

Student Syllabus for Chemistry 106-03
Fundamental Chemistry
Spring 2021

Instructor: Dr. David Szpunar
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Lecture: Videos to be posted weekly on Canvas.

Discussion:	03D1	Mon. 10:00AM-10:50AM	Location:	Zoom meeting
	03D2	Mon. 11:00AM-11:50AM		Zoom meeting

Lab:	03L1	Thurs. 8:00AM-10:50AM	Location:	CBB 230	(Dr. Riha)
	03L2	Wed. 11:00AM-1:50PM		CBB 230	(Dr. Szpunar)

Text: **Lecture:** *Chemistry: Structure and Properties, 2nd ed.*, Nivaldo J. Tro; Pearson: Hoboken, New Jersey, 2018 (required)

- ISBN-13: 978-0134293936
- ISBN-10: 0134293932
- This is available for rental at the University Bookstore

Sapling Learning Homework (required)

- Can login/create an account at: www.saplinglearning.com/login
- Can register for the course at:
<https://macmillan.force.com/macmillanlearning/s/article/Sapling-Learning-Registering-for-courses>.

Scientific calculator (required)

Lab: Labflow Laboratory Package (required)

- Available for purchase at the University Bookstore
- OR visit <https://labflow.com/app/login>

Laboratory Notebook (required)

- A simple bound composition notebook available for purchase at the University Bookstore

Laboratory safety goggles (required)

- Available for purchase at the University Bookstore

Office hours: Dr. Szpunar (Live Zoom office hours)
Wed. 3:00-4:00 PM
Thurs. 11:00AM-12:00 PM
By appointment

Tutoring:

The Tutoring-Learning Center (TLC) offers **FREE** virtual tutoring to support you in your chemistry classes. 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. The TLC will offer two main forms of tutoring during Spring 2021:

- **Drop-In Tutoring.** Tutors are waiting in a Zoom room where students can “drop-in” for assistance. No appointment or registration is required and attendance is flexible. The schedule and Zoom links can be found here: <http://www.uwsp.edu/tlc/Pages/dropInTutoring.aspx>.
- **One-on-One Tutoring.** Tutors are available for weekly, recurring appointments. Weekly attendance is required, as this service is designed for long-term assistance. To sign up, students can submit a request form through the TLC webpage: <https://www.uwsp.edu/tlc/Pages/Mathandscischedules.aspx>. Appointments are made based upon tutor availability – we cannot guarantee that every student will be matched with a tutor. One-on-One Tutoring is **FREE** for all UWSP students during Spring 2021!

Math and Science Tutoring – Spring 2021

What	Details	Schedule	Cost
Drop-In Tutoring	Flexible attendance	https://www.uwsp.edu/tlc/Pages/dropInTutoring.aspx	Free
One-on-One Tutoring	Weekly attendance required	Complete online request form here: https://www.uwsp.edu/tlc/Pages/request-math-science-tutoring.aspx	Free

COURSE DESCRIPTIONS (CHEM 105 & CHEM 106)

CHEM 105 - Fundamental Chemistry (5 cr)

Description:

(Two semester basic course) 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.

Prerequisites:

[MATH 090](#) or placement in [MATH 100](#) or above. (See [notes 3, 4, 5](#) in Course Catalog).

CHEM 106 - Fundamental Chemistry (5 cr)

Description:

Continuation of [CHEM 105](#).

Prerequisites:

[CHEM 105](#), [MATH 100](#) or higher. (See [note 4](#) in Course Catalog.)

Note that MATH 100 is being phased-out and two courses, MATH 95 and MATH 107, have been introduced to replace it.

COURSE OBJECTIVES

General Education Program (GEP)

Natural Sciences

(Learning Outcomes)

(lab
component
also
required)

- To be able to explain major concepts, methods, or theories in the natural sciences to investigate the physical world.
- To be able to interpret information, solve problems, and make decisions by applying natural science concepts, methods, and quantitative techniques.
- To be able to describe the relevance of aspects of the natural sciences to their lives and society.

Student Learning Outcomes (Chemistry Department)

Students graduating with a major in Chemistry from the University of Wisconsin-Stevens Point will be able to perform tasks representing all eight of the following learning outcomes. Students completing Chem 106 will perform tasks, at an introductory level, representing the underlined learning outcomes.

- Apply the foundational principles of the major sub disciplines of chemistry (Analytical, Inorganic, Organic, and Physical) to identify and explain the chemical and physical properties of matter.
- Demonstrate safe work habits and techniques in the chemical laboratory
- Analyze experimental results in order to draw justifiable conclusions

- Evaluate, document, and communicate experimental results and chemistry related issues according to accepted scientific standards, as a written report, as a poster, and as an oral presentation
- Design and construct experiments to address chemical problems using appropriate methods, techniques, equipment, and modern instruments for the synthesis, isolation, and characterization of matter and the analysis of mixtures using relevant information compiled from scientific literature

Living and Learning During COVID-19.

The COVID-19 pandemic has changed how we live and interact. At the end of this section you'll find important information on a number of campus policies, all of which are critical to keeping you, your fellow students, me, and all faculty and staff on campus safe. We'll get to that in due time. First, let me explain how Chem 106 will operate in the face of COVID.

Our class is made up of two different lab sections, with a total of 43 students—too many to put together safely while maintaining social distance. This is why the class is listed as VIRTUAL in your schedules. I will not be lecturing during class time; all lectures will be recorded and available on Canvas.

Chemistry is a laboratory science. COVID-19 has disrupted the way in which we perform laboratory work, but that doesn't mean we can't do it, and it doesn't mean we can't find new and creative ways to do it. We will be using a software platform called Labflow to help us with lab this semester. Labflow will allow students who are learning 100% remotely to have a laboratory experience and will also let us stagger in-person lab times equally amongst students. Each laboratory section will be broken into two cohorts of 11—Purple (group A) and Gold (group B); The cohort information will be posted as a separate document on Canvas. Cohorts of 11 allow us to follow social distancing guidelines, and to give those opting for in-person labs equal opportunities to use lab equipment. In the event that we need to move completely online—a COVID spike on campus, for example—Labflow will allow you continue learning. While it's not the same as getting into lab and mixing chemicals, Labflow is a solid alternative.

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.

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.

METHODOLOGY: This online course is comprised of a series of video lectures uploaded in a weekly format. Each chapter will be broken up into several videos, all of which will be posted in advance for you to watch the material at your own pace. At the end of each chapter, you will be responsible for a Sapling homework assignment and a chapter quiz (see below).

Canvas: All course lectures, quizzes, exams, and other information will be available in a weekly format on Canvas. **It is your responsibility to visit the site daily and perform any required assignment. This is your responsibility, and extensions will not be given.** You must submit any materials before the assigned due date. You can log into Canvas at: <https://www.uwsp.edu/canvas/Pages/default.aspx>

Exams: There will be three hourly exams given on *Monday, 2/22, Monday, 3/29, and Monday 4/26*. There will also be a cumulative final exam given on *Monday, 5/17*. **All exams will open on Canvas at 12:00 AM and close at 11:59PM on the relevant date.** You can start your exam at any time during this window, but once you start, you will have 60 minutes to take the three midterm exams, and 120 minutes to take the final exam. Once you start the exam, you must finish it in the allotted time frame—you cannot stop and return to the exam.

Quizzes: There will be a short (5 question) Canvas quiz on each even-week Friday of the course, as well as week 15 (for a total of 8 quizzes, one for each chapter). Quizzes will typically be conceptual in nature, rather than focusing on problem-solving skills. All quizzes will open on Canvas at 12:00AM and close at 11:59PM on the relevant date. You can start your quiz at any time during this window, but once you start, you will have 6 minutes to take the quiz. Once you start the quiz, you must finish in the allotted 6 minute time frame—you cannot stop and return to the quiz.

Homework: We will be using the Sapling online homework system. Please see the Sapling information page posted to the syllabus section and Introduction module of Canvas for registration information. Mandatory homework is assigned for each chapter and is due at 11:59 PM of the date specified in the schedule below. There are a total of eight assignments (20 pts each), for a total of 160 points. It is essential to do the homework in order to succeed in this class. Exams and quizzes are heavily based on homework.

Discussion: Discussion will be held on Mondays using live Zoom meetings. You are required to attend these discussion sections. If for some reason your schedule does not permit you to attend the discussion for which you are registered, you may (with permission) attend another discussion section. Discussions will begin with a brief update, followed by breakout groups of 4 students to work on practice problems. These assignments are not graded—they are assigned for you to practice when other students and I are available to work through problems together. You will have the opportunity to download solution sets to aid in your understanding of the material.

Laboratory: We will be using the Labflow system for our laboratory. As detailed in the laboratory schedule, twelve experiments will be assigned. Five of these labs will be held in person, and the other seven will be online lab simulations. Eleven of these labs are worth 16 points, and one (Safety Lab) is worth 9 points. *Prelabs (to be completed in Labflow) are due the Monday of the week the lab is to be performed.* For the 11 labs, Prelabs are due the Monday that the lab is to be performed (4 points) and the lab report is due the Friday of the week following when the lab was performed (12 points). Specific due dates are presented at the end of this syllabus. **There are no makeup labs.**

General considerations:

- Significant figures will be considered on all quizzes, exams, lab reports, prelabs and homework assignments.
- Phases (i.e. solid, liquid, gas or aqueous) must be included in all chemical equations.
- Carbon atoms are shown with more than 4 bonds in Lewis structures etc.

Make-up policy: There will be **NO** unexcused make-ups of homework, exams, or quizzes. Any excused makeups must be performed within 48 hours of the original date. Due to the nature of labs, there are no lab makeups. All unexcused absences will result in a grade of zero.

Final Exam: Note that the final exam is cumulative covering Ch. 11, 13- 19. It is scheduled for **Monday, 5/17. The final exam will open on Canvas at 12:00 AM and close at 11:59PM.** You can start your exam at any time during this window, but once you start, you will have 120 minutes to finish the final exam. Once you start the exam, you must finish it in the allotted time frame—you cannot stop and return to the exam.

Grading: Your final grade will be based on the following point system:

Hourly exams:	3×125 pts	=	375 points	(37.5%)
Final exam:	1×200 pts	=	200 points	(20%)
Chapter Quizzes:	8×10 pts	=	80 points	(8%)
Homework:	8×20 pts	=	160 points	(16%)
12 labs and prelabs:	$(1 \times 9)^* + (11 \times 16)$ pts	=	185 points	(18.5%)
			<hr/>	
			1000 points	(100%)

*The safety lab (lab #1) is worth 9 points. All other labs are worth 16 points

You will be graded on the following scale:

% 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+		

Lecture policies:

Video lectures will be posted weekly to Canvas. It is your responsibility to stay up to date on these videos and contact me if/when you have any questions.

Attendance for all lectures, discussions and laboratories is expected as outlined in the UWSP Undergraduate Catalog. See the section about Attendance under Academic Policies.

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 715-346-3365 or DATC@uwsp.edu.

I will post PowerPoint slides for each lecture along with the relevant lecture video. A useful strategy is to print out these slides and make notes on them accordingly. Please remember that you can watch these lectures as many times as you want, and you are encouraged to do so.

If you have any questions whatsoever, please take advantage of the resources available to you.

Remember that I will be holding open Zoom office hours every Wednesday and Thursday, and I am also available in our weekly Zoom discussion sections (Mondays). If you are not available during these times, please e-mail me to set up a private Zoom meeting.

You are responsible for checking your e-mail and Canvas daily.

Treat all fellow students with respect and civility. Failure to do so will result in your dismissal from that day's lab.

Study Tips for General Chemistry.

- Lectures will primarily follow the text. Read the assigned sections before lecture and again shortly after, using your lecture notes as a supplement. Repeating the information helps the facts and concepts sink and remain in your brain.
- Try to work the problems as soon as possible after lecture. This will help you discern where your understanding may be lacking and will help reiterate the important concepts.
- This course covers some difficult material and because of the truncated schedule, necessarily maintains a rapid pace. Expect to spend 12 – 15 hours per week outside of lectures for study, homework and completing labs. If you cannot commit to this level of study, I recommend you reduce your other commitments or withdraw from the course.
- Do the homework, re-do the homework, and do practice problems. “Practice makes perfect.”

Academic Honesty/Plagiarism Policy

You are encouraged to study together, work problems and exercises with others in the class, and to seek help in understanding the material. However, unless specifically instructed otherwise, all work to be graded should be your own work, and not copied from any other person. Any instances of plagiarism or cheating will be dealt with in accordance with the UWSP Chapter 14 rules on Academic Misconduct. Any violations will result in a zero for that assignment/exam. A second violation results in an F for a final grade in the class.

Accommodation of Persons with Disabilities:

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.

University Policy on Absence to Observe Religious Holidays

It is UW System policy to reasonably accommodate your sincerely held religious beliefs with respect to all exams and other academic requirements. You will be permitted to make up an exam or other academic requirement at another time or by an alternative method, without any prejudicial effect, if:

- There is a scheduling conflict between your sincerely held religious beliefs and taking the exam or meeting the academic requirements; and
- You have notified me within the first three weeks of the beginning of classes of the specific days or dates that you will request relief from an examination or academic requirement.
- I will accept the sincerity of your religious beliefs at face value and keep your request confidential.
- I will schedule a make-up exam or requirement before or after the regularly scheduled exam or requirement.
- You may file any complaints regarding compliance with this policy in the Equity and Affirmative Action Office.

Course Material

Week	Chapter	Day	Date	Lecture Material
1	11	Th	1/28	§11.2-11.3
2	11	M	2/1	§11.4-11.5
		Th	2/4	§11.6, 11.8-11.9
3	13	M	2/8	§13.2-13.3
		Th	2/11	§13.4-§13.5
4	13	M	2/15	§13.6
		Th	2/18	§13.7
5	14	M	2/22	§14.2-14.3
		Th	2/25	§14.4-14.5
6	14	M	3/1	§14.6
		Th	3/4	§14.7-14.8
7	15	M	3/8	§15.2-15.4
		Th	3/11	§15.5-15.7
8	15	M	3/15	§15.8
		Th	3/18	§15.9
×	×	Spring Break	3/22- 3/26	No Class
9	16	M	3/29	§16.2-16.4
		Th	4/1	§16.5-16.6
10	16	M	11/2	§16.7-16.8
		Th	11/5	§16.9-6.11
11	17	M	11/9	§17.2
		Th	11/12	§17.3-17.4
12	17	M	11/16	§17.5-17.6
		Th	11/19	17.7
13	18	M	11/23	§18.2-18.4
		Th	11/25	§18.5-18.6
14	18	M	11/30	§18.7-18.8
		Th	12/3	§18.9-19.10
15	19	M	12/7	§19.2-19.4
		Th	12/10	§19.5-19.6

Course Schedule

Week	Dates	Course Material	Due Monday	Due Friday
1	1/25-1/29	Ch 11		
2	2/1-2/5	Ch 11		HW 1; Quiz 1
3	2/8-2/12	Ch 13		
4	2/15-2/19	Ch 13		HW 2; Quiz 2
5	2/22-2/26	Ch 14	Exam 1 (Ch 11, 13)	
6	3/1-3/5	Ch 14		HW 3; Quiz 3
7	3/8-3/12	Ch 15		
8	3/15-3/19	Ch 15		HW 4; Quiz 4
×	3/22-3/26	Spring	Break	No Classes
9	3/29-4/2	Ch 16	Exam 2 (Ch 14, 15)	
10	4/5-4/9	Ch 16		HW 5; Quiz 5
11	4/12-4/16	Ch 17		
12	4/19-4/23	Ch 17		HW 6; Quiz 6
13	4/26-4/30	Ch 18	Exam 3 (Ch 16, 17)	
14	5/3-5/7	Ch 18		HW 7; Quiz 7
15	5/10-5/14	Ch 19		HW 8; Quiz 8
×	5/17	×	Final Exam (Cumulative)	×

Please note, the last day to drop without a grade is Wednesday, 2/3, and the last day to drop a course is Fri., 4/23.

List of Labs

Lab Number	Lab Title
Safety Lab	Lab Safety*
Virtual Lab 1*	Effect of IMF on Evaporation of Solvents*
Lab 1†	Molar Mass of Solute Using Freezing Point Depression†
Virtual Lab 2*	Aqueous Solutions, Electrolytes, and Concentrations*
Lab 2†	Iodine Clock Reaction†
Virtual Lab 3*	Le Châtelier's Principle*
Lab 3†	Determination of K_{sp} †
Virtual Lab 4*	Determining the Amount of NaOCl in bleach*
Lab 4†	Titration—Identifying a Diprotic Acid†
Virtual Lab 5*	Entropy of Borax Dissolution*
Lab 5†	Buffers†
Virtual Lab 6*	Voltaic Cells*

* Signifies a virtual lab

† Signifies an in-person lab

Laboratory Schedule

Week	Dates	Lab Group A/Online Only	Lab Group B
1	1/25-1/29	No Lab	No Lab
2	2/1-2/5	Safety Lab: Lab Safety*	Safety Lab: Lab Safety*
3	2/8-2/12	Virtual Lab 1: Effect of IMF on Evaporation of Solvents*	No Lab
4	2/15-2/19	Check-in Lab 1: Molar Mass of Solute Using Freezing Point Depression†	Virtual Lab 1: Effect of IMF on Evaporation of Solvents*
5	2/22-2/26	Virtual Lab 2: Aqueous Solutions, Electrolytes, and Concentrations*	Check-in Lab 1: Molar Mass of Solute Using Freezing Point Depression†
6	3/1-3/5	Lab 2: Iodine Clock Reaction†	Virtual Lab 2: Aqueous Solutions, Electrolytes, and Concentrations*
7	3/8-3/12	Virtual Lab 3: Le Châtelier's Principle*	Lab 2: Iodine Clock Reaction†
8	3/15-3/19	Lab 3: Determination of K_{sp} †	Virtual Lab 3: Le Châtelier's Principle*
×	3/22-3/26	Spring Break	No Lab
9	3/29-4/2	Virtual Lab 4: Determining the Amount of NaOCl in bleach*	Lab 3: Determination of K_{sp} †
10	4/5-4/9	Lab 4: Titration—Identifying a Diprotic Acid†	Virtual Lab 4: Determining the Amount of NaOCl in bleach*
11	4/12-4/16	Virtual Lab 5: Entropy of Borax Dissolution*	Lab 4: Titration—Identifying a Diprotic Acid†
12	4/19-4/23	Lab 5: Buffers† Check-out	Virtual Lab 5: Entropy of Borax Dissolution*
13	4/26-4/30	No Lab	Lab 5: Buffers† Check-out
14	5/3-5/7	Virtual Lab 6: Voltaic Cells*	Virtual Lab 6: Voltaic Cells*
15	5/10-5/14	No Lab	No Lab

* Signifies a virtual lab

† Signifies an in-person lab

Lab Group A/Online Only Due Dates

Week	Dates	Prelab Due Date	Data and Report Submission Due Date
		(Mondays 11:59 PM)	(Fridays 11:59 PM)
1	1/25-1/29	×	×
2	2/1-2/5	×	×
3	2/8-2/12	Virtual Lab 1 Prelab: 2/8	Safety Lab Report: 2/12
4	2/15-2/19	Lab 1 Prelab: 2/15	Virtual Lab 1 Report: 2/19
5	2/22-2/26	Virtual Lab 2 Prelab: 2/22	Lab 1 Report: 2/26
6	3/1-3/5	Lab 2 Prelab: 3/1	Virtual Lab 3 Report: 3/5
7	3/8-3/12	Virtual Lab 3 Prelab: 3/8	Lab 2 Report: 3/12
8	3/15-3/19	Lab 3 Prelab: 3/15	Virtual Lab 3 Report: 3/19
×	3/22-3/26	×	×
9	3/29-4/2	Virtual Lab 4 Prelab: 3/29	Lab 3 Report: 4/2
10	4/5-4/9	Lab 4 Prelab: 4/5	Virtual Lab 4 Report: 4/9
11	4/12-4/16	Virtual Lab 5 Prelab: 4/12	Lab 4 Report: 4/16
12	4/19-4/23	Lab 5 Prelab: 4/19	Virtual Lab 5 Report: 4/23
13	4/26-4/30	Virtual Lab 6 Prelab: 4/26	Lab 5 Report: 4/30
14	5/3-5/7	×	Virtual Lab 6 Report: 5/7
15	5/10-5/14	×	×

* Signifies a virtual lab

† Signifies an in-person lab

Lab Group B Due Dates

Week	Dates	Prelab Due Date	Data and Report Submission Due Date
		(Mondays 11:59 PM)	(Fridays 11:59 PM)
1	1/25-1/29	×	×
2	2/1-2/5	×	×
3	2/8-2/12	×	Safety Lab Report: 2/12
4	2/15-2/19	Virtual Lab 1 Prelab: 2/15	×
5	2/22-2/26	Lab 1 Prelab: 2/22	Virtual Lab 1 Report: 2/26
6	3/1-3/5	Virtual Lab 2 Prelab: 3/1	Lab 1 Report: 3/5
7	3/8-3/12	Lab 2 Prelab: 3/8	Virtual Lab 3 Report: 3/12
8	3/15-3/19	Virtual Lab 3 Prelab: 3/15	Lab 2 Report: 3/19
×	3/22-3/26	×	×
9	3/29-4/2	Lab 3 Prelab: 3/29	Virtual Lab 3 Report: 4/2
10	4/5-4/9	Virtual Lab 4 Prelab: 4/5	Lab 3 Report: 4/9
11	4/12-4/16	Lab 4 Prelab: 4/12	Virtual Lab 4 Report: 4/16
12	4/19-4/23	Virtual Lab 5 Prelab: 4/19	Lab 4 Report: 4/23
13	4/26-4/30	Lab 5 Prelab: 4/26	Virtual Lab 5 Report: 4/30
14	5/3-5/7	Virtual Lab 6 Prelab: 5/3	Lab 5 Report: 5/7
15	5/10-5/14	×	Virtual Lab 6 Report: 5/14

* Signifies a virtual lab

† Signifies an in-person lab