Summer 2022

CHEM 244-141: Organic Chemistry II

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NJIT New Jersey Institute of Technology

THE COLLEGE OF SCIENCE AND LIBERAL ARTS

THE DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE

Chemistry 244 – 141
Organic Chemistry II
Middle-Summer Session
2022 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 course is a continuation of Organic Chemistry I (CHEM 243). Students will learn about modern spectroscopic analysis techniques for structure determination, recognize additional organic functional groups (ethers, aromatic compounds, ketones, aldehydes, carboxylic acids and derivatives, amines), predict the result of chemical reactions based on these functional groups, and explain the observed reactivity using mechanistic rationalizations.

Number of Credits: 3
Prerequisites: Chem 243 (or equivalent) with a grade of C or better.

Course-Section	Time and Place	Instructor
Chemistry 243 Section 141	Tuesdays and Thursdays, 6:00 – 9:00 pm (15-minute break at 7:15) **Tiernan Hall 111**	Dr. Andrew Naughton

Office Hours: Mutual appointment via WebEx

Required Textbook: electronic or physical texts are both acceptable. Homework and reading assignments are given from the text, so it is required.

Title	Organic Chemistry
Author	Wade, L.G; Simek, J.W.
Edition	Ninth
Publisher	Pearson
ISBN #	ISBN 13: 978-0-321-97137-1

University-wide Withdrawal Date: The last day to withdraw with a **W** is Friday, June 17th. It will be strictly enforced.

Learning Outcomes:

Upon completion of the course, you should have a facility in accomplishing the following:

1. Use IR, NMR and MS spectroscopic data to determine the structure of molecules.
2. Draw correct structures of products expected for a given set of reactants.
3. Explain why chemical reactions do or do not happen, based on functional group reactivity and concepts like acidity/basicity, electrophilicity/nucleophilicity or aromaticity.
4. Draw resonance structures of conjugated systems including alkenes, aromatic compounds and carbonyl compounds and relate these structures to reactivity.
5. Write mechanisms for the reactions covered, including electrophilic aromatic substitution, nucleophilic addition to carbonyls, addition-elimination reactions of carboxylic acid derivatives, reactions at the alpha carbon of carbonyls.
6. Common Reactions and Mechanistic Aspects of Ketones and Aldehydes
7. Common Reactions and Mechanistic Aspects of Amines, Ethers, Epoxides and Thioethers
8. Common Reactions and Mechanistic Aspects Carboxylic Acids and Carboxylic acid derivatives
9. Common Reactions and Mechanistic Aspects of Condensation Reactions and Alpha Substitutions
10. Common Reactions and Mechanistic Aspects of Carbohydrates and Nucleic Acids

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:

Attendance and Participation (50 points)	5%
Homework (150 points)	15%
Chapter Reading Quizzes (100 points)	10%
Midterm Exam I (200 points)	20%
Midterm Exam II (200 points)	20%
Final Exam (300 points)	30%

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

A	>850 Points	**C**	>650 Points
B+	>800 Points	**D**	>550 Points
B	>750 Points	**F**	<550 Points
C+	>700 Points		

Attendance Policy: Attendance at classes will be recorded and is **mandatory**. Students are excused from ONE class due to random circumstance. More than one absence will result in loss of points from the 5% attendance and participation grade. Each class is a learning experience that cannot be replicated through simply "getting the notes."

Homework Policy: This is an accelerated summer course which relies heavily on homework for learning. Timely completion of homework is an expectation of the course. Late homework cannot be accepted. As valid events sometimes preclude the ability of the student to do homework the lowest homework grade will be dropped. The homework problems set by the instructor are to be handed in for grading and will be used in the determination of the final letter grade as described above. All homework is handed in via the appropriate CANVAS portal.

Chapter Reading Quizzes: Due to the accelerated nature of the course students will be required to read sections of the textbook prior to each lecture. A short open book 10 minute quiz will take place at the start of each lecture to test comprehension and preparedness for the lecture.

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

Midterm Exam I	June 7, 2022
Midterm Exam II	June 23, 2022
Final Exam	July 21, 2022

The final exam **is cumulative**. All Organic Chemistry builds on itself.

Makeup Exam Policy: There will be **NO MAKE-UP QUIZZES OR EXAMS** during the summer sessions. If 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 instructor that the exam will be missed so that appropriate steps can be taken to make up the grade.

Cellular Phones: Cellular Phones MUST be removed from your work area during all exams. Evidence of a cell phone, even if it is turned off is grounds for a 0 on the exam and possible to the referral to the Dean of Students for disciplinary action.

ADDITIONAL RESOURCES

Chemistry Tutoring Center: May not be available for Summer Sessions. Contact the instructor for one-on-one meeting if additional help is needed.

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 need 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 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: Summer 2022 Academic Calendar at the following web site:

https://www5.njit.edu/registrar/summer-2022-academic-calendar/

Date	Day	Event
May 23, 2022	M	Mid-Summer Session Begins
May 27, 2022	F	Last Day to drop with 100% refund
May 30, 2022	M	Memorial Day – No Classes
May 31, 2022	T	Last Day for 80% refund on dropped classes
June 4, 2022	Sa	Last Day for 60% Refund on dropped class.
June 7, 2022	T	**Exam 1 Chapters 12-15**
June 8, 2022	W	Last Day for 40% Refund on dropped class.
June 13, 2022	M	Last Day for 20% Refund on dropped class.
June 17, 2022	F	Last Day to Withdraw

June 23, 2022	R	**Exam 2 Chapters 16-19**
July 4, 2022	M	Independence Day (Observed)
July 13, 2022	W	Final Exam
July 21, 2022	R	Grades Posted

Course Outline

Lecture	Date	Textbook Reading	Topic
1	May 24		Chap. 12: Infrared Spectroscopy and Mass Spectrometry
2	May 26	**13**-1 – 4, **13**-12A,B,C,D	Chap. 13: Nuclear Magnetic Resonance Spectroscopy
3	May 31	**14**-1 - 4	Chap. 14: Ethers, Epoxides and Thioethers
4	June 2	**15**-1 7	Chap. 15: Conjugated Systems, Diels Alder Reaction and UV
5	June 7		**Exam 1 Chapters 12-15**
6	June 9	**16**-1 - 4	Chap. 16: Aromatic Compounds
7	June 14	**17**-1 - 4	Chap. 17: Reactions of Aromatic Compounds
8	June 16	**18**-1 – 5D	Chap. 18: Ketones and Aldehydes
9	June 21	**19**-1 - 5	Chap. 19: Amines
10	June 23		**Exam 2 Chapters 16-19**
11	June 28	**20**-1 - 4	Chap. 20: Carboxylic Acids
12	June 30	**21**-1 – 2 (all parts)	Chapter 21: Carboxylic Acid Derivatives
13	July 5	**22**-1-2	Chapter 22: Condensations and Alpha Substitutions
14	July 7	**23**-1 - 4	Chapter 23 Carbohydrates and Nucleic Acids
15	July 12		Catch Up and Final Review
16	July 14		Final Exam