Course Syllabus

Jump to Today ✎ Edit

Department of Chemistry

CHEMISTRY 2096: *Organic Chemistry II*

3 Units

Spring 2025

.

Course info, part 2

Meeting days: MWF	**Instructor:** Dr. Katherine Maloney
Meeting times: 8:30-9:25 am (Section 1) and 11-11:55 am (Section 2)	**Phone:** 619.849.3425 **Email:** kmaloney@pointloma.edu (mailto:kmaloney@pointloma.edu)
Meeting location: Ryan Learning Center 101	**Final Exam:** 4:30-7pm, Monday, May 5, location TBD
Maloney office hours: TBD in Rohr Science 316 (accessed through RS330)	**Student-led review sessions:** TBD

PLNU Mission

To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

COURSE DESCRIPTION

Examination of basic organic chemistry from a mechanistic perspective and the use of synthetic procedures.

COURSE LEARNING OUTCOMES

Course learning outcomes

Chemistry 2096 Goals	Chemistry 2096 Outcomes
Students will...	Students will be able to...
...learn to speak and think in the language of organic chemistry.	• ...translate between the names and formulas of organic compounds, particularly aromatic compounds, carboxylic acids and derivatives, aldehydes, ketones, organometallic reagents, and amines. • ...identify important named reactions in organic synthesis, including the Diels-Alder reaction, Friedel-Crafts alkylation & acylation, Sharpless epoxidation, Grignard reaction, the aldol, Claisen and Michael reactions, the Robinson annulation, and the Suzuki reaction.
...recognize the relationship between electronic structure and reaction selectivity.	• ...provide the starting materials, reagents, or products of common reactions of alkanes, alkenes, alkynes, alcohols, benzene derivatives, organometallic reagents, carboxylic acids and their derivatives, aldehydes, ketones, and amines. • ...draw curved-arrow mechanisms for a variety of chemical transformations. • ...explain the regio- and stereo-chemical outcome of a reaction using mechanistic reasoning.

...use steric and electronic arguments to predict the rate and product distribution of organic reactions.	• ...predict the relative stability of species (including alkenes, radicals, cations and anions) on the basis of arguments such as resonance, inductive effects, conjugation, and hyperconjugation. • ...draw reaction coordinate diagrams for common organic reactions, labeling the reactant(s), product(s), transition state(s), and any intermediates. • ...explain reaction rate and product distribution on the basis of relative energy of reactants, intermediates, transition states, and products of a reaction.
...understand strategies for designing efficient syntheses of target molecules.	• ...propose a reaction or series of reactions that would lead to a given target molecule. • ...justify the selection of one route over another on the basis of reaction rate or selectivity.
...use infrared (IR) and nuclear magnetic resonance (NMR) spectroscopy for elucidating the structure of organic molecules.	• ...use infrared spectral data to infer the functional groups present in an unknown carbon compound. • ...analyze 1D ^{1}H NMR data – including chemical shift, integration, and splitting information – to infer the electronic environment, equivalence, and proximity of hydrogen atoms in an organic compound.

Program Learning Outcomes: CHEM PLO 2 (GC, IR) and BCHM PLO 3 (GC, IR) will be assessed directly by faculty laboratory instructors' observation of students' use of instruments in the accompanying laboratory (CHE2096L).

REQUIRED TEXTS AND RECOMMENDED STUDY RESOURCES

Janice Gorzynski Smith *Organic Chemistry*, 7th Edition, and ALEKS online homework access are required. The accompanying *study guide/solutions manual* is an optional but useful aid.

A *molecular model set* will be a tremendous asset for visualizing three-dimensional structures.

Preparing for Your ACS Examination in Organic Chemistry, The Official Guide, published by the American Chemical Society is an optional but useful aid in preparing for the final exam.

More information about resources can be found **here (https://canvas.pointloma.edu/courses/77448/pages/course-materials)** .

COURSE SCHEDULE AND ASSIGNMENTS

Note: This schedule is subject to change. Any substantial changes (i.e. changes to anything other than *Details* or *Readings*) will be announced on the *Announcements* page in Canvas, and modified here in the *Syllabus*. Up-to-date reading assignments will also be listed in each Weekly Overview.

Unless otherwise stated, all Intro Problems and EdPuzzle videos are due before the start of class. All other assignments are due by 11:59pm.

Course schedule

WEEK	DAY	TOPIC	READING/NOTES
1	M 1/13	Review	Review Ch 1-11, 13, 14
	W 1/15	Review	Review Ch 1-11, 13, 14
	F 1/17	Reduction of alkenes, alkynes & alkyl halides	12.1-12.3, 12.5, 12.6
2	*M 1/20*	*MLK day - no class*	
	W 1/22	Oxidation of alkenes, alkynes & alcohols	12.7-12.12, 12.15
	R 1/23	Assignment 1 Due	
	F 1/24	Finish Redox & **Quiz: Chapter 12**	12.4
3	M 1/27	Radical halogenation of alkanes	13.1-13.8
	W 1/29	Radical addition & polymerization of alkenes	13.10, 13.13, 13.14
	F 1/31	Resonance and allylic carbocations	14.1-14.6
4	M 2/3	Conjugated alkenes & UV light	14.8-14.11, 14.15
	W 2/5	Introduction to the Diels-Alder reaction	14.12-14.14
	R 2/6	Assignment 2 Due	
	F 2/7	Stereochemistry of the Diels-Alder reaction	14.13C-14.13D
5	M 2/10	Benzene & aromaticity	15.1-15.4, 15.6-15.8
	W 2/12	**Exam 1: Chapters 12-14**	
	F 2/14	Electrophilic aromatic substitution (EArS)	16.1-16.4
6	M 2/17	Friedel-Crafts alkylation and acylation	16.5

	T 2/18	Assignment 3 Due	
	W 2/19	Directing effects in EArS	16.6-16.11
	F 2/21	Synthesis of benzene derivatives	16.12, 16.14-16.16
7	M 2/24	Properties and reactions of carboxylic acids	19.1-19.3, 19.6-19.9
	W 2/26	Oxidation and reduction of aldehydes & ketones	17.1-17.4, 17.7, 17.8
	F 2/28	Asymmetric reductions: reduction of esters, amides, and acid chlorides	17.5-17.7
		Assignment 4 Due	
8	M 3/3	**Exam 2: Chapters 15-17.8, 19**	
	W 3/5	Organometallica, part I: Organolithium and Grignard reagents	17.9-17.11, 17.14
	F 3/7	Organometallica, part II: Organocuprates and synthesis	17.13, 17.15, 17.17
3/10-3/14		*Spring Break - no class*	
9	M 3/17	Organometallica, part III: Metal-catalyzed cross-coupling reactions	24.1-24.3
	W 3/19	Properties and synthesis of aldehydes & ketones	18.1-18.3, 18.5
	F 3/21	Reactions of aldehydes & ketones (featuring the Wittig reaction)	18.6-18.9, 18.12
		Assignment 5 Due	
10	M 3/24	Imines, enamines, and acetals	18.10-18.14
	W 3/26	Properties and synthesis of carboxylic acid derivatives	20.1-20.4, 20.9 *plus 19.1-19.3 re: nitriles only*
	R 3/27	Assignment 6 Due	
	F 3/28	**Exam 3: Chapters 17.9-18, 24**	
11	M 3/31	Substitution reactions of carboxylic acid derivatives	20.6-20.8, 20.10, 20.12, 19.12
	Asynchronous	Polymers	20.15, Chapter 28

	F 4/4	Assignment 7 Due	
12	M 4/7	Enols and enolates: Acidity of the hydrogen	21.1-21.5
	W 4/9	Reactions at the carbon	21.4, 21.6-21.8
	F 4/11	The aldol reaction	22.1-22.4
13	M 4/14	The Claisen reaction	22.5-22.7
	W 4/16	Conjugate addition reactions: the Michael reaction and Robinson annulation	22.8, 22.9, Review 17.15
R 4/17 - M 4/21		*Easter recess - no class*	
14	W 4/23	Review: Reactions of carbonyl compounds	Chapters 17-22
	R 4/24	Assignment 8 Due	
	F 4/25	**Exam 4: Chapters 20-22**	
15	M 4/28	Properties of amines	23.1-23.3, 23.7, 23.9, 23.10
	W 4/30	Introduction to carbohydrates & Fischer projections	26.1-26.3, 26.6
	R 5/1	Assignment 9 Due	
	F 5/2	Final Exam Info	Handout: ACS Tips
Finals week	M 5/5	Comprehensive Final Exam	4:30-7pm, Location TBA

ASSESSMENT AND GRADING

Introduction Problems - A few short Introduction Problems will be assigned daily and will often be used to begin class discussion. The questions will be *based on that day's reading assignment* (which you can find in that week's Overview) and *will cover new material*. You should complete these problems before coming to class. Answers to Intro Problems will be graded for *participation* and *effort*.

EdPuzzle Videos - Short lecture videos may be provided to introduce the day's topic, in addit the day's Intro Problems. Like the Intro Problems, these should be completed before coming t s.

In-Class Exercises - In-class Exercises will frequently be distributed (as paper copies in class, and as PDFs on Canvas) to help solidify concepts in that day's lecture. After class, you should upload a copy of your In-Class Exercise to Canvas to verify participation and effort.

Assignments - Problems requiring greater thought and reflection will be completed outside of class and will be due periodically throughout the course. Given the large class size and recognizing the need for rapid feedback, a portion of each assignment will be *electronic* on the ALEKS platform. If you bought a new book from the book store you already received access to ALEKS in your bundle; alternatively, access to ALEKS with the eBook can be purchased online. The ALEKS format allows you to check your answer in real time. Note that the interface will only accept homework submissions up to the set due time and date.

Most assignments will also include a handwritten portion to give you a chance to practice skills (such as drawing organic mechanisms, or multistep synthesis) that don't lend themselves well to online chemistry homework systems. These problems will be submitted on Canvas and graded by a TA.

Exams - There will be one quiz (20 minutes, in class), four midterm exams (one hour each, in class) and one final (two hours). Despite focusing on recently-covered material, midterm exams are technically *cumulative* and may assume knowledge from CHE2094 or earlier in CHE2096.

The final exam is a *comprehensive* standardized multiple choice exam published by the American Chemical Society. You may find the ACS study guide (listed under **Course Materials (https://canvas.pointloma.edu/courses/77448/pages/course-materials)**) helpful as you prepare for the final. See the course schedule for exam dates.

Makeup examinations will be given only for excused absences. In such cases, appropriate documentation must be provided within two working days of the end of the excused absence.

Organic Learning Community (OLC) - Learning a challenging subject like organic chemistry is easier with the help of a regular study group. For each week that you meet with your study group for at least 1 hour, answer a couple questions about your session, and provide documentation of the meeting (e.g. a screenshot or photo), you can receive 1 ***extra credit*** point toward your Participation grade. (That's in addition to the benefit you'll get from that hour of focused study time!) You can connect with others looking for a study group **here (https://canvas.pointloma.edu/courses/77448/pages/organic-learning-community-study-group-sign-up-page)** .

The activities described above will contribute to your total course grade according to the following distribution:

Grade distribution

Intro Problems & EdPuzzle videos	10%
In-class participation	10%

Homework Assignments	15%
Quiz & Midterm Exams	45%
Final Exam	20%

Student grades will be posted in the Canvas grade book as they are graded, up to the last day of regular class. Final grades will be posted to Workday (NOT to Canvas) within one week of the end of the class. Grades will be based on the following:

Standard Grade Scale Based on Percentages

A	B	C	D	F
A 93-100	B+ 87-89	C+ 77-79	D+ 67-69	F Less than 59
A- 90-92	B 83-86	C 73-76	D 63-66	
	B- 80-82	C- 70-72	D- 60-62	

STRATEGIES FOR SUCCESS IN CHE2096

1. Focus on recognizing *patterns* and understanding *general concepts* that are applicable to a variety of situations rather than merely memorizing information.
2. Work practice problems (lots of them)! Extra practice problems from Smith will be posted on Canvas. And *hide the answer key*. Often the most challenging part of a problem is figuring out what is being asked of you; don't skip practicing this skill!
3. Come prepared to class. This means *reading the assigned sections*, *completing the intro problems*, and *watching any posted videos*. The time you invest before class will be repaid in full when it comes time to study for the exams!
4. Get help if you don't understand something! The instructor is here for you.

If you don't believe me, check out the advice provided by students in past iterations of Prof. Maloney's OChem II class **here (https://canvas.pointloma.edu/courses/77448/pages/advice-from-recent-students-in-maloneys-ochem-ii-class)** .

FINAL EXAMINATION POLICY

Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the **Traditional Undergraduate Records: Final Exam Schedules (http://www.pointloma.edu/experience/academics/class-schedules)** site. If you find yourself scheduled for three (3) or more final examinations on the same day, you are authorized to contact each professor to arrange a different time for one of those exams. However, unless you have three (3) or more exams on the same day, no requests for alternative final examinations will be grant

LOMABOOKS INSTRUCTIONS FOR STUDENTS

This course is part of our course material delivery program, **LomaBooks**. The bookstore will provide each student with a convenient package containing all required physical materials; all digitally delivered materials will be integrated into Canvas.

You should have received an email from the bookstore confirming the list of materials that will be provided for each of your courses and asking you to select how you would like to receive any printed components (in-store pick up or home delivery). If you have not done so already, please confirm your fulfillment preference so the bookstore can prepare your materials.

For more information about **LomaBooks,** please go: **HERE (https://www.pointloma.edu/lomabooks)**

STATE AUTHORIZATION

State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student's responsibility to notify the institution of any change in his or her physical location. Refer to the map on **State Authorization (https://www.pointloma.edu/offices/office-institutional-effectiveness-research/disclosures)** to view which states allow online (distance education) outside of California.

INCOMPLETES AND LATE ASSIGNMENTS

Unless otherwise stated, all Intro Problems and EdPuzzle videos are due before the start of class. All other assignments (including uploads of In-Class Exercises) are due by 11:59pm. Incompletes will only be assigned in extremely unusual circumstances.

PLNU COPYRIGHT POLICY

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

PLNU RECORDING NOTIFICATION

In order to enhance the learning experience, please be advised that this course may be recorded by the professor for educational purposes, and access to these recordings will be limited to enrolled students and authorized personnel.

Note that all recordings are subject to copyright protection. Any unauthorized distribution or publication of these recordings without written approval from the University (refer to the Dean) is strictly prohibited.

PLNU ACADEMIC HONESTY POLICY

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See **Academic Policies (http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278)** for definitions of kinds of academic dishonesty and for further policy information.

PLNU ACADEMIC ACCOMMODATIONS POLICY

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities in accordance with the Americans with Disabilities Act (ADA). Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center (**EAC@pointloma.edu (mailto:EAC@pointloma.edu)** or 619-849-2486). Once a student's eligibility for an accommodation has been determined, the EAC will work with the student to create an Accommodation Plan (AP) that outlines allowed accommodations. The EAC makes accommodations available to professors at the student's request.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their AP in that particular course. Accommodations are not retroactive so clarifying with the professor at the outset is one of the best ways to promote positive academic outcomes.

Students who need accommodations for a disability should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. It is the student's responsibility to make the first contact with the EAC. Students cannot assume that because they had accommodations in the past, their eligibility at PLNU is automatic. All determinations at PLNU must go through the EAC process. This is to protect the privacy of students with disabilities who may not want to disclose this information and are not asking for any special accommodations.

PLNU ATTENDANCE AND PARTICIPATION POLICY

Regular and punctual attendance at all synchronous class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions *(4 lectures)*, the faculty member will issue a written warning of de-enrollment. If the absences exceed 20 percent *(that's 8 lectures!)*, the student may be de-enrolled without notice until the university withdrawal date or, after that date, receive an "F" grade.

SPIRITUAL CARE

Please be aware PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith.
If students have questions, a desire to meet with the chaplain or have prayer requests you can contact the **Office of Spiritual Development (https://www.pointloma.edu/offices/spiritual-development)**

SEXUAL MISCONDUCT AND DISCRIMINATION

In support of a safe learning environment, if you (or someone you know) have experienced any form of sexual discrimination or misconduct, including sexual assault, dating or domestic violence, or stalking, know that accommodations and resources are available through the Title IX Office at **pointloma.edu/Title-IX (http://pointloma.edu/Title-IX)** . Please be aware that under Title IX of the Education Amendments of 1972, faculty and staff are required to disclose information about such misconduct to the Title IX Office.

If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact Counseling Services at **counselingservices@pointloma.edu (mailto:counselingservices@pointloma.edu)** or find a list of campus pastors at **pointloma.edu/title-ix (http://pointloma.edu/title-ix)** .

If you (or someone you know) have experienced other forms of discrimination or bias, you can find more information on reporting and resources at **www.pointloma.edu/bias (http://www.pointloma.edu/bias)**

ASSIGNMENTS AT-A-GLANCE

The table below lists our assignments and their due dates. Click on any assignment to review it.

Course Summary:

Date	Details	Due