Fall 2019

CHEM 605-101: Advanced Organic Chemistry, Structure and Mechanism

Pier Alexandre Champagne

NJIT New Jersey Institute of Technology

THE COLLEGE OF SCIENCE AND LIBERAL ARTS

THE DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE

CHEM 605 – Advanced Organic Chemistry, Structure and Mechanism

Fall 2019 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: Structure of organic molecules and mechanisms of organic reactions. Topics include atomic and molecular structure, stereochemistry, reactive intermediates (cations, anions, radicals, and carbenes), orbital symmetry, and spectroscopy. Additional topics include chemical databases, as well as reading and writing organic chemistry articles.

Number of Credits: 3

Prerequisites: Undergraduate organic chemistry. Students that are not fully comfortable with the material of undergraduate organic chemistry will need to revisit it on their own in order to do well in this class.

Instructor: Dr. Pier Alexandre Champagne
Office: Tiernan Hall (TIER) 354
Email: pier.a.champagne@njit.edu

Lectures: Thursdays, 6:00-9:00 PM
Tiernan Hall (TIER) 105

Office Hours: Mondays, 10:30 AM - 12:00 PM
Thursdays, 3:30 - 5:00 PM

Textbooks: Material for this class will come from two main textbooks. None are required but they are recommended.

Title	Intermediate Organic Chemistry	Advanced Organic Chemistry, Part A: Structure and Mechanisms
Authors	Ann M. Fabirkiewicz, John C. Stowell	Francis A. Carey, Richard J. Sundberg
Edition	3rd edition	5th edition
Publisher	Wiley	Springer
ISBN #	978-1-118-30881-3	978-0387448978

University-wide Withdrawal Date: The last day to withdraw with a **W** is Monday, November 11, 2019. 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:

Class participation	10%
Literature assignment and presentation	20%
Problem sets	20%
Midterm Exam	20%
Final Exam	30%

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

A	100-90%	**C**	74-70%
B+	89-85%	**D**	69-65%
B	84-80%	**F**	Below 65%
C+	79-75%		

Participation: As this is a graduate course, class participation is expected. Students who come to class on time, are prepared by reading on the material before the lecture, and who ask and answer questions during class will get the full 10 points.

Problem sets: Problem sets will be assigned 4 times during the semester. They will be collected 2 weeks after they were assigned, graded then returned promptly. Each problem set will be worth 5 points to the final grade.

Literature assignment and presentation: Reading research papers and presenting results are key skills in organic chemistry. During the semester, students will be asked to discuss about two organic chemistry papers of their choosing that were published in 2019. A written report on the first paper, due halfway through the semester, will be worth 10 points. A 20-minute presentation on the second paper, done during the last lectures of the semester, will be worth 10 points. Detailed assignment information will be provided during the semester.

Exams: There will be one midterm exam 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	October 24th (2 hours)
Final Exam Period	December 14 - 20, 2019

The midterm exam will cover chapters 1 – 5.

The final exam will cover all chapters, with an emphasis on chapters 6 – 10.

Attendance Policy: There are no notes provided. If the students don't attend the lectures, they will not have access to the material. Exceptions can be made if the absence is excused by the Dean of Students.

Email Policy: All email communication should done using the "njit.edu" domain. No chemistry questions will be answered through email.

Make-up Exam Policy: There will be **no make-up exams** during the semester. In the event that a student has a legitimate reason for missing an 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.

Phones and laptops: All smartphones 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: **O**ffice of **A**ccessibility **R**esources and **S**ervices (***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: Fall 2019 Academic Calendar, Registrar)

Date	Day	Event
September 3	T	First Day of Classes
September 13	F	Last Day to Add/Drop Classes
November 11	M	Last Day to Withdraw
November 26	T	Thursday Classes Meet
November 27	W	Friday Classes Meet
November 28 – December 1	R - Su	Thanksgiving Break - University Closed
December 11	W	Last Day of Classes
December 12-13	R - F	Reading Day
December 14-20	Sa - F	Final Exam Period

COURSE OUTLINE

Date	Topic	Pre-lecture reading	Assignments and due dates
Sept. 5th	Syllabus Chapter 1: Chemical Databases	IOC Chap. 2	
Sept. 12th	Chapter 2: Reading and Writing Research Articles		Problem set #1
Sept. 19th	Chapter 3: Stereochemistry	IOC Chap. 3	
Sept. 26th	Chapter 4: Study and description of organic reaction mechanisms	IOC Chap. 4	Problem set #1 due Problem set #2
Oct. 3rd	Chapter 4: Study and description of organic reaction mechanisms		
Oct. 10th	Chapter 5: Conjugation, aromaticity and pericyclic reactions	IOC Chap. 5	Problem set #2 due
Oct. 17th	Chapter 6: Nucleophilic substitution	AOC Chap. 4	Problem set #3
Oct. 24th	Midterm exam Chapter 7: Polar addition and elimination reactions		
Oct. 31st	Chapter 7: Polar addition and elimination reactions	AOC Chap. 5	Literature report due
Nov. 7th	Chapter 8: Carbanions and carbon nucleophiles	AOC Chap. 6	Problem set #3 due
Nov. 14th	Chapter 9: Addition and substitution reactions on carbonyl compounds:	AOC Chap. 7	Problem set #4
Nov. 21st	Chapter 10: Free radical reactions (if time permits)	AOC Chap. 11	
Nov. 26th **	Chapter 10: Free radical reactions (if time permits) Literature presentations		Problem set #4 due
Dec. 5th	Literature presentations Review		

IOC: Intermediate Organic Chemistry, by Fabirkiewicz and Stowell
AOC: Advanced Organic Chemistry, by Carey and Sundberg
** Tuesday November 26th: Thursday classes meet according to the NJIT schedule