

Chemistry 106

Fundamental
Chemistry

Fall 2018

Section 1

University of
Wisconsin-
Stevens Point



Much of Chem 106 is devoted to understanding how molecules interact and react with each other. These topics will help you understand important real world applications such as the science behind putting salt on roadways.

Course Description and Objectives

Chemistry is the study of matter and the changes it undergoes.

Chemistry is everywhere around you and plays an essential role in many aspects of your daily lives. Because Chem 106 is a continuation of Chem 105, you will need to use your knowledge from Chem 105 and apply it to new concepts in Chem 106, including: gases, thermodynamics, chemical kinetics, and equilibrium.

Upon completion of Chem 106 the successful student will have:

- (i) mastered the fundamental chemical principles and theories of chemistry.
- (ii) obtained problem solving skills (both qualitative and quantitative).
- (iii) developed essential laboratory skills, including effectively following procedures, working safely with chemicals, and keeping a laboratory notebook.

(iv) understood how to effectively master/learn complex subject matter.

Keep an eye out for more specific learning objectives on D2L. Learning objectives will be posted in the study guide for each unit. Study guides will also contain suggested reading, suggested homework problems, and answers to the suggested homework problems.

Your Professor: Dr. Mondloch (or Dr. M)

Office: CBB 444

Email: jmondloc@uwsp.edu

Office Hours: T 10-11, W 4-5, Th 10-11.

Additional times available by appointment (please email me).

Course Website: Additional information can be found on the course website in D2L (CHEM 106 Fundamental Chemistry Sec 1).

Required Materials:

Lecture textbook Gilbert, T.R.; Kirss, R.V.; Foster, N. Chemistry An Atoms Focused Approach 1st Edition (ISBN: 978-0-393-91234-0).

Laboratory manual Chem 106 laboratory manual for Bowling & Mondloch.

Laboratory notebook Barbakam Lab Notebook.

Goggles (available at the bookstore, **must be splash proof!**).

Class Outline

	Section	Day(s)	Time	Location	Instructor
Lecture	106-01	T, Th, F	9:00	CBB 105	Dr. M. (Dr. D.)
Discussion	106-01D4	W	11:00	CBB 161	Dr. M. (Dr. Hladky)
Discussion	106-01D3	W	12:00	CBB 161	Dr. M. (Dr. Hladky)
Discussion	106-01D2	W	2:00	CBB 265	Dr. M. (Dr. Hladky)
Discussion	106-01D1	W	3:00	CBB 265	Dr. M. (Dr. Hladky)
Lab	106-01L1	M	11:00	CBB 226	Lueck
Lab	106-01L2	T	2:00	CBB 226	Dr. M. (Dr. D.)
Lab	106-01L3	W	2:00	CBB 226	Lueck
Lab	106-01L4	Th	2:00	CBB 226	Dr. M. (Dr. Hladky)

Assignments & Grading

Five **quizzes** for **250 total points**.

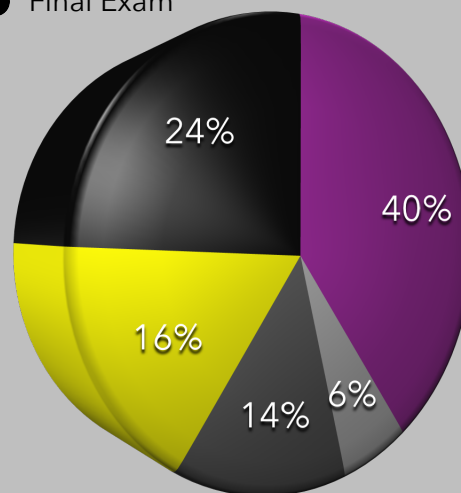
Twelve **pre-lab notebooks** for **36 total points** & Twelve **lab reports** for **84 total points**.

Your **midterm** will be cumulative. **100 total points**. The percentage on your midterm can replace your lowest quiz score for quizzes 1–3 if you have no more than three unexcused absences before the midterm.

Your **final exam** will be cumulative. **150 total points**. The percentage on your final exam grade can replace your lowest quiz score for quizzes 4–5 if you have no more than three unexcused absences after the midterm.

The grading scale is shown below. I will never adjust the grade scale higher. For example, if you obtain 83% in the class, you will receive no less than a B. Please do not ask if I grade on a curve. Your grades will be regularly updated on D2L and it is YOUR responsibility to keep track of them. **You must pass (>63%) both the lecture and lab portions of the class to receive a passing grade in Chem 106.**

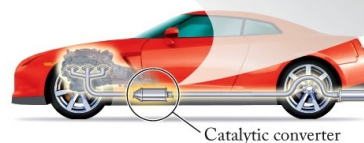
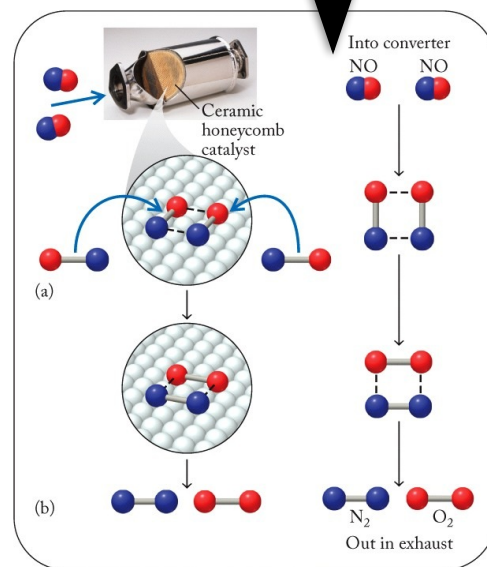
Grades: A (100 - 93%); A- (<93 - 90%); B+ (<90 - 87%); B (<87 - 83%); B- (<83 - 80%); C+ (<80 - 77%); C (<77 - 73%); C- (<73 - 70%); D+ (<70 - 67%); D (<67 - 63%); F (<63%)



Lecture & Discussion

Week	Description	Quizzes/Exams
1 (9/4)	Unit 9	-
2 (9/10)	Unit 10	-
3 (9/17)	Unit 11	Quiz 1 (9/21)
4 (9/24)	Unit 11/Unit 12	-
5 (10/1)	Unit 12	Quiz 2 (10/5)
6 (10/8)	Unit 13	-
7 (10/15)	Unit 13	Quiz 3 (10/19)
8 (10/22)	Unit 14	-
9 (10/29)	Unit 14	Midterm (11/2)
10 (11/5)	Unit 15	-
11 (11/12)	Unit 15	Quiz 4 (11/16)
12 (11/19)	Unit 15	-
13 (11/26)	Unit 15	-
14 (12/3)	Unit 16	Quiz 5 (12/7)
15 (12/10)	Unit 16	-
16 (12/17)	Finals	Final Exam (12/20)

How does the catalytic converter in your car turn toxic chemicals (e.g., nitrogen monoxide) into less toxic chemicals (e.g., nitrogen or oxygen)?



Our tentative lecture schedule is shown above; it may need to be adjusted depending on the pace of the class.

Quiz and Exam dates will NOT change. See "the fine print" for details regarding policies for makeup quizzes and exams.

- Unit 9:** Gases
- Unit 10:** Solids
- Unit 11:** Properties of Solutions
- Unit 12:** Thermodynamics
- Unit 13:** Kinetics
- Unit 14:** Chemical Equilibrium
- Unit 15:** Aqueous Equilibrium
- Unit 16:** Electrochemistry

Quizzes

Quizzes will be multiple choice and administered during the lecture periods (CBB 105). You should treat the quizzes as short exams. The quizzes may be cumulative in nature, but will focus on the material most recently covered in lecture and discussion.

Midterm & Final Exams

Your midterm and final exam will be multiple choice as well as cumulative. Your midterm will be administered during the lecture period (CBB 105). **The final exam will be administered on Thursday 12/20 from 2:45–4:45 (CBB 105).**

Some other important dates you should keep in mind over the course of the semester (for all of your classes):

Drop Day (no grade on transcript): 9/13
Drop Day (W on transcript): 11/9

In the Lab

Week	Experiment
1 (9/4)	Check In & Safety
2 (9/10)	Synthesis of Aspirin
3 (9/17)	Analysis of Aspirin
4 (9/24)	Molar Mass of a Metal by Gas Evol.
5 (10/1)	Lattice Enthalpy
6 (10/8)	Freezing Point Depression
7 (10/15)	Decomposition of Crystal Violet
8 (10/22)	La Chatelier's Principle
9 (10/29)	Equilibrium Constant
10 (11/5)	Solubility of Potassium Nitrate
11 (11/12)	Strong vs Weak Acid Titration
12 (11/19)	Thanksgiving - No Labs
13 (11/26)	Strong vs Weak Acid Titration
14 (12/3)	Buffers
15 (12/10)	Electrochemical Cells
16 (12/17)	Finals Start - No Labs

The Details

Your lab instructor may or may not be me. However, every lab performs the same experiments and all labs will be graded by the same person. Questions regarding laboratory grades should be directed to me, NOT your lab instructor.

The lab will NOT be described in detail by your instructor prior to the start of lab. Therefore it is your responsibility to come prepared for lab. You will be required to complete a pre-lab assignment in your lab notebook before lab starts. More details are provided in the Lab Notebook Guidelines document.

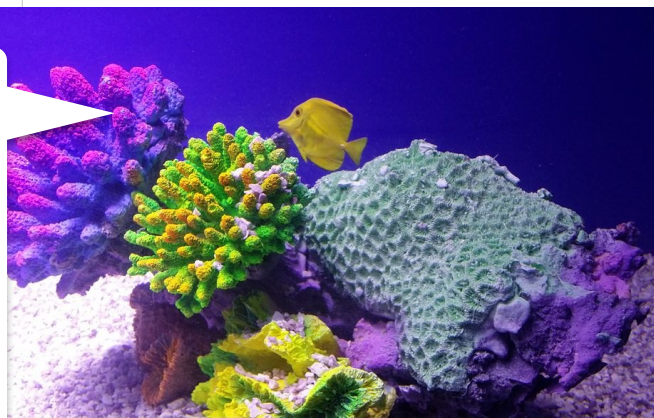
For some labs you will work alone, some with partners. However, you will always turn in your own lab report. Lab reports, which include carbon copies from your lab notebook and the Post-Lab Follow-Up Questions sheet, will be due the following week at the start of lab. Labs turned in more than one week late will not be graded.

Dress Code

In lab you must wear **splash proof goggles** and **closed toe shoes** at all times. Long hair should be tied back. Full length pants are strongly recommended.

Consult your lab instructor for additional details or if other concerns about safety arise.

You can (and will) measure equilibrium constants. Chemical equilibrium plays an important role in the environment as well as many other practical applications.



Make up labs are not typically possible. Please consult with me ahead of time if a conflict arises.

The Fine Print

Attendance

It is in your best interest to attend all lectures, discussions, and labs. Make up exams and labs are NOT allowed except under the following circumstances:

- (i) UWSP athletic event. Please get written authorization from your coach.
- (ii) Armed forces related training or drills. Please bring me written authorization from your supervising officer.
- (iii) Medical emergency. Please bring me authorization from your physician.
- (iv) Death in the family. Please bring me some sort of documentation.

Disability Services

UWSP is committed to providing reasonable and appropriate accommodations to students with disabilities and temporary impairments. If you have a disability or acquire a condition during the semester where you need assistance, please contact the Disability and Assistive Technology Center on the 6th floor of Albertson Hall (library) as soon as possible. DATC can be reached at DATC@uwsp.edu.

Study Hints

This course will not be easy for most students. Suggested homework problems are designed to alert you to your level of comprehension and encourage you to **seek help** before you are in trouble.

Suggested Study Routine:

- (i) Skim relevant text prior to class.
- (ii) Take notes in class.
- (iii) Keep a running list of potential exam topics.
- (iv) Re-write and organize your notes in conjunction with reading.
- (v) Work problems daily.**
- (vi) Identify trouble spots and seek help!

Media Devices

Use of personal multimedia devices during class meetings is not permitted unless you are using it as a note-taking device. This includes cellular phones, iPods, iPads, computer, PDAs, and other similar devices.

An exception may be the use of electronic devices to ask the instructor questions in lecture and discussion sections. Stay tuned for more information.

Tutoring Services

Tutoring in Math and Science (TIMS) in the Tutoring-Learning Center (TLC) offers free group and drop-in tutoring to support you in your chemistry classes. In addition, TIMS offers the option for individual chemistry tutoring sessions. The 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. Discussing chemistry concepts and processes together clarifies and solidifies knowledge, and the tutors are eager to study with you. If you have questions about the schedules or would like to make an appointment, please visit the TLC in ALB 018 (library basement), email (tlctutor@uwsp.edu), or call (715) 346-3568 for information.

Academic Integrity

Academic misconduct is serious and can follow you throughout your entire academic and professional career. You are a student at the University of Wisconsin-Stevens Point and you should know the student academic standard and disciplinary procedures. More information regarding this topic can be found at the following link <http://www.uwsp.edu/dos/Pages/Academic-Misconduct.aspx>. Look at it, read it, and comprehend the decisions you make regarding your academic integrity!

Have you ever wondered how a car can run on batteries? It's simple — electrochemistry! In Chem 106 we will look closely at how batteries operate on the molecular level.



Dr. Mondloch's Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
8 am	Chem 299/399 (CBB 460)	Lecture Prep Please Avoid	R, P, G	Lecture Prep Please Avoid	Lecture Prep Please Avoid
9 am		Chem 106 Lecture (CBB 105)	R, P, G	Chem 106 Lecture (CBB 105)	Chem 106 Lecture (CBB 105)
10 am		Office Hour CBB 444	R, P, G	Office Hour CBB 444	Chem 299/399 (CBB 460)
11 am		R, P, G	Chem 106 Discussion (01D4, CBB 161)	R, P, G	
Noon		R, P, G	Chem 106 Discussion (01D3, CBB 161)	R, P, G	
1 pm		R, P, G	R, P, G	R, P, G	
2 pm		Chem 106 Lab (01L2, CBB 226)	Chem 106 Discussion (01D2, CBB 265)	Chem 106 Lab (01L4, CBB 226)	Chem Dept Meetings/ Seminars
3 pm			Chem 106 Discussion (01D1, CBB 265)		
4 pm			Office Hour CBB 444		

R,P,G stands for Research, Prep, and Grading