**Department of Chemistry Syllabus**

This syllabi is advisory only. For details on a particular instructor's syllabus (including books), consult the instructor's course page. For a list of what courses are being taught each quarter, refer to the Courses page. *Every instructor has prerogative to teach the course as they see fit and ultimately the instructor's syllabus supersedes all others.*

***CHE 118C: Organic Chemistry for Health and Life Sciences***

Approved:

Suggested Textbook: (actual textbook varies by instructor; check your instructor)

“Organic Chemistry, 7th Edition”, K.P.C. Vollhardt & N.Schore

 “ Study Guide/ Solution Manual, 7th Ed.”

 “Chemistry 118C Laboratory”

Suggested Schedule:

Week 1

Monday Chap. 19 19.1-2

Wednesday Chap. 19 19.3-6

Friday Chap. 19 19.7-10

Week 2

Monday Chap. 19 19.11-13

Wednesday Chap. 20 20.1-20.2

Friday Chap. 20 20.3-20.5

Week 3

Monday Chap. 20 20.6-20.7

Wednesday Chap. 20 20.8, 21.1

Friday Chap. 21 21.2-21.4

Week 4

Monday Chap. 21 21.5-21.7

Wednesday Chap. 21 21.8-21.10

Friday MIDTERM 1

Week 5

Monday Chap. 22 22.1-3

Wednesday Chap. 22 22.4-22.6

Friday Chap. 22 22.7-22.9

Week 6

Monday Chap. 22 22.10-11

Wednesday Chap. 23 23.1-23.2

Friday Chap. 23 23.3-23.4

Week 7

Monday Chap. 25 25.1-25.3

Wednesday Chap. 25 25.4-25.6

Friday Chap. 25 25.7-25.8

Week 8

Monday Chap. 25 25.7-25.8

Wednesday Chap. 24 24.1-2

Friday MIDTERM 2

Week 9

Monday Chap. 24 24.3-24.5

Wednesday Chap. 24 24.6-24.9

Friday Chap. 26 24.10-12

Week 10

Monday Chap. 26 26.5-26.9

Final

Lab Schedule

Week 1 Check-in. NMR Review

 Expt. 1: Synthesis of Benzocaine

Week 2 Expt. 2: Synthesis of Benzilic Acid

Week 3 Expt. 3: Synthesis of Dilantin

Week 4 Expt. 4: Synthesis of Acetominophen

Expt. 5: Coenzyme Synthesis of Benzoin (start)

Week 5 Expt. 5: Coenzyme Synthesis of Benzoin (end)

 Expt. 6: Synthesis of Methyl Orange

Week 6 Expt. 7: Cu2+ Oxidation of Benzoin

Week 7 Expt. 8: Glucose Pentaacetate

Week 8 Expt. 9: Carbohydrates

Week 9 Expt. 10: Amino-Acid Paper Chromatography

 Check out.

Additional Notes:

Prerequisite: course 118B or courses 128B and 129A. Open to students changing from the Chemistry 128 course sequence only if they have completed prior organic laboratory work (at least course Chemistry 129A)

Learning Goals:

Upon completion of this course students should be able to:

Name compounds containing carboxylic acids, carboxylic acid derivatives (e.g. esters, acid halides, anhydrides, and amides) and/or amines using the IUPAC system and recognize the common names of everyday molecules.

Understand and explain the reactions of carboxylic acids and carboxylic acid derivatives including product determination, reagents used in reactions, and mechanisms such as hydroboration and electrophilic addition to and alkene.

Understand and explain the reactions of amines including product determination, reagents used in reactions and mechanisms such as alkylation, reductive amination, Hofmann elimination, and nitrosylation.

Understand and explain the reactions of benzene substituents including product determination, reagents used in reactions and mechanisms for phenol chemistry, benzylic redox chemistry, and diazonium reactions

Understand and explain the reactions adjacent to an ester carbonyl including product determination, reagents, and mechanisms such as Claisen condensations and enolate reactions.

Describe and identify carbohydrates, their reactions and properties including: D vs. L, anomers, redox reactions, derivatization, glycosides, monosaccarides, disaccarides and polysaccarides.

Describe and identify heterocycles, their reactions and properties, including reactions and mechanisms of pyridine, benzopyridines, and non-aromatic alkaloids.

Describe and identify amino acids, peptides and protein chemistry including properties of aminoacids, synthesis of amino acids and peptides, protein sequencing, and protein synthesis.

Understand and explain the principles of IR, 1H NMR, and 13C NMR spectroscopy of carboxylic acids, carboxylic acid derivatives, and amines and to integrate this with spectroscopy from 118A and B to allow for identification of unknown compounds from their spectra.

Integrate reactions of carboxylic acids, carboxylic acid derivatives, benzene substituents and amines with reactions from 118A and B into multistep synthesis of target molecules.