



Welcome to Fundamental Chemistry

CHEM 105, Spring 2021

Section D1/L1

Lecture:

3 Online Lectures per Week

Discussion:

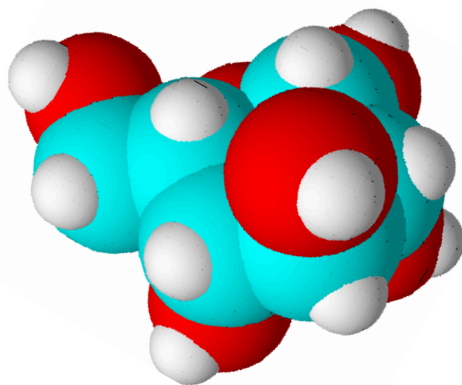
Monday 9:00 – 9:50 AM via Zoom

<https://uwsp.zoom.us/j/7424698010>

Laboratory:

Tuesday 8:00 AM – 10:50 AM in CBB 226

(see cohort schedule at end of syllabus)



Dr. Dave Snyder

dave.snyder@uwsp.edu

Office Location: CBB 445

Office Hours:

M, T, Th, Fr 12:00 – 1:00 PM, W 9:00 – 9:50 AM via Zoom and by appointment

<https://uwsp.zoom.us/j/7424698010>

Please contact me with your questions or concerns!

Table of Contents

About the Instructor	2
What is this course all about?.....	2
COVID-19 Health and Safety	2
Words of Advice	3
Chemistry Learning Outcomes.....	3
General Education Learning Outcomes	4
Inclusive Excellence.....	4
Course Format.....	5
Learning Resources and Required Materials	5
Support and Help is Available!	6
Course Policies	7
Assignments.....	8
Weekly Assignment Schedule and Event Calendar.....	9
Grading Information	9
Course Outline	11
Laboratory Schedule Cohort A (last names beginning with A – L).....	12
Laboratory Schedule Cohort B (last names beginning with P – Z).....	13

About the Instructor



My name is Dr. Dave Snyder, and I am excited about the opportunity to work with you this semester. 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 105 and 106 together provide a broad introduction to the field of chemistry. In Chemistry 105, we focus on modern atomic and molecular theory. We will study the structure of matter, from the subatomic particles that make up atoms to the formation and structure of simple molecules and ionic compounds that can be readily studied in the laboratory. You will study how molecules interact with one another and work to understand the interaction between matter and energy. Finally, you will learn how chemists describe chemical and physical changes and learn how to predict the results of chemical and physical interactions in both descriptive and mathematical terms. Chemistry 105 provides the foundation for Chemistry 106, which focuses in more detail on the nature of chemical interactions.

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.

Words of Advice

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

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 get 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 only on getting a good grade, effective 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 fundamental 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, demonstrate, explain, interpret, and describe*. Primarily, you will be evaluated this semester on your ability to meet these learning outcomes.

3. Study a little every day.

On your first day of class, we will discuss how to study for this class. You will receive a handout (also available on Canvas) that provides specific suggestion on how to spend you time studying for this class. At a minimum, successful completion of this class will require from you 20 – 28 hours of effort each week (including lecture, lab, and discussion attendance).

4. Ask for help when you need it.

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

Chemistry Learning Outcomes

After successful completion of this course, students 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 the flow of energy that takes place during chemical reactions and physical changes
- 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.

Inclusive Excellence

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

Lecture

Lectures will be delivered asynchronously (prerecorded) via Canvas. Each lecture will be divided into 3 or 4 short segments and will include practice problems that should be worked on while viewing the lecture. You are strongly encouraged to work on homework problems relevant to the lecture material after viewing each lecture segment.

Discussion

During discussion, I will answer questions and provide additional practice problems. Please come prepared to ask questions and participate. At the end of each discussion period, you will meet with a small group of classmates to work collaboratively on Part 1 of a weekly module quiz. Students who do not attend discussion will receive a score of zero (0) on Part 1 of the quiz.

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 in person lab exercises.** It is also critical that you come to lab prepared, so please read lab procedures thoroughly before attending lab.

Learning Resources and Required Materials

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

Lab Flow 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.*

Scientific Calculator: You will need a scientific calculator with log functions. It does not have to be a fancy, expensive one. My trusty Casio solar costs \$11.49 at Staples, got me through college and graduate school, and never needs new batteries!

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.

Course Technology Requirements

Because this is a hybrid course (a combination of in-person and online instruction using Canvas), 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

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 grades 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. Pointer”), 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. You do not need to make an appointment to stop by during “drop-in” office hours but should contact me in advance for appointments at other times. I expect that you will need help with this course and am always happy to work with you.
- **Group Tutoring:** Group tutoring will be available for this class. The dates and times for these sessions will be announced during the second week of class.
- **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 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 the DOS 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

Participation and Attendance Policy

As directed by the Provost, Spring 2021 courses at UWSP will be taught according to the modality indicated in the timetable. This course consists of three (3) components, an asynchronous online lecture, a synchronous online discussion, and an *in-person* laboratory.

1. Three (3) online lectures will be provided and posted to Canvas each week. Lectures will typically consist of 3 – 4 short segments no longer than 10 - 15 minutes each. You are expected to watch these lectures during the week that they are posted.
2. Discussions will take place via Zoom during the time indicated on your course schedule. To receive credit for discussion activities, you must attend the entire Zoom session, including break-out sessions. Please be prepared to have your camera on during Zoom sessions. If, from time to time, you are unable to use your camera, please contact me prior to your discussion.
3. All students are expected to attend lab in-person. An online lab option will be available, by permission, on a week-to-week basis for those students who cannot attend due to illness or who are in quarantine. During laboratory sessions, social-distancing guidelines, mask wearing, and other safety protocols will be strictly enforced. Your lab section will be divided into 2 cohorts that will meet in person every-other week, and there will be no more than 11 students in the lab at any given time (the lab holds a maximum of 24 students).

If you are not comfortable with the modality of any component of this course, you should meet with your academic advisor to discuss taking CHEM 105 during a future semester. If, after meeting with your

advisor, it is not practical for you to take this course later, please contact me as soon as possible to discuss other options that may be available to you.

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. 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>

Late Work /Missed Test Policy

- Late lab reports will be assessed a 50% penalty. The deduction will be taken from the total points a student earns on the report (example: a student who earns 8/10 on a late lab report will receive 4 points instead of 8). A report will be considered late if it is turned in after midnight on the day that it is due. Lab reports turned in more than 7 days late will receive a score of zero.
- No credit will be given for late homework assignments.
- Final Exams and Midterm Exams will not be given before the scheduled exam period.

Policy Disclaimer: The instructor reserves the right to change or amend these policies at his discretion on a case-by-case basis.

Assignments

Homework Assignments

A homework assignment will be posted to Canvas each week. Homework assignment typically contain 20 problems. You will submit answers via a Canvas quiz. Homework answers are due by midnight each Sunday. Solutions will be posted immediately after the due date/time.

Module Quizzes

Material in this course will be organized into modules. Each module will typically consist of three lectures, an accompanying homework assignment, and a quiz. Module quizzes will be taken in two parts: Part 1 will be taken group quiz taken during Discussion and Part 2 will be an individual quiz taken in Canvas. The Canvas quiz is always due by midnight on Mondays.

Laboratory Reports

Each laboratory exercise will require the completion of a prelab quiz and a lab report, both of which will be submitted through Labflow. Prelab quizzes are due by midnight the evening before your lab is scheduled, and lab reports are due one week after the scheduled lab day.

Midterm and Final Exams

Two exams will be given this semester – a midterm and a final. The midterm exam will cover topics from Chapters E & 1-5, and the final exam will cover topics from Chapters 6 – 10. Both exams will be taken in Canvas.

Weekly Assignment Schedule and Event Calendar

Sunday: Homework answers due (Canvas Quiz) by midnight
Monday: Attend discussion via Zoom (9:00 – 9:50 AM)
Module Quiz Part 1 due during discussion
Module Quiz Part 2 due by midnight
Prelab Quiz for Lab due by midnight in Labflow
Tuesday: Lab (8:00 – 10:50 AM, CBB 226). Check cohort schedule for assigned activity (in person or virtual)
Previous week's lab report due in Labflow
Wednesday: View online lecture & work on homework problems
Thursday: View online lecture & work on homework problems
Friday: View online lecture & work on homework problems

Grading Information

The final course grade will be determined by a weighted scale as show below. Numbers in parentheses represent the number of items included in each category. If more than this number of items is assigned, low scores will be dropped (for example, 12 labs are assigned, so 1 is dropped and only the highest 11 will count towards the final grade).

Category	Weight
Homework (10)	15 %
Module Quizzes (10)	25 %
Lab Exercise* (11)	30 %
Midterm Exam (1)	15 %
Final Exam (1)	15 %
Total	100 %

*Lab report (70%) + Prelab Quiz (30%)

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

Grades Assigned by Canvas and Labflow

All assignments graded by Canvas or Labflow will be reviewed and regraded after the due date to ensure that students earn appropriate credit for their answers. Note that you will have 2 attempts to complete the Labflow prelab quiz and the lab report. Please note however, that you will see similar (but not the same) quiz questions on your second attempt. The higher of your two attempts will be recorded.

Final Course Grades

I invite you to come and discuss your grade 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 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 or work opportunities, or change the grading scale after the final exam has been completed.

Course Outline and Lecture Schedule

Week	Dates	Chapter(s)	Events	Topics Covered
1	January 25 - 29	E		Making Measurements
2	February 1 - 5	1		The Particle Nature of Matter
3	February 8 - 12	2		Quantum-Mechanical Model of the Atom
4	February 15 - 19	3		Periodic Properties of the Elements
5	February 22 -26	4		Molecules and Compounds
6	March 1 - 5	5		Chemical Bonding
7	March 8 - 12	5		Chemical Bonding
8	March 15 - 19	6	Midterm Exam	Bonding Theories
	March 22 - 26		SPRING BREAK	
9	March 29 – April 2	7		Reactions/ Stoichiometry
10	April 5 - 9	7, 8		Limiting Reactants/ Units of Concentrations
11	April 12 - 16	8		Solution Stoichiometry
12	April 19 - 23	8		Solution Chemistry
13	April 26 - 30	9		Thermochemistry
14	May 3 - 7	9, 10		Thermochemistry/ Gas Laws
15	May 10 - 14	10		Gas Laws/ Gas Stoichiometry
16	TBA		Final Exam	

Other Important Dates:

[†]Feb 3: Last day to add a course or drop this course without a grade (course will not appear on your transcript)

[‡]April 23: Last day to drop this course (a grade of "W" will appear on your transcript)

Laboratory Schedule Cohort A (last names beginning with A – L)

Week	Date	Experiment
1	January 26	Safety and Check In (in person lab)
2	February 2	Exp. 1: Chemistry Glassware and Measurement (virtual lab)
3	February 9	Exp. 2: Basic Lab Techniques (in person lab)
4	February 16	Exp. 3: Beer's Law (virtual lab)
5	February 23	Exp. 4: Iron in Water (in person lab)
6	March 2	Exp. 5: Empirical Formulas (virtual lab)
7	March 9	No lab this week 😊
8	March 16	Exp. 6: Compounds and Their Bonds (in person lab)
	March 23	Spring Break 😊
9	March 30	Exp. 7: Types of Chemical Reactions (virtual lab)
10	April 6	Exp. 8: Chemistry of Copper and Percent Yield (in person lab)
11	April 13	Exp. 9: Volumetric Analysis (virtual lab)
12	April 20	Exp. 10: Determination of Acid Concentration (in person lab)
13	April 27	Exp. 11: Soluble and Insoluble Salts (virtual lab)
14	May 4	Exp. 12: Constant Pressure Calorimetry and Check Out (in person lab)
15	May 11	No lab this week 😊

Laboratory Schedule Cohort B (last names beginning with P – Z)

Week	Date	Experiment
1	January 26	No lab this week 😊
2	February 2	Safety and Check In (in person lab)
3	February 9	Exp. 1: Chemistry Glassware and Measurement (virtual lab)
4	February 16	Exp. 2: Basic Lab Techniques (in person lab)
5	February 23	Exp. 3: Beer's Law (virtual lab)
6	March 2	Exp. 4: Iron in Water (in person lab)
7	March 9	Exp. 5: Empirical Formulas (virtual lab)
8	March 16	No lab this week 😊
	March 23	Spring Break 😊
9	March 30	Exp. 6: Compounds and Their Bonds (in person lab)
10	April 6	Exp. 7: Types of Chemical Reactions (virtual lab)
11	April 13	Exp. 8: Chemistry of Copper and Percent Yield (in person lab)
12	April 20	Exp. 9: Volumetric Analysis (virtual lab)
13	April 27	Exp. 10: Determination of Acid Concentration (in person lab)
14	May 4	Exp. 11: Soluble and Insoluble Salts (virtual lab)
15	May 11	Exp. 12: Constant Pressure Calorimetry and Check Out (in person lab)