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CHEM 243-102: Organic Chemistry I

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Chemistry 243 Organic Chemistry I
Section 102 Spring 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

NOTE: To further control the spread of COVID-19 the University requires exclusively online learning for at least the month of January 2022 and possibly longer. This Syllabus is written to accommodate online learning for January 2022 only. If the University requires exclusively online learning for longer the Syllabus will be adapted accordingly.

Course Description: This course is an introduction to Organic Chemistry. The unique atomic properties of carbon which allows it to serve as the basis for all organic frameworks will be discussed. Hybridized carbon can support a rigid stereochemical arrangement which leads to a preferred "handedness" to its compounds and the basis and use of this property will be discussed. The course continues with an introduction to basic hydrocarbon chains (straight and branched alkanes, alkenes, and alkynes) and explores some of the common syntheses of these frameworks as well as common reactions. The course finishes with an introduction to the synthesis and use of alkyl halides and alcohols as the basis for introduction of further functionality to compounds (which is then continued in Organic Chemistry II).

Number of Credits: 3

Prerequisites: Chem 123 or Chem 126 (or equivalent) with a grade of C or better.

Course-Section	Instructor
Chemistry 243 Section 102 Mondays 6:00 - 8:50 pm (10-min. break 7:15) Kupfrian 118	Dr. Andrew Naughton Office Hours: By appointment, WebEx Only

Required Textbook: electronic or physical textbooks are both acceptable.

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 Monday, April 4th. It will be strictly enforced.

Learning Outcomes:

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

1. Understand the basic electronic structure of carbon, hydrogen, nitrogen, and oxygen with emphasis on the hybridized electronic structures of carbon.
2. Understand Basic Molecular orbital theories for carbon, hydrogen, nitrogen, and oxygen and be able to draw bonding, non-bonding, and anti-bonding orbital arrangements.
3. Use your understanding of points 1 and 2 to assemble and name organic chemistry structures according to IUPAC guidelines. This will include alkanes, cycloalkanes and their related ring conformers, alkenes and their stereochemistry and alkynes.
4. Understand the source of chirality in organic compounds and correctly assign configuration based on Cahn-Ingold-Prelog rules.
5. Understand basic SN1 and SN2 principles and mechanism and their application to organic chemistry syntheses and their stereochemical aspects. Recognize and differentiate reaction mechanisms based on electronic and steric effects. Design basic organic syntheses based on SN1 and SN2 principles.
6. Understand E1 and E2 elimination reactions, mechanisms and their regio- and stereoselectivity aspects. Design basic organic synthetic reactions based on E1 and E2 principles.
7. Understand and use basic synthetic techniques to transform alkenes and alkynes.
8. Understand the methods to produce and use basic alkyl halides in organic synthesis.
9. Understand the methods to produce and use basic alcohols in organic synthesis.

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:

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%
Total 1000 Points	

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: This is not a freshman class. Learning organic chemistry is best done in person with a skilled leader and an enthusiastic group but upperclasspersons manage their own time. Attendance is not mandatory, but lack of attendance will be reflected in the participation portion of the grade. In addition, only persons in attendance may take, and receive credit for exams and Chapter Readings Quizzes. There will be no make up exams or quizzes without a valid absence notification processed through the Dean of Students.

Homework Policy: Homework is a vital part of this class. Problems have been selected to both teach you and prepare you for the exams. It is quite amazing, in fact, how closely the exams resemble the homework. The instructor can add a few points to the final tally in instances where the next grade up is not very distant. THIS WILL ONLY BE CONSIDERED for persons who have submitted all homework assignments on time.

Homework is submitted as a scanned document via Canvas portal. Homework is due for the previous week at 5:59 pm on Mondays so that it can be reviewed in class. NO LATE HOMEWORKS will be accepted. Being an upperclassperson also means managing your own work deadlines.

Chapter Reading Quizzes: At 6:05 pm each class a 10-minute open book quiz will be given on the pre-readings assigned (see last page). There will be 5-10 short questions on each quiz. The purpose to the readings is to be sure that you have some idea of what will be discussed that day in class before we begin. If you do the readings it will be possible to answer 5-10 questions in 10 minutes. If you do not do the readings it may be very hard to find the answers in the textbook in such a short time.

Exams: There will be two midterm exams held in class during the semester and one final exam. Exams and the finals are closed book. If permitted by university policies, the exams will be held **in person** on the following dates. If the University continues online learning beyond January exams will be given during class time using the Respondus lock down browser. You must have a computer which can run the Respondus lock down browser. If you do not, the University library has cubicles with computers which may be used for this purpose.

Midterm Exam I	February 14, 2022
Midterm Exam II	March 28, 2022
Final Exam	May 9, 2022

The final exam is focused on Chapters 6-11 but will test your knowledge of all the course material taught in the entire course. Organic Chemistry builds on itself.

Makeup Exam Policy: Normally there will be **NO MAKE-UP QUIZZES OR EXAMS**. Instructor works full time outside of the University and creating a makeup exam is time consuming. 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 CES Department Office/Instructor that the exam will be missed so that appropriate steps can be taken to make up the grade.

Cellular Phones, laptops, electronic devices: Cellular Phones, smart watches and all other electronic devices **MUST** be removed from your work area during all exams (put in backpack at the front of the class). Evidence of a cell phone or smart watch, 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: Due to COVID restrictions the chemistry tutoring center is not open for on-line services. 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 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/studentssuccess/disability-support-services/>

Important Dates (See <https://www5.njit.edu/registrar/spring-2022-academic-calendar/>)

- January 18 (T) First Day of Classes
- January 24 (M) 100% withdraw deadline

- January 31 (M) 90% withdraw deadline
- February 14 (M) 50% withdraw deadline
- March 7 (W) 25% withdraw deadline
- March 14-19 Spring Recess (No Classes)
- April 4 (M) Last day to withdraw
- April 15 (F) No classes
- May 3 (T) FRIDAY classes meet, Last day of class for Spring 2022 semester
- May 4,5 Reading Days
- May 6 – 12 Final Exam Period (There is no Final Exam in this class, but Exam 3 may happen in this time)
- May 14 Grades are Due

Course Outline

Lecture	Date	Pre-Class Textbook Reading	Topic
1	January 24	Sect. 1-1 to 1-9 (incl.)	Chap. 1: Structure and Bonding
2	January 31	Sect. 2-1 to 2-6 (incl.)	Chap. 2: Acids and Bases; Functional Groups
3	February 7	Sect. 3-1 to 3-5 (incl.)	Chap. 3: Structure and Stereochemistry of Alkanes
4	February 14		Midterm Exam 1 - Chapters 1-3
5	February 21	Sect. 4-1 to 4-4 (incl.)	Chap. 4: The Study of Chemical Reactions
6	February 28	Sect. 5-1 to 5-2 (incl.)	Chap. 5: Stereochemistry
7	March 7	Sect. 6-1 to 6-5 (incl.)	Chap. 6: Alkyl Halides
March 14 - 19 Spring Break			
8	March 21		Catch Up Day, Chapters 1-6 review, Recitation
9	March 28		Midterm Exam 2 - Chapters 4-6
10	April 4	Sect. 7-1 to 7-2 (incl.)	Chap. 7: Structure and Synthesis of Alkenes, Eliminations
11	April 11	Sect. 8-1 to 8-2 (incl.) Table 8.1 is key!	Chap. 8: Reactions of Alkenes
12	April 18	Sect. 9-1 to 9-2 (incl.)	Chap. 9: Alkynes
13	April 25	Sect. 10-1 to 10-5 (incl.)	Chapter 10: Alcohols
14	May 2	Sect. 11-1 to 11-4 (incl.)	Chapter 11: Reactions of Alcohols
17	May 9		Final Exam (Focus Chaps. 6-11)

*Updated by Genti' Price - August, 2020
Department of Chemistry & Environmental Sciences (CES)
Course Syllabus, Spring 2022*
