

Chem 105 Syllabus Fundamental Chemistry Fall 2016

Contact Information

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The best way to reach me is through my university email. I check my email regularly during working hours (8 a.m. – 5 p.m.). I do not check my email at night or on weekends.

My Schedule – updated schedule can be found on D2L or outside my office door

	Monday	Tuesday	Wednesday	Thursday	Friday	
8:00	105 Lab 17 B140	Research, Projects & Grading	105 Lab 18 C124	Research, Projects & Grading	Research, Projects & Grading	
9:00						
10:00		333 Lec 1 A111		333 Lec 1 A111	333 Lec 1 A111	
11:00	Research, Projects & Grading	105 Lab 20 C124	Class Prep	Research, Projects & Grading	Research, Projects & Grading	
12:00			105 Dis 17 A111			
1:00	Office Hour		105 Dis 18 A111		Office Hour	
2:00	Class Prep	Class Prep	105 Dis 19 A111	Seminar / Meeting		
3:00	105 Lec 5 A121	105 Lec 5 A121	105 Dis 20 A111		105 Lec 5 A121	
4:00	Meeting	Office Hour			Office Hour	

Meeting Times

Lectures: 3 – 3:50 p.m. Monday, Tuesday, Thursday

Room: Science A121

Lab/Discussion:

Section	Discussion (Room)	Lab (Room)	Lab Instructor (Office)
17	W 12 – 12:50 (A111)	M 8 – 10:50 (B140)	Dr. Amanda Jonsson (B145)
18	W 1 – 1:50 (A111)	W 8 – 10:50 (C124)	Dr. Amanda Jonsson (B145)
19	W 2 – 2:50 (A111)	F 8 – 10:50 (C124)	Mr. Gary Shulfer (B131)
20	W 3 – 3:50 (A111)	T 11 – 1:50 (C124)	Dr. Amanda Jonsson (B145)

Required Materials

Textbook

Chemistry – An Atoms Focused Approach Gilbert, Kirss, Foster, W.W. Norton & Company, 2014. This book is available for rental at the University Bookstore.

Lab Manual

Chem. 105 Lab Manual – Fall 2016, UW-Stevens Point. This lab manual is available for purchase at the University Bookstore.

Lab Notebook

Lab notebook with carbonless self-copy pages. An appropriate notebook is available for sale at the University Bookstore for \$15. You may purchase an equivalent notebook but the pages must have numbers printed on them, not have perforations on the permanent pages and you must be able to hand in a copy of your notebook pages at the end of lab.

Scientific Calculator

Your calculator must be able to do logarithms and scientific notation. **You will not be allowed to use graphing calculators, calculators with an alphabetic keyboard, or other electronic devices such as cell phones, tablets, etc. on an exam or quiz.**

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.

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.

Course Purpose

As a student you may be taking Chem. 105 for a variety of reasons as this course satisfies requirements in many majors beyond chemistry and biochemistry, including: biology, clinical laboratory science, geoscience, watershed management, forestry, soil and waste resources, natural science, paper science and engineering, and others.

In a broader sense, students in this class will benefit from knowledge of chemistry in their everyday lives. Things we encounter everyday such as cleaning products, pharmaceuticals, art supplies, and batteries are chemistry in action! In order to be well-informed and make good decisions about how and when to use products such as these it is important that you have a basic understanding of chemical principles.

Course Learning Outcomes

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

This Course Meets the Following General Education Learning Outcomes

1. Identify the basic taxonomy and principles of the scientific method as it pertains to the natural, physical world.
2. Infer relationships, make predictions and solve problems based on an analysis of evidence or scientific information.
3. Apply scientific concepts, quantitative techniques and methods to solving problems and making decisions.
4. Describe the relevance of some aspect of the natural sciences to your lives and society.

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.

Opportunities to Get Help

Tutoring in Math and Science (TIMS) in the Tutoring-Learning Center (TLC) offers free Group and Drop-in sessions to support you in your chemistry classes. In addition, TIMS offers the option for individual chemistry tutoring sessions. The chemistry tutors are UWSP students who have done well in their classes and who are here to share their successful study habits and chemistry content knowledge to help others succeed. Talking about chemistry and working problem sets together helps to clarify and solidify knowledge, and the tutors are eager to help. If you have questions about the schedule or would like to make an appointment, please visit room LRC 018, email (tlctutor@uwsp.edu) or call (715) 346-3568 for information.

Chemistry Help – Fall 2016

Name	Day	Time	Location	Cost
Drop-in Tutoring	Mon.- Thurs.	6 p.m. - 9 p.m.	Drop-in Tutoring Center, DUC 205	Free
Group Tutoring and Supplemental Instruction (SI)	Mon. – Fri.	See TLC Website	See TLC Website	Free
One-on-One	Mon. – Fri.	By appointment	Sign up in TLC- LRC 018 Mon.-Fri. 9 a.m. - 4:30 p.m.	May have fee

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. 105 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! The best way to learn how to answer/solve chemistry problems, or any other skill, is practice, practice, and more practice! The answer to any end-of-chapter exercise with a red number can be found in the back of the text.

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 a quiz/exam.
- A list of any key equations for the chapter (THESE WILL BE PROVIDED ON THE QUIZZES/EXAMS).
- A list of suggested practice problems. The answers to all of these problems can be found in the back of your textbook.

Academic Responsibility & Integrity

I encourage students to work and study in groups. However, projects submitted for a grade must reflect your own work and understanding of the material. Academic dishonesty will be dealt with following the rules on academic misconduct in the current UWSP handbook and, at a minimum, a score of 0 on the assignment. Egregious and/or repeated problems will result in an F in the course. Each student is expected to act with honesty and integrity, and must respect the rights of others to learn in a safe, respectful and inviting environment. *Please do not hesitate to contact me if you have any questions or concerns.*

Disability Services

The Americans with Disabilities Act (ADA) is a federal law requiring educational institutions to provide reasonable accommodations for students with disabilities. If you have a disability and require classroom or exam accommodation, please register with the Disabilities Services office and then contact me within the first two weeks of the semester. 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 on their website). You must have me sign the form and return it to the Office of Disability Services.

Important Dates

September 6 th	Classes begin
September 15 th	Last day to drop a 16-week course without a grade
November 11 th	Last day to drop a 16-week course
November 23 rd	Thanksgiving break begins at 6 p.m.
December 19 th	Final Exam, 12:30 – 2:30 p.m.

Grading

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

Lab Reports – You will be completing 11 laboratory exercises during the semester. **Lab make-ups are not allowed for any reason.** *Your 10 highest scores will be used in calculating your grade.*

Lab Practical – Students will complete an individual lab practical during week 7 of the semester. The lab practical will cover the skills that you should have acquired during the first 5 labs of the semester. **A make-up lab practical is not allowed for any reason.**

Quizzes – There will be a total of 5 quizzes given throughout the semester. Quizzes will last 30 minutes and be given at the start of the lecture period.

Midterm and Final Exam – On Thursday, October 27th from 6 – 8 p.m. there will be a cumulative midterm exam. This midterm will cover material from the first part of the semester. At the end of the semester is a cumulative final exam, covering all material from the semester.

Students who must reschedule a quiz or exam should make arrangements before the quiz or exam takes place. Students who need a make-up for an unforeseeable event must contact me within 24 hours of the missed quiz or exam to reschedule. Make-ups must be taken within 2 business days, regardless of the reason for missing the assignment. Students who fail to meet these timelines will not be allowed a make-up.

Laboratory							
	10 Lab Reports	each	12 pts	=	120 pts		
	Lab Practical				30 pts		
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	Lab Total				150 pts		
Lecture							
	5 Units Quizzes	each	50 pts	=	250 pts		
	Midterm Exam				100 pts		
	Final Exam				150 pts		
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	Lecture Total				500 pts		

Overall Class Points	650 pts
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Assuming you pass both the lecture and lab components, your grade in the overall course will be determined by adding the points you have earned in the laboratory component to those earned in the lecture component.

Your grade in both the lab component, lecture component, and in the overall course will be found using the scale shown below.

% Total Points	Grade	% Total Points	Grade
≥ 93 %	A	73 – 76 %	C
90 – 92 %	A-	70 – 72 %	C-
87 – 89 %	B+	67 – 69 %	D+
83 – 86 %	B	63 – 66 %	D
80 – 82 %	B-	< 63 %	F
77 – 79 %	C+		

******You must receive a passing grade (>63%) in BOTH the laboratory component AND the lecture component to pass this course******

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 and/or through D2L/email. If you miss class be sure to talk to your classmates about any announcements.

Week 1	Lab – Check-In	
	M 9/5	<i>No Classes</i>
	T 9/6	Syllabus/Course Intro W Disc: 1.1 – 1.3 Energy and Matter
	R 9/8	1.4 – 1.6 Properties of Matter, Atomic Theory & Molecular View
Week 2	Lab – Precision vs. Accuracy	
	M 9/12	1.8 Units and Significant Figures
	T 9/13	1.9 – 1.10 Dimensional Analysis and Temperature Conversions
	R 9/15	2.1 – 2.3 Nuclear Atom, Symbols and the Periodic Table
Week 3	Lab – Water Content of a Hydrated Salt	
	M 9/19	2.4 – 2.5 Masses of Atom, Ions, Molecules and Molar Masses
	T 9/20	3.1 – 3.2 Wave Nature of Light
	R 9/22	Ch 1&2 Quiz 3.3 Quantum Theory
Week 4	Lab – Introduction to Absorption Spectroscopy	
	M 9/26	3.4 – 3.5 Bohr Model, Uncertainty Principle
	T 9/28	3.6 – 3.7 Quantum Numbers and Atomic Orbitals
	R 9/29	3.8 – 3.9 Electron configurations
Week 5	Lab – Colorimetric Determination of Iron	
	M 10/3	3.10 Trends in Size
	T 10/4	3.11 – 3.12 Trends in Ionization Energy and Electron Affinity
	R 10/6	Ch 3 Quiz 4.1 Chemical Bonds
Week 6	Lab – Periodic Properties	
	M 10/10	4.2 Naming and Writing Formulas
	T 10/11	4.3, 4.8 Lewis Symbols and Lewis Structures
	R 10/13	4.6 – 4.7 Resonance and Formal Charge
Week 7	Lab Practical	
	M 10/17	4.9 Bond Lengths and Strengths
	T 10/18	5.1 – 5.2 Molecular Shapes and VSEPR
	R 10/20	5.3 Bond and Molecular Polarity
Week 8	Lab – Polarity	
	M 10/24	5.4 Valence Bond Theory and Hybrid Orbitals
	T 10/25	6.1 – 6.3 Intermolecular Forces and Solubility Trends
	R 10/27	Review 6 – 8 p.m. Cumulative Midterm Exam
Week 9	Lab – Intermolecular Forces	
	M 10/31	6.4 – 6.5 Phase Diagrams and Water Properties
	T 11/1	7.1 – 7.2 Balancing Equations
	R 11/3	7.4 Stoichiometry
Week 10	Lab – Stoichiometric Analysis of Antacid Tablets	
	M 11/7	Ch 5&6 Quiz 7.3 Combustion Reactions
	T 11/8	7.5 – 7.7 Percent Composition, Empirical Formulas, Molecular Formulas
	R 11/10	7.8 Limiting Reactant and Percent Yield

Week 11	Lab – Copper Transformations	
	M 11/14	8.1 Solutions and Concentrations
	T 11/15	Ch 7 Quiz 8.1 Concentrations
	R 11/17	8.2 Dilutions and Solution Stoichiometry
Week 12	<i>No Lab</i>	
	M 11/21	8.3 – 8.4 Electrolytes and Nonelectrolytes, Neutralization Reactions
	T 11/22	8.7 Titrations
	R 11/24	<i>No Class, Thanksgiving</i>
Week 13	Lab – Introduction to Titrations: KHP Titration	
	M 11/28	8.7 Titrations
	T 11/29	8.5 Precipitation Reactions
	R 12/1	8.6 Redox Reactions
Week 14	Lab – Vinegar – Is the Label Truthful?	
	M 12/5	9.1 – 9.2 Energy, Heat and Work
	T 12/6	Ch 8 Quiz 9.3 Enthalpy
	R 12/8	9.4 Heat Capacities and Enthalpy Changes
Week 15	Lab – Check-Out	
	M 12/12	9.5 Calorimetry
	T 12/13	9.6 Hess's Law
	R 12/15	9.7 Formation and Bond Enthalpies
Cumulative Final Exam Monday, December 19th from 12:30 – 2:30 p.m.		