STARK STATE COLLEGE

GENERAL SYLLABUS

Course Information

Course Name: Organic Chemistry II
Course Number: CHM242

Required Materials

Textbook(s): (1) **Organic Chemistry** 10th ed. By John McMurry. Free access here and in BrightSpace: Organic Chemistry: A Tenth Edition - OpenStax
(2) **Organic Chemistry Lab Techniques by Lisa Nichols**. Free access here and in Brightspace: Organic Chemistry Lab Techniques (Nichols) - Chemistry LibreTexts

Required Readings: **Online HW:** Chem21Labs for online HW and timed quizzes

Additional Materials: **Lab Manual**: Christie and Padias, "Organic Chemistry Manual 2016-17", Hayden-McNeil, New York, ISBN: 978-0-7380-8920-1. **Lab notebook:** Scientific laboratory notebook with carbonless duplicate pages from bookstore (preferred). CHM241 notebook may be used **Calculator:** scientific calculator such as the as the "TI-30X IIs." Cell phones will not be permitted during assessments. **Splash-proof Safety Googles and Lab Coat (Mandatory and may be purchased at the bookstore) Molecular model set:** May be purchased new or used (recommended Molymod MMS-008 Organic Chemistry Molecular Model, Student Set (50 atom parts)) or can be borrowed during the course on a first-come, first-served basis. **ChemDraw Software:** License will be provided

Course Outline/Calendar

The date of coverage and order of coverage may be modified based on the faculty member and events beyond the control of faculty members that interfere with class times and teaching.

Week	Chapter/Topic/Lab
1	Syllabus Chapter 16 Aromatic Compounds
1	Chapter 16 Aromatic Compounds
2	Chapter 17 Reactions of Aromatic Compounds
3	Chapter 17 Reactions of Aromatic Compounds
3	Review for Exam 1
4	**Exam I (Chapters 16 & 17)**
4	Chapter 18 Ketones and Aldehydes
5	Chapter 18 Ketones and Aldehydes
5	Chapter 19 Amines
6	Chapter 19 Amines
6	Chapter 19 Amines
7	**Exam II (Chapters 18 & 19)**
7	Chapter 20 Carboxylic Acids
8	Chapter 20 Carboxylic Acids
8	Chapter 21 Carboxylic Acid Derivatives
9	Chapter 21 Carboxylic Acid Derivatives
9	Review Exam III
10	**Exam III (Chapters 20 & 21)**
10	Chapter 22 Condensation Rxns
11	Chapter 22 Condensation Rxns
11	Chapter 22 Condensation Rxns
12	Chapter 24 Amino Acids, Peptides and Proteins
12	Chapter 24 Amino Acids, Peptides and Proteins
13	Chapter 26 Polymers
13	Review Exam IV
14	**Exam IV (Chapters 22, 24 & 26)**
14	Review for ACS full year national exam
15	Review for CHM242 Final Exam
15	Review for CHM242 Final Exam
16	**Final Exam Part 1 CHM242 Final Exam**

Laboratory Schedule:

Week	Experiment Number and Name	Description
1		• Safety training and model kit check out • Spectroscopy review (2 handouts) • Acid / Base review (1 handout) • Resonance review (1 handout) • Record keeping and literature searches
2	5b Electrophilic Aromatic Substitution	• Perform nitration • Practice working with concentrated acids • Determine purity of the product
3	**Capstone Project Introduction**	• **Searching the chemical literature** • **Topic selection** • **Chemical abstracts research**
4	6b Aldehydes and ketones	• Identify unknowns • Run more specific aldehyde and ketone reactions
5	**Wk 5/6 Capstone Project**	• **Reaction proposals** • **Inventory check** • **Collecting and ordering supplies**
6	11b Synthesis of Methyl Orange	• Perform azo coupling • Observe interaction of dye with different fabrics • Learn about bleaching
7	9a Gas Chromatography (and MS) of FAMES	• Transesterification of unknown fat • Apply GC-MS analysis technique used in food industry • ID the fat based on GC-MS data
8	**Wk 7/8 Capstone Project**	• **Run reactions** • **Characterize products**
9	7b Grignard reaction	• **Final characterization if needed** • Make and handle water sensitive reaction mixtures • Use acid/base extraction in work up • Recrystallization
10	**Wk 9/10 Capstone Project**	• **Class presentation (15 min each)**
11	9b Aldol Condensation	• Perform free radical polymerization • Perform condensation polymerization
12	12b Polymerization	• Choose recrystallization solvents • ID product by IR and NMR
13	10b Multistep Synthesis	• Synthesis of tetraphenylcyclopentadienone • Perform 3 synthesis steps in sequence
14	**Lab Practical**	• Covers all experiments
15	**Final Exam Part 2 ACS National Exam**	• Covers all chapters