards to attendance, respect, and make-up work.
- Provide you with prompt and helpful feedback.

What do I expect of you? You should

- Show up on time and prepared for each meeting.
- Be willing to work hard.
- Have a good attitude.
- Adhere to all course policies and procedures.

Preparation/Participation

Before coming to class each day you should read through the assigned reading (rarely more than 10 pages and often with many pictures/tables). I do not expect that you understand all the material before coming to class, however, I do expect that you are familiar enough with the material that we can discuss it without having to stop to define each new word.

During class I expect that you pay attention (to the best of your abilities), refrain from using technology (ipods, laptops, cell-phones, etc.) in a disruptive way, and participate in class discussions and activities. Participation is not awarded its own grade, but in my experience students who participate in class tend to do better than those who do not.

Recommended study habits and tips

Chemistry is not an easy subject to master, and you should not expect to master it without hard work. The general rule of thumb is that you should spend 2 – 3 hours of time outside of class for each hour that you are in class. Chem 106 is a 5 credit class, which means that you should plan on spending 10 – 15 hours a week preparing for class, working through end-of chapter problems, working on class assignments, and studying for exams. The best way to break this time up is to spend a little bit of time working on chemistry each day. Chemistry can become incredibly overwhelming if you wait until the night before the exam to start studying.

Here are some study habits and tips that may be useful.

- Before coming to class each day, quickly review your notes from the previous day. You don't need to spend much time on this (5 – 10 minutes), but it will remind you of what we have covered and of any questions you would like cleared up before we move on to new material.
- When taking notes in class leave a lot of white space so that you can go back and fill in gaps later. After class, sit down with a friend and compare notes. Fill in the things you are missing. When you are done read through your notes and see if they make sense. If not, talk to a friend, reread sections of the book, or talk to the professor to keep filling in the gaps until things make sense.
- Do as many problems as possible! On assignments and exams I won't be asking you how you feel about chemistry, I'll be asking you to answer/solve chemistry problems. In order to do that you need to know how to answer/solve chemistry problems. The best way to learn this, or any other skill, is practice, practice, and more practice! I have provided suggested homework problems, along with detailed solutions for a number of problems at the end of each chapter. In addition the answer to any end-of-chapter exercise with a red number can be found in the back of the text.

Grading

Your grade in this course will be broken down into two components, a laboratory component and a lecture component.

Laboratory component:		
12 Labs		Each 10 pts – 120 pts
Lecture component:		
5 quizzes		Each 35 pts – 175 pts
Midterm Exam		75 pts
Final Exam		150 pts
8 Homework Assignments		Each 10 pts – 80 pts
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Total Lecture Points		480 pts

Total Points in Course: 600 pts

Your grade in the lab and lecture component of the course will be determined using the following scale

A ≥ 93%	A- ≥ 90%	
B+ ≥ 87%	B ≥ 83%	B- ≥ 80%
C+ ≥ 77%	C ≥ 73%	C- ≥ 70%
D+ ≥ 67%	D ≥ 63%	
	F < 63%	

******YOU MUST RECEIVE A PASSING GRADE IN BOTH THE LABORATORY COMPONENT AND THE LECTURE COMPONENT TO PASS THIS COURSE******

Assuming you have passed both components of the course your lab and lecture points will be added together and your overall course grade will be determined using the same scale shown above. Students who fail either the lecture component OR the laboratory component will automatically be assigned a grade of F in the course.

Quizzes – Six quizzes will be administered over the course of the semester, one each for Chapters 24/11, 19, 13, 15, 16, and 17. Each quiz will contain one or more of the following types of questions: multiple choice, fill in the blank, short answer (definition, explanation etc.), worked problem. **Students who must make-up a quiz must contact me within 24 hours of the quiz to reschedule. Students will then be allowed 2**

business days to make up the quiz. If these timeline are not met you will not be allowed to make-up the quiz. **I will drop your lowest quiz score.**

Midterm Exam – One 50 minute midterm exam will be given the week before spring break.

Final Exam – One two-hour cumulative final exam will be given at the end of the semester.

Lab Reports – You will be completing 13 lab activities during the semester. Each is worth 10 points. **I will drop your lowest lab score.**

Homework– Homework problems will be given for each chapter that we cover. Students must complete all homework problems for the chapter and turn them in on the day noted in the syllabus (usually on the day of a quiz or exam). **Each homework assignment will be worth 8 points. Your lowest score will be dropped.** A separate handout will be provided that will detail how the homework should be completed and how it will be graded.

Rights and Responsibilities

UWSP values a safe, honest, respectful, and inviting learning environment. In order to ensure that each student has the opportunity to success, we have developed a set of expectations for all students and instructors. This set of expectations is known as the *Rights and Responsibilities* documents, and it is intended to help establish a positive living and learning environment at UWSP. Click here for more information: <http://www.uwsp.edu/stuaffairs/Pages/rightsandresponsibilities.aspx>

Academic Misconduct

The definition of academic misconduct can be found at <http://www.uwsp.edu/admin/stuaffairs/rights/rightsChap14.pdf>
Students found to have engaged in academic misconduct on homework or labs will receive a score of zero on the assignment for the first offense and an F in the course for the second offense. Students found to have engaged in academic misconduct on an exam will receive a grade of F for the course.

Study Guides

To help you learn the material in this course, and to try to make my expectations of you as clear as possible, I will provide you with a study guide for each chapter. The study guides will include

- A list of the things I expect you to be able to do by the time you take the quiz.
- A list of any key equations for the chapter.
- A list of the graded homework problems for the chapter. (Final answers to the numerical problems will be provided.)
- A list of suggested homework problems for the chapter. The answers to all of these problems can be found in the back of your textbook.

Suggested Problems

A great deal of chemistry focuses on solving problems. As a result, a significant portion of your homework and exams will deal with solving problems related to chemistry. As with any endeavor, the only way to get good at something is to practice. For each chapter I have selected a series of suggested homework problems for you to complete and have listed them on the study guide for each chapter. In general, these problems are very similar to the graded homework problems and will be a good indicator for what will be on the quiz and the final exam.

Tips on Using the Syllabus

Use this syllabus to

- Find out what reading is due for each class period.
- Find out what labs you are doing each week.
- Keep track of exam dates.

Disability Services

The Americans with Disabilities Act (ADA) is a federal law requiring educational institutions to provide reasonable accommodations for students with disabilities. For more information about UWSP's policies, check here:

<http://www.uwsp.edu/stuaffairs/Documents/RightsRespons/ADA/rightsADAPolicyInfo.pdf>.

If you have a disability and require classroom or exam accommodation, please register with the Disabilities Services office and then contact me. Complete information on the disability services offered at the university may be found at <http://www.uwsp.edu/special/disability/>. In order to receive accommodations you must have documentation of your disability on file with the Office of Disability Services. In addition, you must provide me with an Accommodations Request Form (available at the website). You must have me sign the form and return it to the Office of Disability Services.

Important Dates

Jan. 20	Classes Begin
Jan. 29	Last day to drop a 16 week course without a grade
Mar. 13	Spring break begins at 6 p.m.
Mar. 23	Classes resume
Apr. 3	Last day to drop a 16 week course.
May 8	Last day of class

Tentative Course Schedule

The instructor reserves the right to change this schedule as needed. Any changes will be announced in advance via an in-class announcement. If you miss class be sure to talk to your classmates about any announcements you may have missed.

Week 1	Lab - Check In	
	T 1/20	Syllabus & Shape, Polarity, and Functional Groups
	R 1/22	Types of Hydrocarbons, 11.2
	F 1/23	11.2
Week 2	Lab - Experiment 1 : Molecular Models	
	T 1/27	11.3&11.5
	R 1/29	11.4
	F 1/30	11.4&11.6
Week 3	Lab - Experiment 2 : Intermolecular Forces	
	T 2/3	Quiz Ch 24/11, HW 24/11 Due 19.1
	R 2/5	19.2 – 19.3
	F 2/6	19.3 – 19.4
Week 4	Lab - Experiment 3 : Synthesis of Aspirin	
	T 2/10	19.5 - 19.6
	R 2/12	Ch 19 Quiz, Ch 19 HW Due 13.1
	F 2/13	13.2 - 13.3
Week 5	Lab - Experiment 4 : Lattice Enthalpy, Hydration Enthalpy, Heats of Solution	
	T 2/17	13.4
	R 2/19	13.5
	F 2/20	14.1 – 14.3
Week 6	Lab - Experiment 5 : Road Deicers	
	T 2/24	Ch 13 Quiz, Ch 13 HW Due
	R 2/26	14.6
	F 2/27	14.4
Week 7	Lab - Experiment 6: Polymer	
	T 3/3	14.5
	R 3/5	14.7
	F 3/6	15.1, 19.7, 15.2
Week 8	Lab - Experiment 7: Reaction Order for Crystal Violet	
	T 3/10	15.2 - 15.3, Ch 14 HW Due
	R 3/12	Cumulative Midterm Exam Ch 11/24, 19, 13, and 14
	F 3/13	15.4 – 15.6

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Spring Break – no classes or labs

Week 9	Lab - Experiment 8: Determination of an Equilibrium Constant	
	T 3/24	15.6
	R 3/26	15.7
	F 3/27	16.1 – 16.2
Week 10	Lab - Experiment 9: LeChatlier's Principle Lab	
	T 3/31	Ch 15 Quiz and HW Due 16.2
	Discussion	16.3 – 16.5
	R 4/2	16.6
	F 4/3	16.7
Week 11	Lab - Experiment 10: Diprotic Acid Titration	
	T 4/7	16.8 – 16.9
	R 4/9	16.9 – 16.10
	F 4/10	HW Help session
Week 12	Lab - Experiment 11: Buffers	
	T 4/14	Ch 16 Quiz – Entire Hour, Ch 16 HW Due
	R 4/16	17.1 – 17.2
	F 4/17	17.2 – 17.3
Week 13	Lab - Experiment 12: K _{sp} of Lead Iodide	
	4/21	17.3
	R 4/23	17.4 – 17.5
	F 4/24	20.1 – 20.2
Week 14	Lab - Experiment 13: Electrochemical Cells	
	T 4/28	Ch 17 Quiz, HW due, 20.3
	R 4/30	20.4 – 20.5
	F 5/1	20.6 – 20.9
Week 15	Lab - Experiment 14: Check Out	
	T 5/5	21.1 – 21.2 Ch 19 HW Due
	R 5/7	21.3, 21.6
	F 5/8	21.7 – 21.9
Cumulative Final Exam (all chapters) Tuesday May 12th 10:15 –12:15		
Ch 20 HW Due		