straighterline

Syllabus

CHEM251 | **Organic Chemistry II**

Course Texts

No need to track down a textbook; these texts are provided digitally as part of the course enrollment:

Smith, Janice. *Organic Chemistry*. 2026 Release., McGraw Hill, 2026.

Course Description

Students will build on their foundational knowledge of organic chemistry and deepen their understanding of the complex reactions and properties of organic molecules. Organic Chemistry II covers a wide-range of topics, including alcohols, ethers, and related compounds, oxidation and reduction reactions, benzene and aromatic compounds, reactions of aromatic compounds, introduction to carbonyl chemistry, aldehydes and keynotes, carboxylic acids and nitriles, and amines.

Learning Outcomes

After completing this course, students will be able to:

1. Predict the appearance of product(s) of a dehydration reaction, Sn1 reaction, or epoxide ring opening.
2. Predict the appearance of product(s) of a alkene dihydroxylation or ozonolysis reaction.
3. Using the inscribed polygon method to determine if a compound is aromatic.
4. Predict the appearance of product(s) from a monosubstituted, disubstituted, or trisubstituted benzene with an electrophile.
5. Predict the appearance of all stereoisomers that form in a Grignard reaction.
6. Predict the appearance of stereoisomers that form in the intramolecular cyclization of a hydroxy aldehyde.
7. Rank benzoic acids in order of increasing acidity.
8. Determine the carboxylic acid and alcohol needed for a Fischer esterification.
9. Use retrosynthetic analysis in a reductive amination
10. Use spectroscopy to identify compounds

Course Prerequisites

It is recommended that students complete Organic Chemistry I or its equivalent before enrolling in this course.

Academic Integrity Statement

Academic integrity is the pursuit of scholarly activity in an honest, truthful and responsible manner. Violations of academic integrity include, but are not limited to, plagiarism, cheating, fabrication and academic misconduct. Failure to comply with the Academic Integrity Policy can result in a failure and/or zero on the

attempted assignment/examination, a removal from the course, disqualification to enroll in future courses, and/or revocation of an academic transcript.

Course Completion Policy

In order for a course to be considered complete, **all required coursework must be attempted, submitted, and graded.** Required coursework consists of graded assignments. Any Academic Integrity Policy violations may prevent a course from being considered complete.

Assessment Types

StraighterLine courses may include any combination of the assessment types described below. Review the descriptions to learn about each type, then review the Course Evaluation Criteria to understand how your learning will be measured in this course.

Benchmarks
Benchmarks test your mastery of course concepts. You have 3 attempts, and your highest score counts. **Note:** Cumulative Benchmarks (final exams) only allow 1 attempt and use a browser-based examination integrity tool.

Capstones
Capstones are project-based assessments that help you apply concepts to real-world scenarios. You have 2 attempts, and your highest score counts.

Checkpoints
Checkpoints are quick knowledge checks on important course concepts. All are open-book, and most have 1-3 attempts.

AI Use-Case Policies

StraighterLine Capstone assessments operate under one of three AI Use-Case Policies. These designations are selected intentionally to support learners in developing digital literacy, ethical reasoning, and authentic communication skills. Each model requires students to engage meaningfully with the course outcomes while adhering to academic standards.

Independent Work Requirement: Capstones with this designation must be completed independently without using AI tools. The goal is for learners to showcase their own understanding and skills without AI assistance. Students are expected to generate and submit original work developed solely through their own reasoning and effort.

AI-Assisted Planning Option: Capstones with this designation may allow AI tools to support brainstorming and assessment planning. If allowed, students will be asked to document any AI assistance by noting how it informed their work. Documentation must be included within the assignment or in a designated reflection field. Examples include describing how an AI tool helped organize an outline, generate ideas, or surface sources for further exploration.

AI-Integration Requirement: Capstones with this designation require AI tools as part of the learning process. Students will be asked to reflect upon their AI interactions and AI contributions to the assessment.

Reflections must include which tools were used, how they were used, and what insights students gained from the process. This promotes transparency, ethical use, and metacognitive skill-building.

Course Evaluation Criteria

Your score provides a percentage score and letter grade for each course. A passing percentage is 70% or higher.

There are a total of 1000 points in the course:

Assessment	Points	Learning Outcomes
Checkpoint 1: Alcohols, Ethers, and Related Compounds	5	1
Checkpoint 2: Oxidation and Reduction	5	2
Benchmark 1: Checkpoints 1-2	110	1, 2, 3
Checkpoint 3: Benzene and Aromatic Compounds	5	3
Checkpoint 4: Reactions of Aromatic Compounds	5	4
Benchmark 2: Checkpoints 3-4	110	4, 5
Benchmark 3: Checkpoints 1-4	200	1-5
Checkpoint 5: Introduction to Carbonyl Chemistry	5	5
Checkpoint 6: Aldehydes and Ketones–Nucleophilic Addition	5	6
Benchmark 4: Checkpoints 5-6	115	6-8
Checkpoint 7: Carboxylic Acids and Nitriles	5	7
Checkpoint 8: Carboxylic Acids and Their Derivatives	5	8
Checkpoint 9: Amines	5	9
Benchmark 5: Checkpoints 7-9	115	9, 10
Benchmark 6: Checkpoints 1-9	300	1-10
Total	1000	

Course Roadmap

This roadmap provides an overview of the checkpoints and lessons covered in this course.

Checkpoint 1: Alcohols, Ethers, and Related Compounds

- Textbook: Checkpoint 1 Reading Assignment: Chapter 9
- Alcohols, Ethers, and Related Compounds
- Checkpoint 1: Chapter 9: Video Playlist

Checkpoint 2: Oxidation and Reduction

- Textbook: Checkpoint 2 Reading Assignment: Chapter 12
- Oxidation and Reduction
- Checkpoint 2: Chapter 12: Video Playlist

Checkpoint 3: Benzene and Aromatic Compounds

- Textbook: Checkpoint 3 Reading Assignment: Chapter 15
- Benzene and Aromatic Compounds
- Checkpoint 3: Chapter 15: Video Playlist

Checkpoint 4: Reactions of Aromatic Compounds

- Textbook: Checkpoint 4 Reading Assignment: Chapter 16
- Reactions of Aromatic Compounds
- Checkpoint 4: Chapter 16: Video Playlist

Checkpoint 5: Introduction to Carbonyl Chemistry

- Textbook: Checkpoint 5 Reading Assignment: Chapter 17
- Introduction to Carbonyl Chemistry: Organometallic Reagents: Oxidation and Reduction
- Checkpoint 5: Chapter 17: Video Playlist

Checkpoint 6: Aldehydes and Ketones–Nucleophilic Addition

- Textbook: Checkpoint 6 Reading Assignment: Chapter 18
- Aldehydes and Ketones-Nucleophilic Addition
- Checkpoint 6: Chapter 18: Video Playlist

Checkpoint 7: Carboxylic Acids and Nitriles

- Textbook: Checkpoint 7 Reading Assignment: Chapter 19
- Carboxylic Acids and Nitriles
- Checkpoint 7: Chapter 19: Video Playlist

Checkpoint 8: Carboxylic Acids and Their Derivatives

- Textbook: Checkpoint 8 Reading Assignment: Chapter 20
- Carboxylic Acids and Their Derivatives-Nucleophilic Acyl Substitution
- Checkpoint 8: Chapter 20: Video Playlist

Checkpoint 9: Amines

- Textbook: Checkpoint 9 Reading Assignment: Chapter 23
- Amines
- Checkpoint 9: Chapter 23: Video Playlist

Related Courses

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