



Welcome to General Chemical Principles

CHEM 117, Fall 2020

5 Credits



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Please contact me with your questions or concerns!

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About the Instructor



My name is Dr. Dave Snyder, and I am excited about the opportunity to work with you this fall. I teach courses in general and analytical chemistry here at UWSP (CHEM 100, 105, 106, 117, 248, and 446) and conduct environmental chemistry research with a small group of students each semester. I love teaching and interacting with my students, and I hope that you will enjoy being in my class. This course will be challenging, but please be assured that I will be there to support you and guide you along the way.

What is this course all about?

Chemistry 117 is an accelerated course that provides a broad introduction to the field of chemistry and is intended for especially well-prepared, first-year students. Topics covered include atomic and molecular structure, review of stoichiometry, descriptive inorganic chemistry of the representative and transition elements, chemical equilibria, electrochemistry, thermodynamics, and chemical kinetics

Course Schedule

A hybrid instructional mode will be used this semester. There will be two in-person lectures each week and two asynchronous, online lectures that will be posted to Canvas. All labs will be taught in-person.

All activities will transition to completely online after the Thanksgiving break.

In-Person Lecture Schedules

Section	Days/ Times	Room
01H	Monday & Wednesday, 11:00 – 11:50	CBB 261
02	Tuesday & Friday, 11:00 – 11:50	CBB 261

Lab Meeting Schedule:

Section	Dates	Room
	Week 1	
01H	Thursday, Sept 3, 11:00 AM – 12:15 PM	CBB 220
02	Thursday, Sept 3, 12:30 – 1:45 PM	CBB 236
	Weeks 2 - 12	
01H	Thursdays, 11:00 AM – 1:35 PM	CBB 220
02	Thursdays, 11:15 AM – 1:50 PM	CBB 236

COVID-19 Health and Safety

1. Face Coverings:

At all UW-Stevens Point campus locations, the wearing of face coverings is mandatory in all buildings, including classrooms, laboratories, studios, and other instructional spaces. Any student with a condition that impacts their use of a face covering should contact the [Disability and Assistive Technology Center](#) to discuss accommodations in classes. Please note that unless everyone is wearing a face covering, in-person classes cannot take place. This is university policy and not up to the discretion of individual instructors. Failure to adhere to this requirement could result in formal withdrawal from the course.

2. Other Guidance:

Please monitor your own health each day using [this screening tool](#). If you are not feeling well or believe you have been exposed to COVID-19, do not come to class; email your instructor and contact Student Health Service (715-346-4646).

- As with any type of absence, students are expected to communicate their need to be absent and complete the course requirements as outlined in the syllabus.
- Maintain a minimum of 6 feet of physical distance from others whenever possible.
- Do not congregate in groups before or after class; stagger your arrival and departure from the classroom, lab, or meeting room.
- Wash your hands or use appropriate hand sanitizer regularly and avoid touching your face.
- Please maintain these same healthy practices outside the classroom.

Academic Words of Advice

1. Don't spend too much time thinking and worrying about your grade

I know this is easier said than done, but your number one task as a student should be to learn, not to get a good grade. Many students are solely focused on earning a good grade and have been taught to equate high marks with learning. My experience has been that students who are only focused on getting good marks are not always learning in ways that are meaningful and help them to be successful in advanced courses and in their careers. In other words, if you focus your efforts on learning, good grades tend to follow; however, if you focus your efforts on getting a good grade, meaningful learning does not necessarily follow.

2. Strive for understanding. You cannot memorize your way through this class.

Memorization is a type of learning that is often necessary but very low on the taxonomy of learning. In this class, you will be required to memorize some material so that you can speak the language of chemistry and quickly recognize and name elements, compounds, and particles; however, reliance on brute-force memorization (often what students tend to do right before an exam) tends to be impermanent. A true understanding of chemistry cannot be achieved through memorization, so strive to achieve a conceptual understanding of chemistry. Note that the learning outcomes for this class listed on the next page do not include memorization but require

you to, among other things, *describe, perform, and demonstrate*. Primarily, you will be evaluated this semester on your ability to meet these learning outcomes.

3. Study every day.

Many students believe that “cramming” works. Unfortunately, brain science tells us that cramming does not work. Numerous studies have documented that “cramming” is ineffective, especially when it comes to long-term cognitive gains. Studying for short intervals with greater frequency promotes long-term learning and helps to reduce anxiety when test time rolls around. My suggestions for study time include:

- Study for short periods every day: There is no hard and fast rule here. Study for roughly 15 – 30 minutes at a time and then take a break. Give yourself a goal for each of these periods (see suggestions below) – this will help you feel like you accomplished something and deserve a reward (play a game, watch a show, eat a snack during your break).
- Copying your notes: Don’t just write your notes verbatim; instead, reorganize them in a way that makes sense to you. Leave room in the margins to write questions about things you don’t understand and bring these questions to class and ask them!
- Study your mistakes: Many students throw exams and homework assignments away. Instead of filing assignments away in the circular bin, rework the problems you got wrong. Learning from our mistakes is one of the best learning strategies around – humans are hard-wired to learn from their mistakes.
- Read your textbook: Don’t read it like a novel. Instead, use the chapter guides to focus your reading so that you are searching for specific information.
- Do your homework: Close your notes and try to solve problems without them. This will help you identify problems that you don’t understand and help you to gain confidence in your problem-solving ability. If your notes don’t help you, look through the textbook for help. Try to avoid using the internet to solve homework. There is an inordinate amount of false and sloppy work on the web that leads students astray.

4. Ask for help when you need it.

Some students believe that asking for assistance is a bad thing. My observations over years of teaching suggest that the most successful students tend to be those who ask questions when they don’t understand something and seek help when they are struggling. Admitting that you don’t understand and asking for help is a sign of maturity and confidence and not a sign of weakness.

Learning Outcomes

Upon successful completion of this course, you should be able to:

- Describe how the chemical and physical properties of matter arise from the fundamental properties of atoms, molecules, and ions
- Accurately perform fundamental chemical calculations including balancing chemical equations, converting between mass and moles, determining theoretical yields, calculating concentrations, and converting between concentrations and the amount of a solute in a solution
- Quantitatively and qualitatively describe chemical processes in terms of reaction rates, equilibrium position, and the transfer and distribution of energy
- Demonstrate proficiency in making measurements and performing experiments in the chemical laboratory
- Record data and report & interpret the results of laboratory experiments with appropriate levels of precision

General Education Learning Outcomes

This course meets the requirements for the General Education Program (GEP) Natural Science Investigation Level requirement. As such, upon successful completing of this course, students should be able to:

- Explain major concepts, methods, or theories in the natural sciences to investigate the physical world.
- Interpret information, solve problems, and make decisions by applying natural science concepts, methods, and quantitative techniques.
- Describe the relevance of aspects of the natural sciences to their lives and society.

Inclusivity Statement

I recognize that students in my classroom may have diverse racial, ethnic, cultural, and religious backgrounds, sexual orientations, and gender identities. I further recognized that students in my classroom may face unique challenges due to health conditions, family obligations, current or past military service, and other situations that may result in significant obstacles to learning.

I am committed to providing a civil, respectful, and equitable classroom where all my students have the opportunity to succeed and feel safe and valued. I believe diversity should be celebrated and embraced because it helps to create an optimal environment for shared inquiry and the development of sophisticated graduates who recognize the value of diversity and human dignity.

I welcome your suggestions and ideas on how we can create and maintain an inclusive and equitable learning environment during the semester.

Course Format

Online and In-Person Lectures

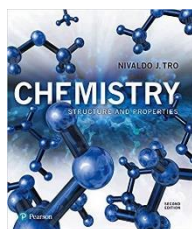
Online lectures will be posted to the course homepage in Canvas. Online-lectures are designed to prepare students for in-person lectures, and students are expected to have viewed these online lectures and completed any assigned activities before attending the accompanying in-person lecture.

Laboratory

Lab periods will provide you with the opportunity to make observations, engage in scientific reasoning, interact directly with natural phenomena, use scientific tools, and learn to record, analyze, and report scientific data and results. Getting the most out of lab requires that you be punctual, attentive, and curious. We will be using an application called *Labflow* to complete lab experiments and submit lab results and reports. **You will need to bring a printed copy of the lab procedure pages with you to lab each week.** It is also critical that you come to lab prepared, so please read lab procedures thoroughly before attending lab and prepare your lab notebook in advance by preparing tables for the data you will collect.

Required Materials and Learning Resources

Textbook

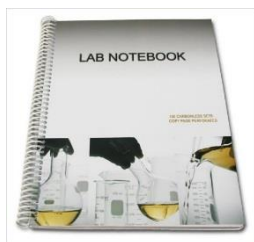


Chemistry: Structure and Properties, 2nd ed. by Nivaldo J. Tro
Available through text rental at the University Store

Labflow License

We will be using a lab course management software called *Labflow* for laboratory experiments this semester. This software package will provide you with information, lab instructions and helpful videos. You will submit your lab results and reports using Labflow. More information will be provided during your first week of class. *The license for this software can be purchased at the University Store or directly from Labflow.*

Lab Notebook



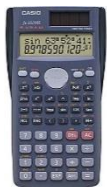
You will need a laboratory notebook with carbonless duplicate pages such the one shown here that is available for purchase at *the University Store*.

Lab Goggles



Lab goggles (not glasses) are required for all laboratory experiments and are available for sale at The University Store/ Text Rental. If you are planning on taking many lab courses, purchasing a pair of quality goggles will be a good investment. The Student Chapter of the ACS will have goggles for sale sometime during the semester.

Scientific Calculator



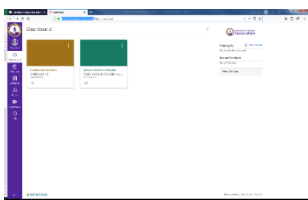
You will need a scientific calculator with log functions. It does not have to be a fancy, expensive one. My trusty Casio fx-300 ES solar (shown at left) costs \$11.49 at Staples, got me through college and graduate school, and never needs new batteries!

Course Technology Requirements



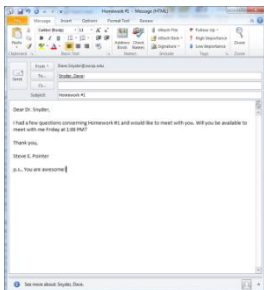
Because this is a hybrid course (a combination of in-person and online instruction using Canvas, our learning management system), you will need to have access to computer technology to participate. Browser and computer requirements for Canvas can be found [here](#). In addition to computer access, you will need a webcam, microphone, printer, and a stable internet connection (do not rely on cellular service).

Canvas Course Site



All course documents, including assignments, rubrics, the syllabus, and other supporting material, can be found on the course Canvas site (login at <https://uwstp.instructure.com> or use the link in the UWSP homepage under the *logins* tab). Your exam, quiz, assignment, and lab grades, along with your overall course grade, can be found on this site as well. I will post content and update grades almost every day, so be sure to check Canvas often.

E-Mail



Please feel free to email me at dave.snyder@uwsp.edu if you have any questions or concerns during the semester. While I may not be able to reply to your messages instantly, I will do my best to reply as quickly as possible. Email messages should be professionally formatted, should include an appropriate salutation (e.g., “Dear Dr. Snyder”), an appropriate closing (“Sincerely, Steve E. Painter”), and should be written in Standard English. Sending me e-mails is a good opportunity to develop or improve your professional communication skills.

Support and Help is Available!

Instructor and Tutoring Support

- **Instructor Office Hours:** During office hours, I am available to assist you in all aspects of this course. I will be available via Zoom during posted office hours. If these times don't work for you, please schedule an appointment with me.
- **Individual Tutoring:** Drop-in tutoring is available through the UWSP Tutoring/Learning Center (TLC). Schedules and locations for tutoring can be found on the TLC website: <http://www.uwsp.edu/tlc>

Disability Services

The University of Wisconsin Stevens Point is committed to providing students with disabilities the academic accommodations and auxiliary aids necessary to ensure access to all university services, programs, and activities. In addition to the university's campus wide efforts to promote access and inclusion, students with disabilities are further accommodated based on specific individual needs. The Disability and Assistive Technology Center (DATC) is responsible for determining these accommodations. They provide services and assistance to enrolled students who are either permanently or temporarily disabled.

- The registration process can take up to 3 weeks to complete, so if you believe you will require accommodations, begin the process as soon as possible. To start the process, contact The Disability and Assistive Technology Center (DATC) at 715-346-3365 or by emailing datctr@uwsp.edu
- UWSP has many services for students offered by various offices. Although decisions regarding disability specific accommodations are made on a case by case basis.
- Visit the Disability and Assistive Technology Center (DATC) website at: <http://www.uwsp.edu/disability/Pages/default.aspx> for information on services offered to students with specific disabilities

Advocacy

In the case of extended illness, family emergencies, or other unforeseen personal situations that present a significant challenge to successfully completing a course, students should contact the Dean of Students (call 715-346-2611, email DOS@uwsp.edu, or visit their office at 212 Old Main). The dean and his staff will provide discreet advocacy and advice for students having academic, personal, or other non-academic concerns. When times are tough, don't go it alone!

Course Policies

Academic Integrity Policy

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. Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors. Students who violate these standards will be confronted and must accept the consequences of their actions. **Please be aware that the penalties for academic misconduct can include suspension or expulsion from the university.** More information on UWSP academic standards and disciplinary procedures pertaining to academic misconduct can be found at:

<http://www.uwsp.edu/admin/stuaffairs/rights/rightsChap14.pdf>

Participation and Attendance Policy

No formal attendance policy will be enforced for in-person lectures; however, students are encouraged to attend in-person lectures if they are able. Attendance will be taken during each lecture (and lab) for the purposes of contact tracing. Please note that failure to attend class may affect your financial aid and enrollment status.

To receive credit for a laboratory exercise, a student must be in attendance during the laboratory period and participate fully in the laboratory exercise. Using another student's data or fictitious data without the express consent of the instructor will be considered academic misconduct. If you miss lab, please contact the instructor as soon as possible.

Late Work /Missed Test Policy

- Late laboratory reports will be assessed a 50% penalty. The deduction will be taken from the total points a student earns on the assignment (example: a student who earns 8/10 on a late lab report will receive 4 points instead of 8). A lab report will be considered late if it is turned in after 5:00 PM on the day that it is due. Lab reports turned in more than 7 days late will earn a score of zero.
- No credit will be given for late homework assignments
- If you know that you will be unable to attend a period in which a test or exam is to be given, you must notify the instructor in writing (e-mail is fine) at least *one week* in advance in order to schedule a make-up test or exam. This includes students who must miss class due to university sanctioned events or scheduled military service.

The instructor reserves the right to change or amend these policies at his discretion on a case-by-case basis. He further reserves the right to require documentation of illness or extraordinary circumstances that might preclude students from successfully completing course requirements.

Protecting your Data and Privacy

UW-System approved tools (including Canvas and Honorlock) meet federal security, privacy (FERPA), and data protection standards. Additional steps that should be taken to safeguard your data and privacy include the following:

- Use different usernames and passwords for each service you use
- Do not use your UWSP username and password for any other services
- Use secure versions of websites whenever possible (HTTPS instead of HTTP)
- Have updated antivirus software installed on your devices

Course Assignments

All course assignments, excluding in-person tests, can be found on the Canvas course homepage. Course content and assignments are grouped in modules.

Homework Assignments

Homework assignments will be posted to Canvas each week. Answers to homework questions will be submitted using Canvas. Solutions will be posted after the assignment has been graded.

Online Quizzes

Each Canvas module will contain one or more quizzes. These quizzes are intended to help you to identify what you know and what you do not know.

Unit Tests

Homework assignments and quizzes are examples of *formative* assessments and are designed to help you to learn. Tests and exams are examples of *summative* assessments and are designed for you to demonstrate what you have learned. Unit tests will consist of extended response questions (“story problems”) and will be given in lecture. *Unit tests are cumulative*, i.e., any item from Test 1 is fair game for Test 2, and any items on Test 1 and 2 are fair game on Test 3. Unit tests will be composed of a multiple-choice section, taken in Canvas, and an extended response section taken in-person during lecture (see the tentative course schedule at the end of this syllabus).

The Final Exam

The final exam is a cumulative exam and will cover material from Units 1 – 3 and material not covered on the Unit 3 test (this will include material covered during the two weeks of class). The final exam will be taken online using Honorlock, an online proctoring tool. More information about Honorlock can be found on Canvas.

Laboratory Observations (Lab Notebook)

Learning to keep proper laboratory records is critically important. Any time you are working in a lab, you should record your observations and measurements. This semester, you will learn how to correctly record laboratory observations in a notebook. In successive chemistry courses, the requirements for

laboratory notebooks will become more demanding, so learning the basics and developing good record-keeping habits will help you in the future. You will be expected to do some preparation *before* attending lab. This may include writing a brief description of your laboratory procedure and preparing tables to collect your laboratory data. Your instructor will check to make sure you have these items prepared when you come to lab, and points will be deducted from your lab scores if they are not completed.

Laboratory Reports

Laboratory reports will be submitted through *Lab Flow*. More information regarding the procedure for submitting lab reports will be shared during the first week of class.

Grading Information

The final course grade will be determined by a weighted scale as show below. Numbers in parentheses represent the approximate number of items in each category.

Category	Weight
Unit Tests (3)	45 %
Final Exam (1)	25 %
Lab Reports (10)	25 %
Module Quizzes (10)	2.5 %
Homework (15)	2.5 %
Total	100 %

The following scale will be used to assign letter grades. Note that at UWSP, a grade of “D-“ is not given.

Grade	Range (%)	Grade	Range (%)
A	100 - 94	C+	76 - 79
A-	90 - 93	C	73 - 75
B+	86 - 89	C-	70 - 72
B	83 - 85	D+	66 - 69
B-	80 - 82	D	63 - 65
		F	0 - 62

A Note about Final Course Grades

I invite you to discuss your grades with me at any time during the semester. I welcome these conversations, and I am more than happy to help you to develop study strategies that can assist you in becoming a better thinker, learner and problem solver – skills that can help you to improve your grade. Additionally, if I have made a mistake in grading an assignment (it happens – I am not perfect), I want to know right away so that I can correct the error. However, unless a mistake has been made in calculating your final grade, course grades posted after the final exam are final and not subject to change. I always take a look at your grade and will round in your favor if you are in-between grades; however, I do not “bump” students up to a higher grade, provide extra credit opportunities or additional work, or change the grading scale after the final exam has been completed.

****Chemistry Department Prerequisite Grade Requirement****

Please note that the UWSP Department of Chemistry requires that a student earn a grade of "C-" or better in order to enroll in a subsequent chemistry course in which CHEM 117 is a prerequisite. This means that if you earn a grade of "D+", "D", or "F", you must repeat this course and earn at least a "C-" if you wish to enroll in CHEM 248 (Quantitative Analysis), CHEM 325 (Organic Chemistry I), or any other chemistry course that requires completion of CHEM 117.

Course Outline (Tentative)

Week	Dates	Chapter(s)	Events	Topics Covered
1	9/2 – 9/4	E, 1		Measurements, Atoms
2	9/8 – 9/11	1, 2		Quantum Mechanical Model of Atoms
3 [†]	9/14 – 9/18	3, 4		Periodic Trends, Molecules and Compounds
4	9/21 – 9/25	5, 6	Unit Test 1	Chemical Bonding
5	9/18 – 10/2	7		Chemical Reactions and Chemical Quantities
6	10/5 – 10/9	8, 9		Aqueous Reactions, Thermochemistry
7	10/12 – 10/16	10		Gases
8	10/19 - 10/23	11, 13	Unit 2 Test	Inter-Molecular Forces, Solution Processes
9	10/26 – 10/30	14		Kinetics
10 [‡]	11/2 – 11/6	14, 15		Kinetics, Chemical Equilibrium
11	11/9 – 11/13	15, 16		Acid-Base Equilibrium
12	11/16 – 11/20	16, 17	Unit 3 Test	Aqueous Equilibrium
13	11/23 – 11/25	18	Thanksgiving Break	Thermodynamics
14	11/30 – 12/4	18, 19	All activities online	Thermodynamics, Electrochemistry
15	12/7 – 12/11	19	All activities online	Electrochemistry
16			Final Exam	Online Cumulative Final Exam

[†]Sept 14: Last day to add a course or drop this course without a grade (course will not appear on your transcript)

[‡]Nov 6: Last day to drop this course (a grade of "W" will appear on your transcript)

Laboratory Schedule (Tentative)

Week	Dates	Experiment
1	9/3	Safety and Lab Check-In
2	9/10	Exp. 1: Introduction to Laboratory Measurements
3	9/17	Exp. 2: Using Excel for Graphing
4	9/24	Exp. 3: Beers Law and Spectrophotometry
5	10/1	Exp. 4: Modeling Geometry and Polarity
6	10/8	Exp. 5: Solutions, Electrolytes, and Concentrations
7	10/15	Exp. 6: Volumetric Analysis
8	10/22	Exp. 7: Titration: Determining the Concentration of an Acid
9	10/29	Exp. 8: Kinetics of Iodine Clock Reaction
10	11/5	Exp. 9: Determination of an Equilibrium Constant
11	11/12	Exp. 10: Determination of the Molar Mass and Identity of a Diprotic Acid
12	11/19	Lab Check-Out*
13	11/26	No Lab – Thanksgiving Break
14	12/3	Exp. 11: Measuring Avogadro's Number
15	12/10	Lab Data Analysis

*In the event that UWSP transitions to 100% online learning before this date, lab check-out will take place during the final face-to-face lab period and the schedule will be adjusted accordingly.