

Fall 2021

## **CHEM 244-101: Organic Chemistry II**

Tamara Gund

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## Chemistry 244 Organic Chemistry II

### *Fall 2021 Course Syllabus*

**NJIT Academic Integrity Code:** All Students should be aware that the Department of Chemistry & Environmental Science (CES) takes the University Code on Academic Integrity at NJIT very seriously and enforces it strictly. This means that there must not be any forms of plagiarism, i.e., copying of homework, class projects, or lab assignments, or any form of cheating in quizzes and exams. Under the University Code on Academic Integrity, students are obligated to report any such activities to the Instructor.

### COURSE INFORMATION

**Course Description:** This is part II of a two semester course in Organic Chemistry for chemistry or non - chemistry majors. Outcomes of the course are given below

**Number of Credits:** 3

**Prerequisites:** Undergraduate level chemistry 126, chemistry 243 minimum grade C in both courses.

#### Course-Section and Instructors

Course-Section	Instructor
Chem 244 - 001 and 102	Dr. Tamara Gund

**Office Hours** M 4 - 5 pm and Th 4 - 5 pm

EMAIL: [gund@njit.edu](mailto:gund@njit.edu)

PHONE: 973-596-3669

#### Required Textbook:

<b>Title</b>	Organic Chemistry
<b>Author</b>	Wade
<b>Edition</b>	9th
<b>Publisher</b>	Pierson
<b>ISBN #</b>	

**University-wide Withdrawal Date:** The last day to withdraw with a W is November 10, 2021. It will be strictly enforced.

## POLICIES

All CES students must familiarize themselves with, and adhere to, all official university-wide student policies. CES takes these policies very seriously and enforces them strictly.

**Grading Policy:** The final grade in this course will be determined as follows:

Three Quizzes	100 points
Exam I	100points
Exam II	100 points
Exam III	100 points
Final Exam	100 points

Your final letter grade in this course will be based on the following tentative curve:

A	87%	C	60
B+	82	D	50
B	75	F	Below 50
C+	68		

**Attendance Policy:** Attendance at classes will be recorded and is **mandatory**. Each class is a learning experience that cannot be replicated through simply “getting the notes.”

**Homework Policy:** Homework is an expectation of the course. It is difficult to do well if you don’t do the homework.

**Makeup Exam Policy:** There will normally be **NO MAKE-UP QUIZZES OR EXAMS** during the semester. In the event that a student has a legitimate reason for missing a quiz or exam, the student should contact the Dean of Students office and present written verifiable proof of the reason for missing the exam, e.g., a doctor’s note, police report, court notice, etc. clearly stating the date AND time of the mitigating problem. The student must also notify the CES Department Office/Instructor that the exam will be missed so that appropriate steps can be taken to make up the grade. A makeup if granted should be taken during specified makeup hours.

**Cellular Phones:** All cellular phones and other electronic devices must be switched off during all class times. Such devices must be stowed in bags during exams or quizzes.

## ADDITIONAL RESOURCES

**Chemistry Tutoring Center:** Located in the Central King Building, Lower Level, Rm. G12. Hours of operation are Monday - Friday 10:00 am - 6:00 pm. For further information please click [here](#).

**Accommodation of Disabilities:** Office of Accessibility Resources and Services (*formerly known as Disability Support Services*) offers long term and temporary accommodations for undergraduate, graduate and visiting students at NJIT.

If you are in need of accommodations due to a disability please contact Chantonette Lyles, Associate Director at the Office of Accessibility Resources and Services at 973-596-5417 or via email at [lyles@njit.edu](mailto:lyles@njit.edu). The office is located in Fenster Hall Room 260. A Letter of Accommodation Eligibility from the Office of Accessibility Resources Services office authorizing your accommodations will be required.

For further information regarding self-identification, the submission of medical documentation and additional

support services provided please visit the Accessibility Resources and Services (OARS) website at:

- <http://www5.njit.edu/studentsuccess/disability-support-services/>

**Important Dates (See: [Fall 2021 Academic Calendar, Registrar](#))**

September	1	Wednesday	First Day of Classes
September	4	Saturday	Saturday Classes Begin
September	6	Monday	Labor Day
September	8	Wednesday	Monday Classes Meet
September	8	Wednesday	Last Day to Add/Drop a Class
September	8	Wednesday	Last Day for 100% Refund, Full or Partial Withdrawal
September	9	Thursday	W Grades Posted for Course Withdrawals
September	15	Wednesday	Last Day for 90% Refund, Full or Partial Withdrawal - No Refund for Partial Withdrawal after this date
September	29	Wednesday	Last Day for 50% Refund, Full Withdrawal
October	20	Wednesday	Last Day for 25% Refund, Full Withdrawal
November	10	Wednesday	Last Day to Withdraw from Classes
November	25	Thursday	Thanksgiving Recess Begins
November	28	Sunday	Thanksgiving Recess Ends
December	10	Friday	Last Day of Classes
December	11	Saturday	Saturday Classes Meet
December	12	Sunday	Sunday Classes Meet
December	13	Monday	Reading Day 1
December	14	Tuesday	Reading Day 2
December	15	Wednesday	Final Exams Begin
December	21	Tuesday	Final Exams End
December	23	Thursday	Final Grades Due

**Materials To Be Covered and Exam Schedule Chapters 9-11 are for your review. We start with chapter 12.**

Chapter 09, Alkynes

Chapter 10, Structure and Synthesis of Alcohols

Chapter 11, Reactions of Alcohols

,Chapter 12, IR Spectroscopy and Mass Spectrometry.

Chapter 13, NMR Spectroscopy.

Chapter 14, Ethers, Epoxides and Sulfides

**Exam I Monday October 11 Chapters 12-14**

Chapter 15, Conjugated Systems, Orbital Symmetry and UV Spectroscopy

Chapter 16, Aromatic Compounds.

Chapter 17, Reactions of Aromatic Compounds.

**Exam 2 Monday, November 15, Chapters 15-17**

Chapter 18, Ketones and Aldehydes

.Chapter 20, Carboxylic Acids.

Chapter 21, Carboxylic Acid Derivatives.

**Exam 3: Monday December 6, Chapters 18, 20, 21**

Chapter 19, Amines (If time permits)

Chapter 22, alpha-Substitution and Condensations of Enolate ions.(If time permits)

Chapter 23-26, Selected Topics.(If time permits)

**Final Exam**

The final exam will be cumulative. Before each Exam there will be a Quiz which covers one or two chapters. Take the Quizzes seriously as they add up to one Exam grade. There may be a fourth quiz depending on time. If there is a fourth quiz one quiz will be dropped.

Problems in the body of the chapter are assigned and selected problems at the end of the chapter. These will be collected. To do well in the course it is important to do these problems. The grade will be determined from a total of 400 points.. 100 points will be dropped from the total of 500 points.. Either the quizzes (100 points) or the lowest of the three exams will be dropped. Makeup exams are not encouraged and will be given if you have an excuse from the dean of students or a doctor's note. If you must miss an exam contact me before the exam or immediately after. Makeups will be given at specified times. The final exam will probably not be dropped.

The final grades will be curved.

Attendance is required and will be taken into consideration when grades are computed.

## Outcomes

**Upon completing organic chemistry I, the student should have an understanding in the following areas:**

1. Lewis structures, condensed structures and structural formulas of organic compounds
2. Understand the geometry resulting from atomic orbital hybridization
3. Know how electronegativity and resonance causes charge distribution on molecules
4. Understand how intermolecular forces affect the boiling points and melting points
5. Interpret 3D representations of molecular structures
6. Know reaction intermediates and their relative stabilities
7. Understand how kinetics, thermodynamics and statistical mechanics describe chemical reactions
8. Draw the structures of the products given specific reactants
9. Write the mechanisms of reactions
10. Understand how physical conditions influence rate and path of reactions
11. Know SN1, SN2, E1 and E2 reactions, their stereo and region-selectivity
12. Know the nomenclature of alkane, alkene, alkyne and alcohols
13. Understand oxidation and reduction in organic chemistry
14. Know organometallic reagents for alcohol synthesis Chapter 22, alpha-Substitution and Condensations of Enolate ions.(If time permits)

**Upon completion of Organic Chemistry II, the students should have further understanding in the following areas:**

1. Use infrared spectroscopy, nuclear magnetic resonance spectroscopy, ultraviolet spectroscopy, and mass spectrometry to determine the structure of molecules;
2. Predict the expected signals in IR, NMR, UV and MS from given functional groups;
3. Know the nomenclature of ethers, conjugated and aromatic systems, ketones, aldehydes and derivatives thereof, amines, carboxylic acids and derivatives;
4. Construct molecular orbital pictures for conjugated and aromatic systems and explain the reactivity patterns of conjugated and aromatic systems;
5. Use Hückel's rule to determine if compounds are aromatic or anti-aromatic;
6. Predict the products of reactions involving or forming ethers, conjugated systems, aromatic compounds, ketones and aldehydes, amines, and carboxylic acids and derivatives.
7. Devise syntheses of complex molecules from simpler reactants by using retrosynthetic analysis.

8. Propose plausible mechanisms for complex multi-step reactions involving cationic or anionic intermediates;
9. Explain the relative acidity and basicity of organic molecules, and rank functional groups in order of their acidity/basicity;
10. Understand how the concept of resonance explains reactivity, acidity, basicity, stability, structure, and hybridization of organic molecules.

**Academic misconduct:** The NJIT Honor Code will be upheld. Any student that participates in any form of academic dishonesty or cheating will receive a zero for the exam. If a person is caught a second time, a final grade of "F" will be given for the course. Any violations will be brought to the immediate attention of the Dean of Students, who may impose further penalties