CHEM 225
PRINCIPLES OF ORGANIC CHEMISTRY
COURSE OUTLINE

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Office hours: Tuesday (10 am-12 pm), Wednesday (10-11:30 am), Thursday (10 am-12 pm) or by appointment. Feel free to drop by and see if I am available!

Required Texts: *Introduction to Organic Chemistry*, *5th Edition* (William H. Brown, Thomas Poon; John Wiley & Sons, 2014)
Study Guide and Solutions Manual, *5th Edition* (Felix S. Lee)

Classes: MONDAY 11:15 AM – 12:05 PM, TUESDAY 1:15 – 2:05 PM, THURSDAY 12:15 – 1:05 PM (D Block)

Course Description: An introduction to organic chemistry. The course focuses on the properties and reactions of common classes of organic compounds; the relationship between the structures of organic compounds and their physical and chemical properties and the corresponding reaction mechanisms are also covered. Prerequisite: CHEM 100 or 120.

Course Information: Any applicable course information, including copies of lectures, answer keys (assignments and midterms) suggested practice problems and tips for studying for the final exam can be found on the Moodle course site. The lectures for this course will be a combination of PowerPoint and classic blackboard lectures. "Chalk talks" will become more prevalent as we dive into the reaction mechanisms of each organic functional group. It is strongly suggested that you take your own notes of blackboard topics to follow wherever possible and please remember to feel free and stop me if you do not understand a step of ***ANY*** given reaction mechanism.

Assignments: There will be 6 assignments given throughout the semester (see schedule below). In order to succeed in all aspects of the course, it is essential that you stay up to date on the suggested practice problems and readings. Assignments will be distributed the week before the due date. Late assignments will be charged with a 10% penalty per day, up to a maximum of 5 days.

Laboratory: Thursday 2:15-5:15 PM or FRIDAY 2:15-5:15 PM, Physical Sciences 2010. *Absence from 3 or more laboratories will result in an automatic failure for this component and, by default, the course.*
Lab manuals are on sale the first week of classes. Safety goggles, lab coats and proper footwear are REQUIRED.

Academic Integrity: St. FX has very strict policies regarding plagiarism and cheating. Details on these official policies can be seen in the ***Policy on Academic Integrity***:
http://sites.stfx.ca/registrars_office/academic_integrity

Mark Calculation – (for a total of 100%)

Scheme 1

Midterm #1 (Oct. 20)	15%
Midterm #2 (Nov. 17)	15%
Assignments	15%
Laboratory	15%
Final Exam (set by Registrar)	40%

Scheme 2

Best Midterm (1 or 2)	30%
Assignments	15%
Laboratory	15%
Final Exam (set by Registrar)	40%

Scheme 3

Assignments	15%
Laboratory	15%
Final Exam (set by Registrar)	70%

Every student's grade will be calculated using the three marking schemes presented above. The marking scheme that provides the student with the best overall course grade will be used in final grade submission. ***PLEASE NOTE – YOU MUST PASS THE CLASSROOM AND LABORATORY COMPONENTS SEPARATELY TO RECEIVE A PASSING GRADE IN THIS COURSE.*** This means that if you obtain a failing grade in either the classroom or laboratory portions in any of the grading schemes you will automatically receive an overall failing final grade – no exceptions! If you feel you are struggling, please drop by and see me. Do not wait until before the final exam. The faster we get you back on track, the more successful you will be and your mark will reflect this effort.

Statement on Equitable Learning Environment: Everyone learns more effectively in a respectful, safe and equitable learning environment free from discrimination or harassment. These values and practices are in accord with the *StFX Discrimination and Harassment Policy, which* can be found at **http://www.mystfx.ca/campus/stu-serv/equity/**. Please feel free to discuss with me any questions or concerns you have about equity in our classroom or any individual learning requirements.

Accessible Learning: St. FX strives to provide an adequate learning environment for all of its students. Should you feel that you require special learning privileges, please feel free to visit **http://sites.stfx.ca/accessible_learning/** or come see me to discuss your options (written documentation will be requested from the Centre for Accessible Learning).

Lecture Topics and Dates:

Dates	*Chapters*	*Topics to be discussed*
Sept. 8, 10, 14	1 – Covalent Bonding and Shapes of Molecules	Electron configuration, lewis model, resonance, VSEPR model, intro to functional groups
Sept. 15, 17	2 – Acids and Bases	Brønsted acid/base theory, lewis acid/bases, predicting acidity via molecular structure, using curved arrows to show the transfer of a proton
Sept. 21, 22, 24, 28	3 – Alkanes and Cycloalkanes	Line/angle structures, alkanes, constitutional isomers, cycloalkanes, nomenclature, Newman projections, chair conformations, cis/trans isomers
Sept. 29, Oct. 1	4 – Alkenes and Alkynes	Nomenclature, structures/Shapes of alkenes/alkynes, cycloalkenes, special nature of terminal alkynes
Oct. 5, 6, 8, 13	5 – Reactions of Alkenes and Alkynes	What is a reaction mechanism, common patterns in reaction mechanisms, carbocations and rearrangements, alkene mechanisms (electrophilic additions, hydration, addition of bromine/chlorine, hydroboration, reduction to alkanes), alkyne mechanisms (reduction to alkenes/alkanes, C-C bond formation, addition reactions)
Oct. 19	Midterm #1 Review	Come with questions and use the time wisely!
Midterm 1: Oct 20 (Ch 1-5 inclusive)		
Oct. 15, 22, 26	6 – Chirality: The Handedness of Molecules	Stereocenters, enantiomers, diastereometers, 2n rule, R/S configs, chirality of cyclic molecules with multiple stereocenters, stereoisomer properties, meso compounds
Oct. 27, 29, Nov. 1	7 – Haloalkanes	Nomenclature, substitution and elimination reactions

Nov. 3, 5, 9	8 – Alcohols, Ethers and Thiols	What are alcohols, ethers and thiols, Nomenclature, characteristic reactions of alcohols and thiols, epoxides, alcohol dehydration, epoxide reactions, ether synthesis from alkenes
Nov. 10, 19	9 – Benzene and its Derivatives	Benzene/aromaticity, benzylic/phenolic compounds, electrophilic aromatic substitution
Nov. 16	Midterm #2 Review	Come prepared and make use of this time!
Nov. 17 – Midterm #2 (Chapters 5-9 inclusive)		
Nov. 23, 24	12 – Aldehydes and Ketones	Reaction themes between functional groups, Gringnard reactions, reaction with amines, How are aldehydes/ketones oxidized and reduced, keto-enol tautomerization
Nov. 26, 30	13 – Carboxylic Acids	Acid/base properties, Fisher esterification, decarboxylation
Dec 2, 3	Flex Days	

Midterm/Assignment Dates:

Sept. 24, 2015: Assignment #1 Due
Oct. 8, 2015: Assignment #2 Due
Oct. 15, 2015: Assignment #3 Due
Oct. 20, 2015: Midterm #1 (will cover material discussed up to and including Oct. 13)
Oct. 29, 2015: Assignment #4 Due
Nov. 10, 2015: Assignment #5 Due
Nov. 17, 2015: Midterm #2 (will cover material discussed up to and including Nov. 10)
Nov. 26, 2015: Assignment #6 Due