

I. Course Information

Course: CHEM 2410 - Organic Chemistry II/Lab Semester Credit Hours: 4.0 Course CRN and Section: 20154 - DA1, 20155 - DA2 Semester and Year: Fall 2017 Course Start and End Dates: 08/21/2017 - 12/10/2017 Building and Room: Parker Building - 338

II. Instructor Information

Professor: Dr. Venkatesh M Shanbhag Email: Phone: 954-262-8331 Office Hours: MTWThF 9-10 Lab is taught by Dr. Carmit Alexenberg

III. Class Schedule and Location

CRN	Day	Date	Time	Location	Building/Room	
20154	MWF	08/21/2017 - 10/06/2017	7:55 AM - 8:45 AM	Ft Lauderdale/Davie Campus	Parker Building-338	
20154	W	08/23/2017 - 10/04/2017	9:00 AM - 11:45 AM	Ft Lauderdale/Davie Campus	Panza Science Annex-2	
20154	W	10/11/2017 - 10/11/2017	8:00 AM - 10:00 AM	Ft Lauderdale/Davie Campus	Parker Building-338	
20154	MWF	10/16/2017 - 11/30/2017	7:55 AM - 8:45 AM	Ft Lauderdale/Davie Campus	Parker Building-338	
20154	W	10/18/2017 - 11/29/2017	9:00 AM - 11:45 AM	Ft Lauderdale/Davie Campus	Panza Science Annex-2	
20154	F	12/08/2017 - 12/08/2017	8:00 AM - 10:00 AM	Ft Lauderdale/Davie Campus	Carl DeSantis Building-1124	
20155	MWF	08/21/2017 - 10/06/2017	7:55 AM - 8:45 AM	Ft Lauderdale/Davie Campus	Parker Building-338	

20155	F	08/25/2017 - 10/06/2017	9:00 AM - 11:45 AM	Ft Lauderdale/Davie Campus	Panza Science Annex-2
20155	W	10/11/2017 - 10/11/2017	8:00 AM - 10:00 AM	Ft Lauderdale/Davie Campus	Parker Building-338
20155	MWF	10/16/2017 - 12/01/2017	7:55 AM - 8:45 AM	Ft Lauderdale/Davie Campus	Parker Building-338
20155	F	10/20/2017 - 12/01/2017	9:00 AM - 11:45 AM	Ft Lauderdale/Davie Campus	Panza Science Annex-2
20155	F	12/08/2017 - 12/08/2017	8:00 AM - 10:00 AM	Ft Lauderdale/Davie Campus	Carl DeSantis Building-1124

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 structure reactivity 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 Author: D. Klein Publisher: Wiley Year: 2015 Edition: 2	ISBN- 9781118454312
Microscale Organic Laboratory: with Multistep and Multistep Author: Mayo, Pike, and Forbes Publisher: Wiley Year: 2015 Edition: 6	ISBN- 9781118083406

Section Supplemental Material: Flash drive, Composition notebook, Lab coat, Goggles

VII. Course Schedule and Topic Outline

Topic Outline:

Week of Tentative TopicClass schedule subject to modification as needed to meet the flow of concept"

Aug. 21	Review	of fundamenta	als of Organic Chemistry Alcohols and phenols		
Aug. 28	Reactions of alcohols Ethers and Epoxides Chemistry of benzene				
Sep. 4	Reactions of Benzene Electrophilic substitutions				
Sept.11	Electropl	Electrophilic substitutions Reactions of substituted benzenes, Retrosynthetic Paths			
Sept. 18	Exam 1,	Carbonyl C	hemistry (Aldehydes and Ketones)		
Sept. 25	Carbony	l Reactions			
Oct 2	Carbony	l Reactions I	Ι		
Oct. 9	Carboxy	lic acids and	their reactions		
Oct. 16	Carboxylic acids and their derivatives (acid chloride, ester, amide, anhydride, nitrile) Exam 2				
Oct. 23	Reaction	s of carboxyl	lic acid derivatives		
Oct 30	Carbonyl Chemistry at alpha carbon, Enols and Enolates				
Nov. 6	Carbonyl alpha reactions, reactions of enolates				
Nov. 13	Name H	Reactions of er	nolates, Amines, Reactions of amines		
Nov. 20	Exam 3				
Nov. 27	Biomolec	cules Amino a	acids Polymers, Carbohydrates and Lipids		
Dec. 4	Final Da	y, location ar	nd time @ <u>https://www.fcas.nova.edu/coursewizard/</u>		
Tentative provided	Lab Sche	dule <i>Actual e</i>	xperiments may vary, appropriate information will be		
Week of	Lab	Chap	Description		
Aug. 21			Lab Lecture or an Introduction to the basic Org. Lab techniques.		
Aug. 28	1	handout	Dehydration of an alcohol to an alkene Oxidation of an Alcohol to a ketone, Oxidation of an alcohol to an acid		
Sep. 4	2	handout	Alcohol oxidation kinetics, and/or NMR & MS Spectroscopy exercises		
Sep. 11	3	6.5	Borohydride reduction of a Ketone		
Sep. 18	4	handout	Electrophilic Aromatic Substitution: Nitration		
Sep. 25	5	handout	Aniline-to-acetanilide – to- p-nitroccetailide –to - p- nitroaniline		
Oct. 2	6		Lab Lecture		

Oct. 9			Mid term week, Lab lecture
Oct. 16	7	handout	Side-chain oxidation:Toluene - to – Benzoic acid Diazotization: Synthesis of organic Dye
Oct. 23	8	handout	Grignard reaction: Synthesis of Benzoic Acid and triphenylmethanol
Oct 30			Lecture Catch-up
Nov. 6	9	handout	N and O-Acylation: Synthesis of Aspirin and Acetaminophen
Nov. 13	10	6.20, handout	Claisen Schmitt Condensation:Acetone with p-anisaldehyde / benzaldehyde Green Knoevenagel Condensation: Malononitrile with Benzaldehyde
Nov. 20			No lab
Nov. 27			Lecture Catch-up
Dec. 4			No Lab

VIII. Assessments

The grade for the course is computed by weighing lecture course work (75%) and lab work (25%) The classroom performance is based on four examinations, homework and quizzes (tentative). Homework must be completed in timely manner in a composition notebook. It would be collected periodically for grading. Class exams cover the material covered up to and including the material discussed in the previous class. The test may have some multiple choice and some free response questions. Quizzes may be administered at the beginning of each lab. The final exam will be comprehensive and cumulative.

IX. Grading Criteria

Grading Scale:

Lecture grade v	weight	Lab grade weight		Final grade criteria		
Exam 1	20%	Lab reports	70%	90% and above A		
Exam 2	20%	Quizzes	20%	80% to 89.9% B		
Exam 3	20%	Lab	10%	70% to 79.9% C		
Pretest/Quizzes	5%	Notebook		60% to 69.9% D		
Final Exam	35%			Others F		
	_			+/- system may be used		

X. Course Policies

General Policy:

24 hour policy: Communicate, by e-mail, within 24 hours between 8 am-5 pm, about missed lab,

missed exam, lab report submission delay and any other deadlines.

Electronic device: Turn off all devices (smart phone, computer, tablet, etc.) during the class and lab.

Etiquette Consuming food in the class and lab is unacceptable. Restroom trips in the middle of the class are unacceptable. If you arrive late, take the seat in the back.

Makeup: Only with the documented university-sanctioned makeup test may be allowed; labs cannot be made up. Report submission based on borrowed data is misconduct.

Misconduct: Plagiarized report submission, unauthorized use of resources during tests, unapproved recording of conversations in the class constitute academic misconduct.

Lecture

Attendance is <u>required</u> in all lecture sessions.

You will be responsible for all the material covered in the class and assigned for the read.

There shall be no recording device, computer, any electronic communication devices active during the class and exam.

Academic dishonesty (cheating, plagiarism, bribery, etc.) on exams, assignments, will be dealt with a harsh penalty; at minimum, with a failing grade in the course. Any sign of cheating during the test will result in a zero on that test and will be referred for administrative evaluation and I always seek maximum penalty prescribed. This may result in probation or suspension. Consult student handbook.

Lab

Attendance is <u>required in all</u> lab sessions.

You are responsible for coming prepared for performing the lab. Pre-lab reading and assignments must be completed.

There will be no drop labs. All labs must be performed.

Lab reports are due within the prescribed time. Late reports are not accepted.

Unpreparedness and unsafe behavior in the lab will result in immediate expulsion from the lab.

Plagiarism on a lab report will not be tolerated; any such event will be documented and will be dealt with a harsh penalty; at minimum, with a failing grade in the lab.

What is unprofessional behavior?

Consistent late arrival, leaving the class early, disruptiveness by devices, eating food, drinking beverages, leaving to the restroom, general disruptive behavior due to not studying prior to class and other general disruptive behavior generally emanating from unpreparedness will be considered unprofessional and is strongly discouraged.

What constitutes cheating / plagiarism?

The use of notes, books and any other resources such as programmable calculators with stored information during the exam, copying from another student during a test, submitting work without proper citation of source, submitting lab reports where information is lifted from another person's work (present or past), shared pre-lab write-ups. A student can become an unwilling participant in the cheating process by not being careful to cover the test so that a neighbor would not cheat. Whether you are a willing or an unwilling participant, the penalties are the same!

XI. University Policies

Students should visit <u>http://www.nova.edu/academic-affairs/nsu-syllabus-policy.html</u> 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 <u>http://www.nova.edu/disabilityservices</u>.

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. <u>http://www.nova.edu/tutoring-testing/index.html</u>