

**About the instructor:** I earned my BS in chemistry from Valparaiso University in 2000 and my Ph.D. in organic chemistry from the University of Wisconsin-Madison in 2005. I have been teaching chemistry courses at UWSP since the fall of 2006. In addition to teaching, I run an active research program where undergraduate students (like you) get hands-on experience synthesizing and studying organic molecules that have never before existed. (If you are interested in learning about chemical research opportunities, please come see me!)



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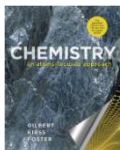
**How to contact me:** When I am not in the classroom or at home, I check my e-mail often. Also, you should feel free to stop by my office to say hello or ask a quick question. If you have lengthy or multiple questions, you can either come to my office hours (10 AM - 11 AM Tues, or 10 AM - 12 PM Thurs) or set up an appointment via e-mail. An e-mail like "Are you available to help me with Chem 106 stuff tomorrow morning at 10 AM?" is very welcome, and I will always say yes or find another time that works better.

**When to contact me:** If you are going to miss a quiz, exam, or lab session, you should e-mail me or talk to me in person as soon as possible. If you are going to miss a single discussion or lecture session, you do not need to contact me. If there is something (e.g. illness, stress, family obligations, sporting events, etc.) that is causing you to miss multiple things please come and talk to me in person. If you are struggling with Chem 106 or any other aspect of college life feel free to come by my office for help or to blow off steam.

**My schedule:** When I am not in the classroom, I stay very busy guiding students in their chemistry research projects (Chem 299/399), doing research myself, grading assignments, preparing for lectures and discussions, writing letters of recommendation and doing university committee work. During the work day, I will always prioritize helping students with their Chem 106 work over these other tasks. Feel free to request an appointment with me during any of the Chem 299/399 blocks below. If possible, I would like to reserve the blocks immediately preceding lectures and discussions for last minute class preparation.

	Monday	Tuesday	Wednesday	Thursday	Friday
08:00	<i>Chem 299/399 D-117/D-119</i>	<i>Class Prep (unavailable)</i>	<i>Class Prep (unavailable)</i>	<i>Class Prep (unavailable)</i>	<i>Class Prep (unavailable)</i>
09:00	<i>Chem 299/399 D-117/D-119</i>	<i>Chem 106 Lecture, A-121</i>	<i>Class Prep (unavailable)</i>	<i>Chem 106 Lecture, A-121</i>	<i>Chem 106 Lecture, A-121</i>
10:00	<i>Chem 299/399 D-117/D-119</i>	<i>Office Hour</i>	<i>Class Prep (unavailable)</i>	<i>Office Hour</i>	<i>Chem 299/399 D-117/D-119</i>
11:00	<i>Chem 299/399 D-117/D-119</i>	<i>Chem 299/399 D-117/D-119</i>	<i>106 Dis 01D4 A-112</i>	<i>Office Hour</i>	<i>Chem 299/399 D-117/D-119</i>
12:00	<i>Class Prep (unavailable)</i>	<i>Chem 299/399 D-117/D-119</i>	<i>106 Dis 01D3 A-112</i>	<i>Chem 299/399 D-117/D-119</i>	<i>Class Prep (unavailable)</i>
13:00	<i>Chem 425 A-112</i>	<i>Chem 299/399 D-117/D-119</i>	<i>Chem 425 A-112</i>	<i>Chem 299/399 D-117/D-119</i>	<i>Chem 425 A-112</i>
14:00	<i>Chem 299/399 D-117/D-119</i>	<i>Chem 299/399 D-117/D-119</i>	<i>106 Dis 01D2 A-112</i>	<i>Chem 299/399 D-117/D-119</i>	<i>Chem 299/399 D-117/D-119</i>
15:00	<i>Chem 299/399 D-117/D-119</i>	<i>Chem 299/399 D-117/D-119</i>	<i>106 Dis 01D1 A-112</i>	<i>Chem 299/399 D-117/D-119</i>	<i>Chem 299/399 D-117/D-119</i>
16:00	<i>Chem 299/399 D-117/D-119</i>	<i>Chem 299/399 D-117/D-119</i>	<i>Chem 299/399 D-117/D-119</i>	<i>Chem 299/399 D-117/D-119</i>	<i>Chem 299/399 D-117/D-119</i>

**About the course: CHEM 106. Fundamental Chemistry.** Chemistry is everywhere around us and plays an essential role in nearly every aspect of our daily lives. Chem 106 is a continuation of Chem 105. Therefore you will need to use the knowledge you obtained in Chem 105 and apply it to new concepts in Chem 106, including: gases, thermodynamics, chemical kinetics, and equilibrium. Upon completion of Chemistry 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.



**Text:** “Chemistry: An Atoms-Focused Approach”, by Gilbert, Kirss and Foster. Norton, W. W. 2013. (ISBN-13: 9780393912340). Available from text rental.

**Lab Manual:** Must be purchased in the book store.

**Lab Notebook:** Barbakam / Lab Notebook 100 Carbonless Pgs Spiral-bound. Must be purchased. Available in book store.

<b>Student Responsibilities (Lecture)</b>	<b>Student Responsibilities (Lab)</b>
<p><b>Bi-weekly Quizzes:</b> Bi-weekly quiz problems will be closely related, but not identical, to assigned problems on the Quiz Guides.</p> <p><b>Mid-Term Exam:</b> will cover the material featured in Quiz Guides #1 - #3</p> <p><b>Final Exam:</b> will cover the material featured in Quiz Guides #1 - #7</p> <p><b>Discussion Exercises:</b> There will often be some extra credit associated with discussion exercises. You must participate in discussion to be eligible for those points.</p>	<p><b>Lab Binder:</b> Buy the lab packet at the book store and put it in a binder. You will use this binder throughout the semester.</p> <p><b>Pre-lab Notebook:</b> Before you begin each experiment, you will prepare your laboratory notebook as described in the lab packet. You will turn in copies of this at the beginning of your lab.</p> <p><b>Lab Reports and Procedures:</b> Every lab session you will turn in a report sheet and a copy of your procedure associated with the past week's activity.</p> <p><b>Lab Quizzes:</b> These are open notebook quizzes to test your understanding of the lab exercises you have completed to this point and the completeness of your notebook entries.</p>

**Grading Breakdown and Policies:**

	<b>Item</b>	<b>Points</b>
565 Lecture Points (80% course)	Quizzes (7 x 45 pts each)	315 pts
	Mid-term Exam (covers Quiz Guide #1 - Quiz Guide #3)	100 pts
	Final Exam (covers Quiz Guide #1 – Quiz Guide #7)	150 pts
140 Lab Points (20% course)	Pre-lab Notebook (13 x 2 pts each)	26 pts
	Post-lab Notebook (13 x 2 pts each)	26 pts
	Lab Reports (13 x 2 pts each)	26 pts
	Lab Quizzes (2 x 31 pts each)	62 pts
	<b>Total points</b>	<b>705 points</b>

*Grade cut-offs: 100-90% = A or A-; 89-80% = B+, B, or B-; 79-70% = C+, C, or C-; 69-60% = D+ or D; < 60% = F. Grade cut-offs will not be raised, but may be lowered at the instructor's discretion. Grades below 60% will result in a failing grade. You must earn a minimum of 60% (339/565 pts) of the lecture exam and quiz points to receive a passing grade in the course.*

**Semester Lecture, Discussion, Quiz and Exam Schedule:**

	<i>Tues.</i>	<i>Wed.</i>	<i>Thurs.</i>	<i>Fri.</i>
Sept. 4 – Sept. 8		Discussion #1		
Sept 11 – Sept 15		Discussion #2		<b>Quiz #1</b>
Sept 18 – Sept 22		Discussion #3		
Sept 25 – Sept 29		Discussion #4		<b>Quiz #2</b>
Oct. 2 – Oct. 6		Discussion #5		
Oct. 9 – Oct. 13		Discussion #6		<b>Quiz #3</b>
Oct. 16 – Oct. 20		Discussion #7		<b>Mid-Term Exam</b>
Oct. 23 – Oct. 27		<b>Lab Quiz #1</b>		
Oct. 30 – Nov. 3		Discussion #8		<b>Quiz #4</b>
Nov. 6 – Nov. 10		Discussion #9		
Nov. 13 – Nov. 17		Discussion #10		<b>Quiz #5</b>
Nov. 20 – Nov. 24		<b>No Discussion</b>	<b>No lecture</b>	<b>No lecture</b>
Nov. 27 – Dec. 1		Discussion #11		<b>Quiz #6</b>
Dec. 4 – Dec. 8		Discussion #12		
Dec. 11 – Dec. 15		<b>Lab Quiz #2</b>		<b>Quiz #7</b>
Dec. 18 – Dec. 22	<b>Final Exam</b> <b>Tuesday</b> <b>Dec. 19th, A-121</b> <b>10:15 AM-12:15 PM</b>			

## Semester Laboratory Schedule

	<i>Mon.</i>	<i>Tues.</i>	<i>Wed.</i>	<i>Thurs.</i>
Sept. 4 – Sept. 8	<b>Labor Day/No Lab</b>	<b>Lab Check-in</b>	<b>Lab Check-in</b>	<b>Lab Check-in</b>
Sept. 11 – Sept. 15	<b>Lab Check-in</b> Synthesis of Aspirin	Synthesis of Aspirin	Synthesis of Aspirin	Synthesis of Aspirin
Sept 18 – Sept 22	Analysis of Aspirin	Analysis of Aspirin	Analysis of Aspirin	Analysis of Aspirin
Sept 25 – Sept 29	Molar Mass of a Metal by Gas Evolution	Molar Mass of a Metal by Gas Evolution	Molar Mass of a Metal by Gas Evolution	Molar Mass of a Metal by Gas Evolution
Oct. 2 – Oct. 6	Lattice Enthalpy, Hydration Enthalpy, and Heat of Solution	Lattice Enthalpy, Hydration Enthalpy, and Heat of Solution	Lattice Enthalpy, Hydration Enthalpy, and Heat of Solution	Lattice Enthalpy, Hydration Enthalpy, and Heat of Solution
Oct. 9 – Oct. 13	Mol. Weight of Compound by Freezing Point Depression	Mol. Weight of Compound by Freezing Point Depression	Mol. Weight of Compound by Freezing Point Depression	Mol. Weight of Compound by Freezing Point Depression
Oct. 16 – Oct. 20	Kinetics of Crystal Violet Decomposition	Kinetics of Crystal Violet Decomposition	Kinetics of Crystal Violet Decomposition	Kinetics of Crystal Violet Decomposition
Oct. 23 – Oct. 27	Le Chatelier's Principle	Le Chatelier's Principle	Le Chatelier's Principle	Le Chatelier's Principle
Oct. 30 – Nov. 3	Determination of an Equilibrium Constant	Determination of an Equilibrium Constant	Determination of an Equilibrium Constant	Determination of an Equilibrium Constant
Nov. 6 – Nov. 10	Solubility of Potassium Nitrate and Thermo. of Dissolution	Solubility of Potassium Nitrate and Thermo. of Dissolution	Solubility of Potassium Nitrate and Thermo. of Dissolution	Solubility of Potassium Nitrate and Thermo. of Dissolution
Nov. 13 – Nov. 17	Strong vs. Weak Acid Titration	Strong vs. Weak Acid Titration	Strong vs. Weak Acid Titration	Strong vs. Weak Acid Titration
Nov. 20 – Nov. 24	<b>No labs</b>	<b>No labs</b>	<b>No labs</b>	<b>No labs</b>
Nov. 27 – Dec. 1	Strong vs. Weak Acid Titrat. (Part II)	Strong vs. Weak Acid Titrat. (Part II)	Strong vs. Weak Acid Titrat. (Part II)	Strong vs. Weak Acid Titrat. (Part II)
Dec. 4 – Dec. 8	Buffers	Buffers	Buffers	Buffers
Dec. 11 – Dec. 15	Electrochemical Cells & <b>Check Out</b>	Electrochemical Cells & <b>Check Out</b>	Electrochemical Cells & <b>Check Out</b>	Electrochemical Cells & <b>Check Out</b>
Dec. 18 – Dec. 22	<b>No labs</b>	<b>No labs</b>	<b>No labs</b>	<b>No labs</b>

**Attendance Policies:**

**Lecture and Discussion** – Absences from lecture or discussion will not result in any direct penalties for students. It is the student's responsibility to collect missed material (e.g. lecture notes, reading assignments, announcements) from students that did attend. Students missing lectures or discussions cannot earn extra credit points that may be offered during those periods.

**Laboratory** – Students are required to attend all laboratory sessions, and will only be allowed one unexcused absence for the semester. Showing up late to lab will be considered an unexcused absence, even if you complete the experiment. Absences *may* be excused at the instructor's discretion. In order for an absence from laboratory to count as excused 1) the student must contact the instructor as soon as they know they will miss the lab period, and 2) the student must complete the missed experiment at another scheduled laboratory time that is approved by the instructor. A student that has more than one unexcused absence for the semester will receive a failing grade in the course (5 credits).

**Due Date and Make-up Policies:**

**Pre-lab and Post-lab work** – Carbon copies of your pre-lab flowcharts are due immediately at the beginning of each lab session. Likewise, post-lab reports and carbon copies of notebook pages are due immediately at the beginning of the lab session the week after you have finished the experiment. If this work is incomplete when you arrive to lab, or if you arrive to lab late, you will receive reduced or zero credit for the assignment, based upon the discretion of the course instructor.

**Exams and Quizzes** – When an exam or quiz must be missed due to a scheduled event it must be made-up before the scheduled exam/quiz (at a time determined by the instructor), rather than after. Students must provide one week of notice before an exam/quiz absence due to a scheduled event. If an absence is unscheduled, the instructor will decide, first, if the student will be allowed to take the exam/quiz, and, second, where and when the student shall take the make-up exam.

**Ethical and Etiquette Policies:**

**Cheating/Copying** – Students, under no circumstances, shall turn in work that is partially or entirely copied from another source (e.g. a classmate, web site, etc.). Everything you turn in must reflect ***your understanding*** of that topic. Any copied material, whether words or drawings, will be treated as plagiarism according to [Ch. 14 of the student rights and responsibilities handbook](#), and will result in failing grade in this course.

**Lecture** – The mission in my lecture is to help guide your study and enhance your understanding of chemistry. Student actions in lecture are to be consistent with this mission. Activities that do not fit within this mission, such as texting (or any other phone use), talking to others (about stuff other than chemistry), and reading books/newspapers/websites, are distracting to this mission and will not be tolerated. If a student feels the need to use their phone during class time, they must leave the classroom. Students shall not interrupt the end of lecture by "packing up" before dismissed by the instructor. In the event that lecture goes past the scheduled time, students can begin "packing up" at 9:52 AM to alert the instructor that time is up.

**Laboratory** – The primary purpose of being in the laboratory is to learn chemistry techniques. Unlike lecture, however, a certain level socializing is expected in the laboratory, as long as it does not interfere with student progress. With that in mind, remember that the laboratory is still a classroom. You must be respectful of others using "PG" language at a reasonable level (i.e. the entire class should not be able to hear your conversations with your neighbors). If you wish to communicate with anyone outside of the classroom (e.g. texting, phone conversations, etc.), you must leave the laboratory/classroom area.

**How to succeed in my chemistry course:**

- ✓ Attend every lecture, lab session and discussion.
- ✓ Read all of the suggested text carefully, making a concerted effort to *understand* the material. Work through the sample problems as you go.
- ✓ Do all of the suggested problems in a separate notebook designated for this purpose. Show your work and do not look at the book, your notes, or an answer key until after you are done. After checking your answers, re-read the sections with material that gave you the most trouble. If that does not clear things up, come see me in my office.
- ✓ Minimize distractions while you study. Turn off your phone and put it away while you are reading and doing practice problems.
- ✓ Do not try to memorize your way through this course! Success in chemistry requires you to understand a few major concepts and several exceptions and caveats. You will be tested on your understanding of the material, not your ability to memorize.
- ✓ Commit at least 8 hours by yourself per week to studying/learning chemistry outside of class time.
- ✓ After you spend time studying on your own, you may also want to get together with other people or attend tutoring sessions. Do not go to group or one-on-one tutoring sessions without trying to learn the material on your own first.
- ✓ Stop me in lecture if you don't understand something.
- ✓ Come to my office for help. Bring your suggested problem notebook. If my office hours don't work for you, feel free to schedule an appointment via e-mail.

**Example study schedule.** Establish a routine weekly schedule for studying chemistry. You, of course, will have to organize your schedule around your other responsibilities. An effective study schedule might look something like this:

	Activity	Approximate time
<b>Monday</b>	Carefully read the assigned sections. Re-read as you go if you don't understand. Work through the in-chapter sample problems and begin in-chapter problems.	1-2 hours
<b>Tuesday</b>	Make appointments to clarify fuzzy points if necessary. Try to complete the problems, referencing book and notes as little as possible.	1-2 hours
<b>Wednesday</b>	Grade yourself using solutions in back of book. Get together with classmates or tutors to discuss problems.	1- 2 hours
<b>Thursday</b>	Clear up any final confusion. Re-work as many problems as you can before Friday's quiz, checking your answer as you go.	1-2 hours

**Extra Help:**

The best way to get help with course material is to come to my office for help!

Additional help is offered by the Tutoring-Learning Center (TLC) on campus.

- Schedules for Group Tutoring and Supplemental Instruction can be found here: <http://www.uwsp.edu/tlc/Pages/schedules.aspx>. Times and locations will be listed by Week 2 of the semester.
- The Drop-In Tutoring Center (DUC 205) schedule can be found here: <http://www.uwsp.edu/tlc/Pages/dropInTutoring.aspx>. Note that additional chemistry tutoring hours will be added to this schedule – please check back often to view the most up-to-date schedule!
- One-on-One Tutoring is available by appointment only. Please go to the TLC (ALB 018, library basement) to request tutoring. Appointments are made based upon tutor availability – we cannot guarantee that every student will be matched with a tutor.

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 practicing problems together clarifies and solidifies knowledge, and the tutors are eager to study with you. If you have questions about the schedule or would like to make an appointment, please visit the TLC in room 018 ALB, email ([tlctutor@uwsp.edu](mailto:tlctutor@uwsp.edu)), or call (715) 346-3568 for information.

**Math and Science Tutoring – Fall 2017**

Name	Day	Time	Location	Cost
Drop-In Tutoring Center	Mon. – Thurs.	<a href="#">See TLC Drop-In Schedule</a>	DUC 205	Free
Group Tutoring and Supplemental Instruction	Mon. – Fri.	<a href="#">See TLC Website</a>	<a href="#">See TLC Website</a>	Free
One-on-One Tutoring	Mon. – Fri.	By appointment	Sign up in TLC, 018 ALB Mon. – Fri. 9:00 a.m. - 4:30 p.m.	May have fee
Math Room	Mon. – Thurs.	9:00 a.m. - 4:00 p.m. 7:00 p.m. - 9:00 p.m.	SCI A113A <a href="#">See Math Department Website</a>	Free
Math Pad (Math 90, 95, 100, 107 only)	Mon. – Fri.	<a href="#">See Math Department Website</a>	CCC 302	Free
Physics Room	Mon. – Fri.	<a href="#">See Physics Department Website</a>	SCI A105	Free