

The University of Texas at Tyler
ORGANIC SYNTHESIS
CHEM 4399.004
Fall 2025 Syllabus

• **INSTRUCTOR CONTACT INFORMATION AND OFFICE HOURS**

Sean C. Butler, Ph.D.

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Best method of contact is email.

Office Hours:

MW 10:00 – 11:30 am

T 1:30 – 3:30 pm

It is my policy to be available anytime I am at the University. Please stop by anytime you have questions, and I will do my best to assist you whenever possible. If I am unable to help you outside of office hours, we can set up a time that works.

• **COURSE MEETING TIMES**

<u>Day</u>	<u>Time</u>	<u>Location</u>
M	6:00 – 8:45pm	RBS 2019

• **PREREQUISITES**

- CHEM 3344 or instructor approval.

• **COURSE DESCRIPTION**

Application of organic reactions to the synthesis of complex organic molecules. Study includes synthesis design and methodology, scope and limitations of reactions, and experimental design.

• **CENSUS DATE AND LAST DAY TO WITHDRAW**

Deadline for all registrations, schedule changes, and section changes is, **September 8, 2025** and the last day to withdraw from the course is **November 3, 2025**.

- **COURSE GRADE**

Your course grade will be based on the following:

Literature Reports (LITR) – 25%

Five articles of relevance to this course will be distributed for you to read and analyze (see course schedule for dates). You will submit a one-to-two-page summary of the article. Your description should discuss the problem, the results, and the significance/conclusions. Do not photocopy or copy-and-paste schemes and/or tables from the article into your summary as these should be redrawn/remade by you. Represent the conclusions in your own words. Reports must be typewritten and the original article you have chosen must be attached.

Problem Sets (PROB) – 45%

Three problems sets will be assigned so that you may have practice with the reactions and concepts we are covering in the course. You will be assigned a different group to work with for each problem set. These may consist of predict-the-product, predict-the-reactant, provide-the-reagents, provide-the-mechanism, explanatory/reasoning, and/or synthesis-type questions, etc.

Group Paper (GRPA) – 15%

Groups will be assigned, and each group will choose a molecule from a list. A paper (written in the style of Organic Letters) detailing and comparing at least two syntheses of the molecule from the literature will be prepared. Unique and important aspects of the synthesis should be highlighted when making comparisons. More information regarding the paper will be provided several weeks into the semester.

Group Presentation (GRPR) – 15%

A group presentation will be based on the paper and will be given at the end of the semester. The presentation should last no longer than 30 minutes, with each group member taking part. A general questioning period will follow. More information regarding the presentation will be provided several weeks into the semester.

Grades will tentatively be based on the 90/80/70/60 scale but may be adjusted due to my evaluation of class as a whole.

• **TENTATIVE LIST OF COURSE TOPICS AND IMPORTANT DATES (Subject to Adjustment)**

Week	Date	Tentative Lecture Topics	Assigned	Due
1	Aug. 25	Introduction and Syllabus	LITR1	
2	Sept. 1	Labor Day (No Class)		
3	Sept. 8	Advanced Stereochemistry		LITR1
4	Sept. 15	Sophomore Organic Chemistry Review	LITR2	
5	Sept. 22	Discussions about Selected Syntheses and Associated Reactions	PROB1	
6	Sept. 29	Discussions about Selected Syntheses and Associated Reactions	GRPA+GRPR	LITR2
7	Oct. 6	Discussions about Selected Syntheses and Associated Reactions	LITR3	
8	Oct. 13	Discussions about Selected Syntheses and Associated Reactions	PROB2	PROB1
9	Oct. 20	Discussions about Selected Syntheses and Associated Reactions		LITR3
10	Oct. 27	Discussions about Selected Syntheses and Associated Reactions	LITR4	
11	Nov. 3	Discussions about Selected Syntheses and Associated Reactions	PROB3	PROB2
12	Nov. 10	Discussions about Selected Syntheses and Associated Reactions		LITR4
13	Nov. 17	Discussions about Selected Syntheses and Associated Reactions	LITR5	
14	Nov. 24	Thanksgiving Break (No Class)		PROB3
15	Dec. 1	Group Presentation		LITR5 GRPR+GRPA
16	Dec. 8	Finals Week (No Class)		

• COURSE MATERIALS

Textbook: No required textbook. Notes will be made available on Canvas.

Recommended Materials: Molecular Modeling Kit

• STUDENT LEARNING OUTCOMES

By the end of this course, you should:

1. Have a greater understanding of organic reactions and mechanisms.
2. Make reasonable chemical predictions about the reactivity of certain organic molecules based on conformation, stereochemistry and/or electronic reasons.
3. Be able to analyze a compound retrosynthetically and put together a method of synthesis using reactions from this course and the organic literature.
4. Read, analyze, and information from the organic literature in a way that other chemists may understand.

• ARTIFICIAL INTELLIGENCE (AI) STATEMENT

UT Tyler is committed to exploring and using artificial intelligence (AI) tools as appropriate for the discipline and task undertaken. We encourage discussing AI tools' ethical, societal, philosophical, and disciplinary implications. All uses of AI should be acknowledged as this aligns with our commitment to honor and integrity, as noted in UT Tyler's Honor Code. Faculty and students must not use protected information, data, or copy-righted materials when using any AI tool. Additionally, users should be aware that AI tools rely on predictive models to generate content that may appear correct but is sometimes shown to be incomplete, inaccurate, taken without attribution from other sources, and/or biased. Consequently, an AI tool should not be considered a substitute for traditional approaches to research. You are ultimately responsible for the quality and content of the information you submit. Misusing AI tools that violate the guidelines specified for this course (see below) is considered a breach of academic integrity. The student will be subject to disciplinary actions as outlined in UT Tyler's Academic Integrity Policy.

AI is permitted only for specific assignments or situations, and appropriate acknowledgment is required. Work that is turned in to be completed with your own knowledge and preparation, without AI assistance. However, other situations such as studying, organizing your notes, and course materials can be made more streamlined, in some cases, using AI.

• MOBILE DEVICE POLICY

The use of mobile devices is strictly prohibited unless consent is given by the instructor. This includes texting, photography, videography, voice recordings, searching/browsing the internet, listening to music, and things like these. Cell phones, smart watches, and any similar electronic devices must be turned off and put away during exams and/or quizzes. If they are observed out in a visually accessible place (i.e. between legs, on the floor, etc.), it will be assumed that they

are being used to cheat; your exam will be taken away, you will receive a zero score (0 points) for the assignment, and you will be referred to the Office of Judicial Affairs.

- **STUDENT ACADEMIC CONDUCT STATEMENT**

Cheating will not be tolerated. The University regulations are very explicit about academic misconduct, and these regulations will be fully enforced. During this course, a code of honor will apply under which students are to perform their own work on assignments and exams and neither give help to other nor receive help from others or from any unauthorized sources. Students also are expected to help enforce this code. The minimum penalty for cheating will be a zero on the assignment in question. **Maximum penalties, up to university expulsion, will be pursued in extreme or repeat cases.**

UT Tyler Honor Code: Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

- **UNIVERSITY POLICIES**

You may [follow this link](#) or access the University Policies through Canvas.