

CAPILANO UNIVERSITY COURSE OUTLINE	
Term: FALL 2016	Course No. CHEM 252
Course: INTRODUCTION TO ORGANIC CHEMISTRY FOR ENGINEERS	Credits: 3.0 Section:
Office: Tel: email:	

COURSE FORMAT: Three hours of class time, plus an additional hour of supplemental activity delivered through on-line or other activities for a 15 week semester, which includes two weeks for final exams.

PRE-REQUISITES: CHEM 111

NOTES: This is an approved Quantitative/Analytical course for baccalaureate degrees.

COURSE OBJECTIVES:

General:

To develop an understanding of organic chemistry with emphasis on numerous engineering processes.

Student Learning

Outcomes:

On completion of the course, the successful student should be able to:

- Identify and use the nomenclature of a variety of organic compounds
- Recognize, name and draw numerous functional groups
- Demonstrate an understanding of the relationship between the physical and chemical properties of a compound and its structure
- Identify enantiomers, diastereomers and meso compounds
- Predict the products that form from common organic chemistry reactions and their reaction conditions
- Demonstrate an understanding of the concepts of structure and bonding by drawing reaction mechanisms
- Demonstrate an understanding of how common polymers are synthesised and what catalysts are used in their formation

REQUIRED COURSE MATERIALS:

Textbook:

Solomons, T.W.G and Craig Fryhle. Organic Chemistry.

11th ed. John Wiley & Sons Publishers, 2011.

Capilano University Chemistry 200/201 Laboratory Manual and Student Laboratory Guide.

Additional material: Solomons, T.W.G. and Craig Fryhle. Organic Chemistry: Study Guide and Solutions Manual for Organic Chemistry. 11th ed. John Wiley & Sons Publishers, 2011.

Organic Chemistry model kit (any variety)

COURSE CONTENT:

Topic	Weeks (approx)
Review: A review of Lewis dot structures, hybridization, formal charges, resonance, equilibrium and pKa values.	2
Alkanes and Stereochemistry: IUPAC nomenclature, functional groups, conformational analysis, cis and trans geometry, torsional, steric and angle strain, chairs, enantiomers, R and S, diastereomers, meso compounds	1
Alkyl Halides: S_N1 , S_N2 , E1 and E2 reactions, mechanisms, reaction profiles and intermediates	1
Alkenes: Structure, nomenclature, electrophilic addition, Markovnikov rule, reactions of alkenes with application to industrial processes especially polymerizations	1
Aromatic Compounds: Aromatic stability, electrophilic aromatic substitution, reactions of benzene and other aromatic compounds	2
Alcohols, Aldehydes and Ketones: Oxidation and reduction reactions, Grignard reactions, acetal formation and carbohydrates	2
Carboxylic acids: Preparation and reactions of carboxylic acids and their derivatives; amides, esters and their polymers	2
Organometallic Chemistry: Catalytic hydrogenation of alkenes and alkynes; hydride reductions of carbonyl compounds, coupling reactions, industrial uses	1
Polymer Chemistry: Types of organic polymers, polymerization processes, cross-linking, properties of surfactants and detergents, industrial uses	1
Final Exam Period	2

EVALUATION PROFILE:

Final grades for the course will be computed based on the following schedule:

Term Tests (2)	40%
Quizzes/Assignments	15%
Final Examination	35%
Performance Evaluation	10%
TOTAL	100%

PERFORMANCE EVALUATION:

In the absence of exceptional circumstances, which are at the instructor's discretion, the performance evaluation component of the final grade will be prorated to the rest of the grade. For example, a 10% performance evaluation component would be determined by dividing the remaining mark out of 90 by 9. The most common circumstance justifying an increased performance evaluation mark is a student's improved performance in the final examination relative to the midterm exam(s), which the instructor feels justifies an elevated letter grade.

SUPPLEMENTAL 4TH HOUR ACTIVITY:

Supplemental activity might be a scheduled tutorial, an on-line activity, a group meeting, or some other activity as indicated by your instructor.

GRADING PROFILE: Letter grades will be assigned according to the following guidelines:

A+ 90 - 100%	B+ 77 - 79%	C+ 67 - 69%	D 50 - 59%
A 85 - 89%	B 73 - 76%	C 63 - 66%	F 0 - 49%
A- 80 - 84%	B- 70 - 72%	C- 60 - 62%	

Students should refer to the University Calendar for the effect of the above grades on grade point average.

OPERATIONAL DETAILS:

University Policies: Capilano University has policies on Academic Appeals (including appeal of final grade), Student Conduct, Cheating and Plagiarism, Academic Probation and other education issues. These and other policies are available on the University website.

Attendance: The student is responsible for all information given in the lectures and laboratories, including times of examinations and assignment deadlines.

Missed Exams:

Normally, a score of zero will be given for a missed exam, test, quiz, lab, etc. In some exceptional situations, the student will be permitted to write a make-up test, defer the lab to a later date or to replace the score by other marks.

The situations in which a score of zero may be avoided are those for which the student meets **all** of the following conditions:

1. Circumstances are beyond the control of the student which resulted in the exam, test, quiz, lab, etc. to be missed. Such circumstances include serious illness or injury, or death of close family member. They do **NOT** include forgetting about

the test, lack of preparation for the test, work-related or social obligations.

2. The student has notified the instructor (or the Pure and Applied Science office staff, if the instructor is not available) about the missed exam, test, quiz, lab, etc. Such notification **MUST** occur in advance, if possible, or at the latest, on the day of the exam, test, quiz, lab, etc.
3. Proof of the circumstances must be provided. Proof of illness or injury requires a note from a doctor, who may also be consulted.
4. The student has been fully participating in the course up until the circumstances that prevented the writing of the exam, test, quiz, lab, etc. **Fully participating means attending almost all classes and turning in almost all assignments in the course.**

The options offered to the student who meets the four conditions are decided by the instructor. They will not necessarily meet the convenience of the student.

Final Exam Period:

Students should note that the final exam period is from **?? to ?? (includes Saturday, ??)**, and that they can expect to write exams at any time during this period. Individual exam times will not normally be rescheduled because of holidays, work, or other commitments. While efforts are made to spread exams throughout the exam period, an individual's particular course combination may result in exams being scheduled close together, or spread widely through the entire exam period.

Cheating/Plagiarism:

Students caught cheating on a test will normally receive a grade of "F" on the course and may be expelled from the University. Plagiarism (including the copying of any part of assignments, laboratory reports, and essays) is a serious offence and is a form of cheating.

Incomplete Grades:

Incomplete grades ("I") are given only when special arrangements have been agreed upon with the instructor prior to the end of the semester. Since "I" grades are granted only in exceptional circumstances (usually health problems), their occurrence is rare. A student receiving an "I" grade should see the instructor.

English Usage:

Students are expected to use correct standard English in their written and oral assignments, exams, presentations and discussions. Failure to do so may result in reduced grades in any part of the Evaluation Profile. Please refer to the guidelines provided in the Capilano Guide to Writing Assignments (available from the University bookstore).

Emergency Procedures:

Please read the emergency procedures posted on the wall of the classroom.