NOVA SOUTHEASTERN UNIVERSITY
Halmos College of Natural Sciences and Oceanography

CHEM 2410 - Organic Chemistry II/Lab

I. Course Information

Course: CHEM 2410 - Organic Chemistry II/Lab
Semester Credit Hours: 4.0
Course CRN and Section: 20156 - DA3, 20157 - DA4
Semester and Year: Fall 2017
Course Start and End Dates: 08/21/2017 - 12/10/2017
Building and Room: Carl DeSantis Building - 3047

II. Instructor Information

Professor: Syed A A Rizvi
Email:
Office Hours:
office Parker 371
Office hours:
MW: 2-4 pm
T: 1-3 pm

III. Class Schedule and Location

CRN	Day	Date	Time	Location	Building/Room
20156	MWF	08/21/2017 - 10/06/2017	1:00 PM - 1:50 PM	Ft Lauderdale/Davie Campus	Carl DeSantis Building-3047
20156	M	08/21/2017 - 10/02/2017	2:05 PM - 4:50 PM	Ft Lauderdale/Davie Campus	Panza Science Annex-2
20156	W	10/11/2017 - 10/11/2017	1:00 PM - 3:00 PM	Ft Lauderdale/Davie Campus	Carl DeSantis Building-3047
20156	MWF	10/16/2017 - 12/01/2017	1:00 PM - 1:50 PM	Ft Lauderdale/Davie Campus	Carl DeSantis Building-3047
20156	M	10/16/2017 - 11/27/2017	2:05 PM - 4:50 PM	Ft Lauderdale/Davie Campus	Panza Science Annex-2
20156	F	12/08/2017 - 12/08/2017	8:00 AM - 10:00 AM	Ft Lauderdale/Davie Campus	Carl DeSantis Building-3047

20157	MWF	08/21/2017 - 10/06/2017	1:00 PM - 1:50 PM	Ft Lauderdale/Davie Campus	Carl DeSantis Building-3047
20157	W	08/23/2017 - 10/04/2017	2:05 PM - 4:50 PM	Ft Lauderdale/Davie Campus	Panza Science Annex-2
20157	W	10/11/2017 - 10/11/2017	1:00 PM - 3:00 PM	Ft Lauderdale/Davie Campus	Carl DeSantis Building-3047
20157	MWF	10/16/2017 - 12/01/2017	1:00 PM - 1:50 PM	Ft Lauderdale/Davie Campus	Carl DeSantis Building-3047
20157	W	10/18/2017 - 11/29/2017	2:05 PM - 4:50 PM	Ft Lauderdale/Davie Campus	Panza Science Annex-2
20157	F	12/08/2017 - 12/08/2017	8:00 AM - 10:00 AM	Ft Lauderdale/Davie Campus	Carl DeSantis Building-3047

IV. Course Description

This course and the related lab is the second part of a two-semester sequence that studies the chemistry of heteroatom-containing carbon compounds, including their structure, nomenclature, preparation, reactions, analysis, and properties. Reaction mechanisms within a functional group framework are stressed. Stability, nucleophilicity and electrophilicity, and structurereactivity relationships will also be examined. The laboratory session practices basic organic syntheses. Prerequisite: CHEM 2400 OR CHEM 2400H. Frequency: Every Fall and Winter.

V. Course Objectives / Learning Outcomes

1) Recognize major functional groups and name organic compounds containing these functional groups.
2) Understand and apply the basic rules of reactivity, nucleophilicity and electrophilicity to organic compounds.
3) Describe simple resonance schemes and their importance to stability and reactivity of organic molecules.
4) Demonstrate mastery of simple organic reaction mechanisms.
5) Recognize functional groups in biochemical compounds and their chemistry.
6) Apply basic organic laboratory techniques to synthesize, purify and broadly characterize simple organic compounds.

VI. Materials and Resources

Book Url: NSU Book Store
Section Required Texts and Material:
Organic Chemistry, Ed. 3, 2017
Author: David R. Klein
Publisher: WileyISBN-13: 978-1119316152
Microscale Organic Laboratory: with Multistep and Multiscale Synthesis, Ed. 6, 2013
Authors: Mayo, Pike, and Forbes
Publisher: Wiley
ISBN-13: 978-1118083406
Section Supplemental Material:
Scientific calculator (no graphing calculators)
Laboratory supplies: A bound composition notebook, lab coat, safety glasses, USB drive, calculator, and black or blue pen

VII. Course Schedule and Topic Outline

Course Schedule:
Lecture schedule:

The week of:	Tentative Topic	Chapter #
21-Aug	NMR, IR, UV Spectroscopy and Mass Spectrometry	Chapters 14, 15 and 16
28-Aug	Organometallic Chemistry 23 Carboxylic Acids and their derivatives	Chapter 23 Chapter 20
4-Sep	Finish up the leftover material and preparation of the exam I	Chapters 14-16, 20 & 23
11-Sep	***Exam I – 09/11/2017: Chapter 14, 15, 16, Chapters 20, & 23***Exam I review Aldehydes and ketones	***Exam I*** Chapter 19
18-Sep	Aldehydes and ketones	Chapter 19
25-Sep	Aldehydes and ketones Alpha Carbon Chemistry	Chapter 19 Chapter 21
2-Oct	Finish up the leftover material and preparation of the exam II ***Exam II – 10/06/2017: Chapter 14-16, Chapters 19, 20, 21, & 23***	Chapters 14-16 Chapters 19-21, 23 ***Exam II***
9-Oct	Exam II review Aromatic Compounds	 Chapter 17
16-Oct	Aromatic CompoundsAromatic Substitution Reactions	Chapter 17 Chapter 18
23-Oct	Aromatic Substitution Reactions	Chapter 18
30-Oct	Aromatic Substitution Reactions Finish up the leftover material and preparation of the exam III ***Exam III – 11/01/2017: Chapters 14, 15, 16, 17, 18, 19, 20, 21, & 23***	Chapters 17, 18 ***Exam III***
6-Nov	Amines Carbohydrates	Chapter 22 Chapter 24
13-Nov	Carbohydrates Amino acids, Peptides and Proteins	Chapter 24 Chapter 25
20-Nov	Lipids Synthetic Polymers	Chapter 26 Chapter 27

27-Nov	Finish up the leftover material and preparation of the exam IV***Exam IV – 11/29/2017: Chapters 14, 15, 16, 17, 18, 18, 20, 21, 22, 23, 24, 25, 26, 27***	Chapter 14-27 ***Exam IV***
04-Dec	***12/?/2017*** **– ACS Final (8:00am-10:00am) Check Course Wizard for information**	

** This schedule is intended only as a guide and may change during the course of the semester. **Topic Outline:**

Laboratory schedule:

Tentative Lab Schedule*Actual experiments may vary, appropriate information will be provided*			
Week of	**Lab**	**Chap**	**Description**
21-Aug	**1**	*handout*	*Oxidation of alcohol to ketoneOxidation of alcohol to acidDehydration of alcohol to alkene*
28-Aug			*Lab Lecture*
4-Sep	**2**	*handout*	*Alcohol oxidation kineticsNMR & MS Spectroscopy exercises*
11-Sep	**3**	*6.5*	*Borohydride reduction of a Ketone*
18-Sep	**4**	*handout*	*Electrophilic Aromatic Substitution: Nitration and Halogenation*
25-Sep	**5**		*Aniline-to-acetanilide – to- p-nitroccetailide –to - p-nitroaniline*
2-Oct	**6**	*Handout*	*Green reduction of Nitro group: Fe(0) nanoparticles in reduction*
9-Oct			*Mid term, no lab*
16-Oct			*Spring break, no lab*
23-Oct	**7**	*handout*	*Sidechain oxidation:Toluene - to – Benzoic acidDiazotization:Synthesis of organic Dye*
30-Oct	**8**	*handout*	*Grignard reaction: Synthesis of Benzoic Acid and triphenylmethanol*
6-Nov			*Lecture Catchup*
13-Nov	**9**	*handout*	*N and O-Acylation:Synthesis of Aspirin and Acetaminophen*
20-Nov	**10**	*6.20, handout*	*Claisen Schmitt Condensation: Acetone with p-anisaldehyde Green Knoevenagel Condensation: Malononitrile with Benzaldehyde*
27-Nov			*Lecture Catch up*

04-Dec			*Lecture Catch-up*

VIII. Grading Criteria

Final Grade:
There will be four semester exams and a cumulative final exam. Additional assignments, which may come in the form of homework (Mastering Chemistry), quizzes, in class work, and/or discussions will also be assigned.
A Pre-Lab assignment is completed prior to the start of each lab experiment and must be hand-written in your laboratory notebook.
The Post-Lab assignment is due at the start of class exactly one week after the completion of the experiment.

Lecture (75%):
- Exam I, II, III, IV (15% each) 60%
- Final Exam 30%
- Homework, Assignments, Quizzes 10%

Laboratory (25%): Pre-lab, in-lab, and post-lab assignments

Grading Scale:

A	93.3-100
A^-	90.0-93.2
B^+	86.6-89.9
B	83.3-86.5
B^-	80.0-83.2
C^+	76.6-79.9
C	73.3-76.5
C^-	70.0-73.2
D^+	66.6-69.9
D	60.0-66.5
F	<60.0

IX. University Policies

Students should visit http://www.nova.edu/academic-affairs/nsu-syllabus-policy.html to access additional required college-wide policies. It is your responsibility to access and carefully read these policies to ensure you are fully informed. As a student in this class, you are obligated to follow these college-wide policies in addition to the policies established by your instructor.
The following policies are described on this website:
- Academic misconduct
- Last day to withdraw
- Email policy
- Student course evaluations
- Student responsibility to register
- Student responsibility for course prerequisites

Academic Resources

Nova Southeastern University offers a variety of resources that may aid in student success. Among these resources are:

Accommodations for students with documented disabilities: For more information about ADA policy, services, and procedures, students may call the Office of Student Disability Services at 954-262-7189 or visit http://www.nova.edu/disabilityservices.

Tutoring and testing center:
Students are encouraged to use the free, individualized tutoring services offered by the Tutoring and Testing Center (TTC). TTC provides a supportive atmosphere in which tutors and students work

collaboratively on improving students' writing, math and/or science skills. http://www.nova.edu/tutoring-testing/index.html