Spring 2021

CHEM 244-HM1: Organic Chemistry II

Yuanwei Zhang

NJIT New Jersey Institute of Technology

THE COLLEGE OF SCIENCE AND LIBERAL ARTS

THE DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE

Chemistry:
Spring 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 intermediate organic chemistry course focuses on the methods used to identify the structure of organic molecules, advanced principles of organic reaction mechanisms, and methods used for the synthesis of organic compounds.

Number of Credits: 3

Prerequisites: General Chemistry and Organic Chemistry I

Course-Section and Instructors

Course-Section	Instructor
CHEM 244 - HM1	Yuanwei Zhang
CHEM 244 - 002	Yuanwei Zhang

Class Schedule: Mondays, Thursdays 2:30 - 03:50 PM
Converged Learning Course

WEC Court B
https://njit.webex.com/meet/ywzhang

Webex Meeting Information:
Link: https://njit.webex.com/njit/j.php?MTID=mab96a70a26743750755809583be9eb33
Meeting Number: 120 683 7355
Password: chem

Office Hours: Mondays, Thursdays 4:00 - 4:30 pm

Required Textbook:

Title	Organic Chemistry
Author	L. G. Wade Jr.
Edition	9th edition
Publisher	Prentice Hall
ISBN #	032197137X

University-wide Withdrawal Date: The last day to withdraw with a **W** is Monday, April 05, 2021. It will be strictly enforced.

Learning Outcomes:

1. Use infrared spectroscopy, nuclear magnetic resonance spectroscopy, ultraviolet spectroscopy, and mass spectrometry to determine the structure of organic 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 synthesis 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.

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.

The shift to converged teaching has required that both instructors and students make changes to their normal working protocols for courses. Students are asked to practice extra care and attention in regard to academic honesty, with the understanding that all cases of plagiarism, cheating, multiple submission, and unauthorized collaboration are subject to penalty. Students may not collaborate on exams or assignments, directly or through virtual consultation, unless the instructor gives specific permission to do so. Posting an exam, assignment, or answers to them on an online forum (before, during, or after the due date), in addition to consulting posted materials, constitutes a violation of the university's Honesty policy. Likewise, unauthorized use of live assistance websites, including seeking "expert" help for specific questions during an exam, can be construed as a violation of the honesty policy.

Grading Policy: The final exam will be cumulative. Before each Exam there will be a Quiz, which covers four or three chapters. Take the Quizzes seriously as they add up to one Exam grade. Problems in the body of the chapter

are assigned and selected problems at the end of the chapter. These will not be collected. To do well in the course it is important to do these problems. The final grade in this course will be determined as follows:

The grade will be determined from a total of 300 points. 100 points will be dropped from the total of 400 points, either the quizzes (100 points) or the lower of the two midterm exams (The final exam cannot be dropped). Makeup exams are not encouraged. If you must miss an exam contact the coordinator before the exam or immediately after. Makeup should be taken within the first week of the exam and before exam answers are given back. You must have a valid excuse and a doctor note. The final grade in this course will be determined as follows:

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

Quizzes	100
Midterm Exam I	100
Midterm Exam II	100
Drop the lowest	-100
Final Exam	100
Total Points	300

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

A	90 – 100	**C**	70 – 74.9
B+	85 – 89.9	**D**	60 - 70
B	80 – 84.9	**F**	< 60
C+	75 – 79.9		

Attendance Policy: Each class is a learning experience that cannot be replicated through simply "getting the notes."

Homework Policy: Homework is an expectation of the course.

Exams: There will be two midterm exams held in class during the semester and one comprehensive final exam. The following exam periods are tentative and therefore possibly subject to change:

Midterm Exam I	February 22
Midterm Exam II	April 08
Final Exam Period	May 09-13

The final exam will test your knowledge of all the course material taught in the entire course.

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.

ADDITIONAL RESOURCES

Chemistry Tutoring Center: Located in the Central King Building, Lower Level, Rm. G12.

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. 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: Spring 2021 Academic Calendar, Registrar
https://www5.njit.edu/registrar/spring-2021-academic-calendar/

Course Outline

Lecture	Chapters	Topic	Assignment
1-2	12	Infrared Spectroscopy and Mass Spectrometry	
3-5	13	Nuclear Magnetic Resonance Spectroscopy	
6-7	14	Ethers, Epoxides and Thioethers	
8-10	15	Conjugated Systems, Orbital Symmetry and UltraViolet	
11-12	16	Aromatic Compounds	
13-15	17	Reactions of Aromatic Compounds	
16-17	18	Ketones and Aldehydes	
18-19	19	Amines	
20-21	20	Carboxylic Acids	
22-23	21	Carboxylic Acid Derivatives	
24-25	22	Condensations and Alpha-Substitution of Carbonyl	