

Chemistry 351: Organic Chemistry

Spring 2026

MTWF 9-9:50 am

Instructor: Dr. Lauren Dudley (she/her/hers), please call me Lauren

Office Hour:

T 11-12 pm; R 10-12 pm; F 8-9 am or by appointment

Course Supplies (Highly Recommended):

- Text Book: Organic Chemistry: Principles and Mechanisms, 3rd ed. Joel Karty. ISBN: 978-0-393-87764-9. Chapters 1-9 and Interchapters A-D will be covered in this course. *Highly Recommended (OER will also be an option on Canvas)*
- Study Guide: Organic Chemistry: Principles and Mechanisms, Study Guide/Solutions Manual. ISBN: 978-0-393-87749-6. *Highly Recommended*
- Molecular model kit: If you asked me what my favorite was – it would be the HGS Polyhedron Molecular Model Kit #1003a (alpha) which you can [purchase here](#) or [here](#). Again, an OER digital version also works or any ball and stick model kit will work. *Highly Recommended*

Course Description: Chemistry 351 is organized around five *Big Ideas*:

1. Organic molecules can be big and complicated, so chemists use a variety of techniques to communicate and simplify chemical structures.
2. Covalent bonds consist of electrons shared between atoms. This sharing means that electrons are “delocalized”, and chemists use various models to describe this electron delocalization.
3. The arrangement in 3D space of atoms in a molecule impacts chemical and physical properties.
4. The difference in energy between two molecules related by a chemical reaction is a measure of relative stability, and the reaction will proceed toward the lowest energy species.
5. When comparing substitution and elimination reactions, the major product will be determined by the reaction with the quickest rate.

We will progress toward understanding these *Big Ideas* by taking on smaller “chunks”, called Learning Targets. These Learning Targets come with specific skills, called Success Criteria, that you should be able to do to demonstrate your understanding. Evaluation of success criteria will be done through homework, in class worksheets/activities, and exams.

Grade Breakdown:	Pre-lecture Videos	10%
	Lecture Participation	10%
	Unit PBL	15%
	Big Idea 1/2 Exam	15%
	Big Idea 3 Exam	15%
	Big Idea 4 Exam	15%
	Big Idea 5 Exam (Final)	20%

- Prelecture videos: Links to the videos and embedded questions can be found on Canvas. There are no penalties for wrong answers, but you must complete each video by the specified due date to receive full credit. Watching videos after their due date is absolutely recommended. Late work will be accepted up to three days past the due date; there is a 10% penalty for each day late.
- Lecture Participation and Attendance: Throughout the quarter, participation worksheets will be provided during lecture. Along with uploading the worksheets, you will have the opportunity to engage in a weekly metacognitive activity. These weekly check ins are intended to help reinforce the current learning target and allow you time for reflection on your learning goals. The canvas quizzes (with photo upload of in class worksheet) will be submitted at the end of the class, and points will be earned based on completion. If you are unable to attend class on a participation worksheet day, you may still receive credit by taking notes on the specific learning target and completing the worksheet (posted on Canvas). Late work will be accepted up to three days past the due date; there is a 10% penalty for each day late. Although I will not take attendance, it is important to attend class regularly not only for you to engage with me and the material but also with your colleagues. Learning is a social endeavor!
- Problem Based Learning Worksheets: Research in Chemistry Education shows that students who collaborate on real life problems are more likely able to retain the information they learn. Problem based learning (PBL) is a novel approach to real world situations in organic chemistry. These assignments are due before each Big Idea Exam (so there will be 4 of them total). You are encouraged to work together in groups of 3 people total or less. Late work will be accepted up to three days past the due date; there is a 10% penalty for each day late.
- Exams: There will be three 50-minute exams (Big Idea 1/2, Big Idea 3, and Big Idea 4) and there will be one 120-minute exam (Big Idea 5). The exams will focus on material from the corresponding Big Idea, but some cumulative material is to be expected. Exam questions will be based on material from lectures and videos, and worksheet. Students who are unable to attend class on the day of an exam must make an arrangement with me at least **24 hours prior** to the exam. A make-up exam can be scheduled in the testing center with an excused absence. An excused absence includes illness, family emergency, or a university-sponsored activity. **No make-ups will be given for unexcused absences or to compensate for a poor grade.** A maximum of one make-up exam will be arranged per student.

Grade Cutoffs:

	> 93% A	90-92% A-
87-89% B+	83-86% B	80-82% B-
77-79% C+	73-76% C	70-72% C-
60-69% D	< 60% F	

Rounding does occur just like we learned in Significant figures from General Chemistry

University Policies

All University policies stated here <https://syllabi.wvu.edu/> will be expected in this class. Please refer to the website listed for details regarding Academic Integrity, Covid-19, and other policies for this course.

Please refer to the following link for information about academic honesty and accommodations (disability resources and religious accommodations).

<https://syllabi.wvu.edu/>

Resources

- LGBTQ+ Western: [LGBTQ.wvu.edu](https://lgbtq.wvu.edu)
- Veterans Services: wp.wvu.edu/veteranservice3s
- Hacherl Research and Writing Studio: library.wvu.edu
- Western encourages students to seek assistance and support at the onset of an illness, difficulty, or crisis:
- Gender Neutral Restrooms
A map showing the locations of gender neutral restrooms is available from the Campus Maps website. (See Campus Maps.) See also: Updating Personal Pronouns and Gender Identity and Pronoun Customization in Online Learning.
- To report an incident or of Sexual Misconduct or Sexual Harassment, and/or to get help now please visit [Together Against Sexual Violence](https://www.wvu.edu/~campuslife/sexualviolence/) or Domestic Violence and Sexual Assault Services at [DVSAS](https://www.wvu.edu/~campuslife/dvsas/) or 1-877-715-1563. Other resources include WWU Students Against Harassment & Sexual Assault [SASHA](https://www.wvu.edu/~campuslife/sasha/), the [Equal Opportunity Office](https://www.wvu.edu/~campuslife/eoo/) (360-650-3307), Campus Police (360-650-3911) and the Bellingham Police 9-1-1.

This syllabus is subject to change. Any changes will be announced on Canvas.

How to be successful in organic chemistry:

Frequent and consistent practice of practice problems is crucial for success in this course. As we progress through the course material, you will build on, and reinforce, fundamental concepts from previous chapters. Therefore, to keep up with the work, it is important that you:

- Ask questions! Our class time is organized so that you come with questions and ask them in class! You may have the same questions as other folks so don't be afraid to ask! During our Weekly participation, you will have an opportunity to write down questions for me to answer. This is to hopefully break down any hesitation or fear in asking me directly! No question is a "stupid question" unless it wasn't asked. As my favorite teacher once said "take chances, make mistakes, and get messy!" (Ms Frizzle, Magic School Bus, 1990s). Asking questions is a great way to learn and develop your knowledge.
- Spend 3-6 hours studying for every 50-minute lecture. Yeah, that's brutal but we are not only learning more in depth chemistry concepts here. You're going to be learning a new language. It's a beautiful language but it's difficult! It's difficult to learn any language in 10 weeks.
- Attend all classes. Communication is key here. We need the face time all together to hear and ask questions, work through practice problems, and communicate with our colleagues. Even if you're not prepared everyday, still come to class!
- Visit me during office hours. I'm here to guide you through this crazy world of chemistry. Come to chat! Let's get to know each other.

Week	Day	Date	Topic	Reading	Big Idea	LT#
1	T	3/31	Introductions and Review of Gen Chem	1.1-1.5, 1.8		
	W	4/1	Bonding I: Lewis structures, formal charges	1.5-1.6, 1.9	1+2	1, 2
	F	4/3	Bonding II: VBT, MO, HAO, VSEPR	3.1-3.8	1+2	4, 5
2	M	4/6	Review of Bonding			
	T	4/7	Bonding III: polar covalent bonds, introduction to resonance	1.7, 1.10-1.11, 3.9	1+2	6, 7
	W	4/8	Bonding IV: Condensed formulas and bond line structures	1.12	1+2	3
	F	4/10	Review Day			
3	M	4/13	Exam 1 - Big Idea 1+2			
	T	4/14	Notation I: Drawing and interpreting bond-line structures, nomenclature, functional groups	1.13, 2.4	3	8, 9, 10
	W	4/15	Notation II: Resonance contributors, curved arrow notation, resonance hybrid	1.7, 3.9	2 (again)	7
	F	4/17	Conformations I: rotations and constitutional isomers, IMFs	2.5-2.8	3	11, 12
4	M	4/20	Lauren gone to Conference			
	T	4/21	Lauren gone to Conference			
	W	4/22	Lauren gone to Conference			
	F	4/24	Conformations II: Newman, conformational analysis of alkanes	4.1	3	13
5	M	4/27	Conformations III: conformational analysis of cycloalkanes, substituted cyclohexanes	4.2-4.3, 4.5-4.9	3	14, 15
	T	4/28	Stereo I: Introduction to stereoisomerism, Cahn-Ingold-Prelog system	5.1-5, 5.12 5.13-14	3	16, 17
	W	4/29	Stereo II: enantio-/diastereomers, symmetry, chirality	5.6	3	18
	F	5/1	Stereo III: cyclic systems (review), chiral compounds without chiral centers, E/Z	5.8-5.9, 5.12c	3	19

6	M	5/4	Review Day		3	7-20
	T	5/5	Exam 2 - Big Idea 3			
	W	5/6	Acid/Base I: Curved arrows, Bronsted-Lowry acidity, pKa, equilibrium prediction	6.1-2, 6.6-9	4	21, 22
	F	5/8	Acid/Base II: ARIO, counterions	6.5-7	4	22, 23
7	M	5/11	Acid/Base III: Resonance	6.8	2 (again)	7
	T	5/12	Acid/Base IV: Basicity and Lewis Acidity	6.1-6.8	4	22, 23
	W	5/13	Reactivity I: Review of ΔS , ΔH , ΔG , K_{eq} , k , E_a , reaction coordinate diagrams	6.2-5	4	23, 24
	F	5/15	Reactivity II: nuc & elec, arrow pushing	7.1; 7.4; 7.6-7	4	23, 24
8	M	5/18	Review Day			
	T	5/19	Exam 3 - Big Idea 4			
	W	5/20	Sub/Elim I: S_N2	7.1-7.3	5	25, 26
	F	5/22	Sub/Elim II: E2	7.5	5	27
9	M	5/25	Memorial Day No class			
	T	5/26	Sub/Elim III: S_N1 mechanisms	8.1	5	28, 29
	W	5/27	Sub/Elim IV: E1 mechanisms	8.2	5	30
	F	5/28	Combination of $S_N2/E2$ or $S_N1/E1$	8.3	5	28, 29, 30, 31
10	M	6/1	Sub/Elim V: Competition of $S_N2/E2$ and $S_N1/E1$	8.4-7	5	32, 33, 34
	T	6/2	Sub/Elim VI: Other Leaving Groups and Acid catalyzed reactions	8.4-7	5	32, 33, 34
	W	6/3	Synthesis Day			
	F	6/5	Review Day			
Final Exam – Wednesday, June 9th from 8:00 – 10:00 am						