Dr. Shannon C. Riha
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CHEMISTRY 105:
FUNDAMENTAL CHEMISTRY

COURSE DESCRIPTION

Chemistry is the study of matter and the transformations of matter. Chemistry is not just chemicals. *Chemistry is at the heart of cooking*—how is cheese made? What makes bread rise?; *Chemistry explains how things work*—what powers your cell phone? What illuminates your computer screen or TV? How can we use the sun's energy to create electricity and fuels?; *Chemistry keeps you safe and informed*—what household chemicals can be safely mixed and which ones are dangerous to keep together? It gives you a basic understanding of product labels; *Chemistry keeps you healthy*—chemistry is medicine, vitamins and supplements. Chemistry is central to the world around you.

Chemistry 105 is intended to introduce the elementary theories and language of chemistry, provide the student with essential analytical reasoning and problem-solving skills, and serve as the foundation to advanced chemistry and science courses. Topics covered in this class include: 1) matter and measurements in chemistry, 2) atomic and molecular structure, 3) chemical bonding, 4) chemical reactions and stoichiometry, and 5) thermochemistry. I hope that this class will not simply feel like another "requirement" course, but rather an eye-opening class to understanding the world around you and how chemistry is creating a better tomorrow.

LEARNING OUTCOMES

At the end of this course, a successful student will be able to:

- **Apply** chemistry ideas and language to describe and enhance your understanding of the physical phenomenon around you.
- **Solve** a variety of chemical problems utilizing analytical reasoning and problem-solving strategies.
- **Perform** important laboratory techniques and methods with a safety-conscious attitude.
- **Communicate** scientifically through written and oral means.

CLASS SESSIONS

	Section	Day(s)	Time	Location	Instructor
LECTURE	02	T, R, F	9:00	CBB101	Riha/Jonsson*
DISCUSSION	02D1	T	12:00	CBB261	Riha/Bowling*
	02D2	T	2:00	CBB261	Riha/Bowling*
	02D3	T	3:00	CBB261	Riha/Bowling*
	02D4	T	4:00	CBB261	Riha/Bowling*
LAB	02L1	R	11:00	CBB226	Riha/Szpunar*
	02L2	F	11:00	CBB226	Lueck
	02L3	M	2:00	CBB226	Lueck
	02L4	R	2:00	CBB230	Riha/Shulfer*

***I will be on maternity leave from mid/late October through the remainder of the semester. During my leave of absence Dr. Amanda Jonsson will cover lectures and Dr. Nathan Bowling will cover discussion sessions. Dr. Dave Szpunar will cover lab section 1 (Thursday 11-2) and Gary Shulfer will cover lab section 4 (Thursday 2-5).**

COURSE COMPONENTS

Lecture is designed to introduce you to the concepts that define chemistry. My lectures combine

Discussion provides a more intimate and active learning environment. It is geared toward

Lab is the fun part! "Hands-on" experience is essential to learning chemistry. It gives you the

classic "chalk-talks" with videos, lecture supplements, clickers, real-world applications and live demonstrations to appeal to the variety of learning styles students have.

reinforcing material presented in lecture through small group activities. On occasion I may use this time to address some of the more challenging concepts covered in lecture as I see fit.

experience of putting the key concepts you covered in lecture into practice, teaches you experimental techniques, and helps you better learn how to problem solve.

REQUIRED MATERIALS

- **Course text**
  Chemistry: An Atoms-focused Approach, Gilbert, Kirss, Foster
  - Available at text rental in the Campus Bookstore
- **Laboratory manual**
  Chem 105 Lab, Fall 2018. Hladky, Jonsson, Lawrence, Riha, Snyder, Szpunar
  - Available for purchase in the Campus Bookstore
- **Laboratory notebook**
  Must have carbon(less)-copy pages.
  - Available for purchase in the Campus Bookstore
- **Lab googles**
  Must be chemical resistant, splash proof goggles; safety *glasses* **not** approved for use.
  - Available for purchase in the Campus Bookstore
- **Calculator**
  Any non-programmable calculator that can do logarithms and exponentials.
  - Available for purchase in the Campus Bookstore or at any office supply store
- **Sapling**
  On-line activity homework system.
  - Go to www.saplinglearning.com/login to log in or create an account. The following link includes detailed instructions on how to register for the course: https://community.macmillan.com/docs/DOC-5972-sapling-learning-registering-for-courses
  - If you have any issues during sign up or throughout the semester, the technical support team is there to help. They can be reached by phone or by webform via the Student Support Community. (https://community.macmillan.com/docs/DOC-6915-students-still-need-help)

ASSESSMENT

Your progress in this course will be assessed based on *both* in-class and lab performance.

Exams. A cumulative final exam will be given at the end of semester. The Final exam date and time is found in the Lecture Schedule and will *not* change.

Quizzes. Quizzes will be multiple choice and given every third week (4 total) during the lecture period. Material on quizzes will include that covered in lecture, homework assignments, and discussion worksheets. The dates for quizzes can be found in the Lecture Schedule below and will *not* change.

Lab. Lab is the "hands-on" experience essential to learning chemistry and critical to your success in this course. During lab, each student will be responsible for properly keeping a lab notebook and collecting data to complete the experiment. Lab reports will be due at the beginning of the following lecture period. At the end of the semester a multiple-choice laboratory quiz will evaluate your

Homework. Assigned homework sets (10 total) will be administered through Sapling, an on-line homework system. The on-line homework system is designed to provide you, the student, immediate feedback as well as useful hints and suggestions to solve problems. Tentative due dates are listed in the Lecture Schedule.

comprehension of the basic lab equipment used and techniques.

GRADING

The grade you receive for the course will be based on the following:

Lecture Quizzes (50 pts each)	200
Lab Reports (top 10 at 10 pts each)	100
Lab Quiz	50
Homework (top 10 at 10 pts each)	100
Syllabus Quiz	5
Final Exam	150
TOTAL	**605**

Tentative grading scale cut-offs:

A	100 – 93%	**C+**	<80 – 77%
A-	<93 – 90%	**C**	<77 – 73%
B+	<90 – 87%	**C-**	<73 – 70%
B	<87 – 83%	**D+**	<70 – 66%
B-	<83 – 80%	**D**	<66 – 60%
		F	<60%

The cut-off percentages may be adjusted at the end of the semester; however, I will never adjust the cut-off percentages higher. This means if you get an 83% you will not receive any lower than a B for the final grade. ***I do not provide extra credit opportunities or "bump" students up to a higher grade***, however, if I have made a mistake in grading an assignment or exam, let me know right away so I can fix it. I welcome you to discuss your grade with me at any point in the semester and am happy to provide you with study strategies to help you earn a solid grade in this course.

Note: You are required to pass *both* lecture and lab. Receiving less than 60% for either the Lecture or the Lab portion (<273 points for lecture or <90 points for lab) will result in a failing grade for the course regardless of total points earned.

HELP & RESOURCES

If you are feeling lost or overwhelmed, there are many resources to get help in this class to maximize your learning experience. Seek help early and often!

- **Come see me.** I am dedicated to help you learn. I have regularly scheduled office hours (see My Schedule below). You can also e-mail me to set up an appointment.
- **Use TIMS at UWSP.** Tutoring in Math and Science (TIMS) offers FREE group and drop-in tutoring to support you in your chemistry classes. Noah Langenfeld, a student double majoring in Biochemistry and Biology who has successfully mastered the course material, will be heading the group tutoring session for this Chem 105 section. The small group setting helps students better understand the material and engage with other students. Group with Noah will begin in week 3. Links to group tutoring schedules can be found on D2L.
- **Form study groups.** Working with other students in the course is a great way to build off each other's strengths and see how to approach problems in different ways.
- **D2L.** Course information, including suggested problem sets, learning objectives, lecture notes, and discussion materials, will be posted on this site. You can also find a running total of your points for the course.
- **Chapter Learning Objectives.** Learning objectives help you, the student, comprehend what I expect you to learn as we finish each chapter and will serve as an *excellent study guide* for the quizzes and exams. Creating your own study guide will help you transition into understanding and organizing complex subject matter.

INSTRUCTOR INFORMATION

Dr. Shannon Riha
Office: Chemistry/Biology Building 448
Phone: 715-346-2172 (on campus dial x2172)
E-mail: sriha@uwsp.edu
**Email is the preferred way to reach me.

Riha Fall 2018 Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00	CHEM299/399	Prep	R, P, G	Prep	Prep
9:00	CHEM299/399	Lect. 02 (CBB101)		Lect. 02 (CBB101)	Lect. 02 (CBB101)

10:00	CHEM299/399	Office Hour	Office Hour	Prep	Office Hour
11:00	CHEM299/399	Prep	CHEM299/399	Lab 02L1 (CBB 226)	R, P, G
12:00	CHEM299/399	Disc 02D1 (CBB261)	CHEM299/399		
13:00	CHEM299/399	R, P, G	CHEM299/399		Department meetings and seminars
14:00	CHEM299/399	Disc 02D2 (CBB261)	CHEM299/399	Lab 02L4 (CBB230)	
15:00	CHEM299/399	Disc 02D3 (CBB261)	CHEM299/399		
16:00	CHEM299/399	Disc 02D4 (CBB261)	CHEM299/399		

How Am I Doing? If there are any particular aspects of my instructing that you find helpful or not useful, please let me know. I can only perform my job as your instructor effectively if I get *constructive* feedback from you, the student.

Dr. Amanda Jonsson
Office: Chemistry/Biology Building 400
Phone: 715-346-2600 (on campus dial x2600)
E-mail: Amanda.Jonsson@uwsp.edu

Jonsson Fall 2018 Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00			Lab 03L1 (CBB230)		
9:00		Lect. 02 (CBB101)		Lect. 02 (CBB101)	Lect. 02 (CBB101)
10:00	Office Hour				Office Hour
11:00		Lab 03L2 (CBB230)		Disc. 03D1 (CBB261)	
12:00				Disc. 03D2 (CBB261)	
13:00	Lect. 03 (CBB105)		Lect. 03 (CBB105)	Disc. 03D4 (CBB261)	Lect. 03 (CBB105)
14:00		Office Hour	Office Hour	Office Hour	Seminar/Meeting
15:00				Disc. 03D3 (CBB261)	
16:00					Class Prep

SCHEDULES

Tentative Lecture Schedule

- Please note that this is a *tentative* schedule and may be adjusted depending on the pace of the class. The quiz/exam dates, however, will <u>not</u> change.

Week	Topic	Reading	Important Dates
1	Matter, Energy, and Measurement	Ch. 1	Sept. 7: HW #1 due
2	Matter, Energy, and Measurement Atoms, Ions, and Molecules	Ch. 1 Ch. 2	Sept. 14: HW #2 due
3	Atoms, Ions, and Molecules	Ch. 2	Sept. 19: HW #3 due ***Sept. 20: Quiz 1***
4	Electronic Structure of Atoms	Ch. 3	
5	Electronic Structure of Atoms Chemical Bonding	Ch. 3 Ch. 4	Oct. 7: HW #4 due

6	Chemical Bonding	Ch. 4	***Oct. 11: Quiz 2***
7	Molecular Geometry and Bonding Theories	Ch. 5	Oct. 17: HW #5 due
8	Molecular Geometry and Bonding Theories Intermolecular Forces	Ch. 5 Ch. 6	Oct. 26: HW #6 due
9	Stoichiometry	Ch. 7	Oct. 31: HW #7 due ***Nov. 1: Quiz 3***
10	Stoichiometry	Ch. 7	Nov. 11: HW #8 due
11	Reactions in Aqueous Solutions	Ch. 8	Nov. 16: HW #9 due
12	Reactions in Aqueous Solutions	Ch. 8	***Nov. 20: Quiz 4*** Nov. 21: HW #10 due
13	Thermochemistry	Ch. 9	
14	Thermochemistry	Ch. 9	
15	Review and Catch-up		Dec. 12: HW #11 due ***Dec. 13: Lab Quiz***
16	Finals Week		***Final Exam:*** ***Dec. 20, 2:45 – 4:45***

Lab Schedule

Week	Date	Experiment
1	9/4	Safety and Check in
2	9/10*	**Experiment 1**: Precision vs. Accuracy in Scientific Measurements and Calculations
3	9/17	**Experiment 2**: Water Content of a Hydrated Salt
4	9/24	**Experiment 3**: Introduction to Absorption Spectroscopy
5	10/1	**Experiment 4**: Colorimetric Determination of Iron
6	10/8	**Experiment 5**: Periodic Properties
7	10/15	**Experiment 6**: Lewis Formulas & Molecular Models
8	10/22	**Experiment 7**: Stoichiometric Analysis for Iron in Cereals
9	10/29	**Experiment 8**: Intermolecular Forces
10	11/5	**Experiment 9**: Separation of a Mixture
11	11/12	**Experiment 10**: Limiting Reactant
12	11/19	No Labs this week — Thanksgiving Holiday!
13	11/26	**Experiment 11**: Introduction to Titrations: KHP Titration
14	12/3	**Experiment 12**: Vinegar—Is the Label Truthful
15	12/10	Check out
16	12/19	No Lab

*Monday labs will check in and perform Experiment 1 on 9/10

Goggles, close-toed shoes, and long pants are required for entry into the lab

POLICIES

- **Class Attendance**
  - Chemistry is a very exciting, yet challenging and complex course. It is, therefore, essential to attend all course lectures, discussions and labs to achieve the course learning objectives. If you miss a lecture it is your responsibility to obtain the material covered. Any *unexcused* absence from a quiz/exam will not be tolerated and you will receive zero points for that quiz/exam. ***Make-up quizzes or exams for unexcused absences will NOT be given***.
  - **Excused Absences.** An excused absence from a quiz/exam must be presented in writing (preferably ahead of time or within 24 hours). Make-up quizzes/exams, will be scheduled under the following circumstances: UWSP scheduled athletic event (written authorization from coach), family emergency (documentation such as an obituary), medical emergency (written authorization from physician), armed forces training/drills (written authorization from supervising officer), or the like. ***Make-up quizzes/exams for excused absences must be completed within <u>two</u> business days of the originally scheduled date***.
- **Lab Attendance and Reports**
  - **Absences:** Make-up labs will not be granted (including for excused absences), however, you can use one of the two dropped labs (see Report Grading) to avoid any penalty. It is your responsibility to understand the procedures involved in the missed experiment for the laboratory quiz.
  - **Report Grading:** There are twelve lab experiments scheduled during the course of the semester and each report is worth 10 points. Your report will include a copy of the notebook grading rubric, the carbon copy pages from your laboratory notebook, and post-lab questions. Items missed on the lab notebook grading rubric will count as deductions from the 10 possible points on the post-lab questions. Only the top 10 lab experiment scores will be applied to your course grade.
  - **Late Reports:** Lab reports will be due at the beginning of the following lab period. Late reports will incur a 1-point penalty for each day it is late.
- **Homework**
  - **Grading:** Each homework assignment is worth a total of 10 points regardless of the number of questions in the assignment. You will have an unlimited number of attempts at each question, however, there is a 5% point deduction for each incorrect attempt. Upon completion of the question, you will have the option to view the detailed solution. If you choose to give up and view the solution to a problem, you will receive zero points for that question. Your lowest homework assignment during the semester will be dropped.
  - **Late Homework:** Meeting deadlines and staying on track with your work are not only useful life and career skills, but also help reduce stress. For this course, you are expected to complete assignments on schedule. If you have a personal situation that prevents you from completing your work on time, you will need to discuss this with me <u>before</u> the due date. Extensions are granted at my discretion.
    - Any questions completed before the due date will receive full credit. Questions attempted/completed after the due date (if no extension has been granted) will be accepted with a 10% point deduction each day the assignment is late.

ADVICE FOR A SUCCEEDING IN THIS CLASS

This class is fast-paced and to do well will require you to put forth a <u>*constant*</u> effort.

- **Scan topics to be covered in class ahead of time.** Don't feel you need to learn and understand everything right away. Rather, skim over each chapter section before they are covered in lecture. Jot down key terms or equations cover as well as any questions you have about the material. You will be much more prepared to learn new material by having an idea of what is ahead.
- **Work the suggested problems.** I cannot stress this point enough! Chemistry is not a course that can simply be memorized right before the exam. Chemistry is a complex subject and can seem, at times, very overwhelming. Working through suggested problems will not only help you understand and retain the material better, it will also prepare you for questions that may appear on quizzes and exams.

- **Take notes.** Taking notes in lecture not only keeps you informed on what was covered that day but also provides you with what I feel are the most important materials. This will also help you know what material is most likely to make it on an exam or quiz.
- **Read the topics carefully.** After covering the material in lecture, go back and read through the key topics. Look over the sample exercises to make sure you understand the key concepts by taking the Concept Tests. Then test your skills by trying some of the suggested end of chapter practice exercises. You will find that the answers to most of the suggested problem sets are found in the back so you can check your progress.
- **Ask questions.** No question is a dumb question. If you are struggling with material or are just curious about something, don't hesitate to ask. Chances are there is someone else in the room with the same question.
- **Don't fall behind.** The materials presented in this course build on what was presented previously. Therefore, if you do not keep up with your reading and problem sets you will find it much harder to follow the lectures and discussions on current topics.

THE FINE PRINT

- **Etiquette.** Be respectful of your fellow classmates!
    - Whispering and talking to your neighbor during class is disruptive and annoying to those around you trying to listen to the lecture. If there is something you do not understand or have a question about, please raise your hand. If you are uncomfortable asking the question in front of the class, you can e-mail me or talk to me during office hours.
    - Cell phones must be turned off and put away during class. This means no texting during class.
    - No iPods, radios, MP3 players or other recording and transmitting devices may be used during an exam or quiz. Hats with bills must be turned backwards during an exam or quiz.
    - It is your responsibility to check D2L for the points you have earned in the class. If you find that an error has been made, you must inform me within *one week* of the posting grade for it to be considered.
    - Mocking/teasing others in the class will not be tolerated.

- **Academic Misconduct.** As stated in the Student Academic Standards and Disciplinary Procedures:
  "The Board of Regents, administrators, faculty, academic staff and students of the University of Wisconsin System believe that academic honesty and integrity are fundamental to the mission of higher education and of the university of Wisconsin system. The university has a responsibility to promote academic honesty and integrity and to develop procedures to deal effectively with instances of academic dishonesty."
  Therefore, students caught cheating on exams, quizzes or in the laboratory are subject to a grade of F for the course and a report being placed in their judicial file. More information can be found at: http://www.uwsp.edu/dos/Pages/Academic-Misconduct.aspx

- **Disability Services.** There are a number of resources available for students with documented disabilities. A full listing of them can be found at http://www.uwsp.edu/special/disability/. Please be aware that, in order to take advantage of some of the services, you must provide me with an Accommodation Request Form I will sign. You must return the form to Disability Services.