



UNIVERSITY OF CALGARY

DEPARTMENT OF CHEMISTRY COURSE OUTLINE WINTER 2015

1. Course: CHEMISTRY 357, Industrial Organic Chemistry for Engineers

Lecture Sections:

L01: MWF, 11:00-11:50am, MFH 162, Instructor: Dr. A.S. Causton, Office: SA 144A, Tel. No.: 403-210-3968, e-mail address: acauston@ucalgary.ca, Office Hours: TBA.

Tutorials: See your timetable, SA 204, start week of Jan. 19th.

Departmental Office: SA 109, 220-5341, uginfo@chem.ucalgary.ca

2. Prerequisites: Chemistry 209. <http://www.ucalgary.ca/pubs/calendar/current/chemistry.html#6509>

3. Grading: The University policy on grading and related matters is described sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Midterm Test (In class on Friday 6th March)	25%
Coursework	25%
Final Exam (April date scheduled by registrar)	50%
Total	100%

The marks for each of the course components will be recorded as numerical scores and combined as shown above to arrive at the total numerical score which will then be converted to the letter grade that will be reported to the Registrar. In assigning the final course letter grade, the following scale will be used:

A+ 90 A 85 A- 80 B+ 75 B 70 B- 65 C+ 60 C 55 C- 50 D+ 45 D 40 F

Notes:

- A minimum 50% on the Final examination **or** a minimum 50% weighted average on the examinations (midterm and final) **is required** in order to satisfy prerequisite requirements (*i.e.* if a student scores below 50% in the examinations, then the maximum grade they can obtain in CHEM 357 is a D+).
- The coursework mark is based on the best score in five out of six equally weighted components: Five equally weighted quizzes (written under exam conditions during tutorial time), and one equally weighted classroom participation score that is generated using a "clicker" to respond to questions.

4. Missed Components of Term Work: The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in [Section 3.6](#). It is the student's responsibility to familiarize himself/herself with these regulations. See also [Section E.6](#) of the University Calendar

5. Suggested Course Materials: Organic Chemistry Principles in Context by Mark M. Green, 2012, ScienceFromAway Publishing. Any "introduction to organic chemistry" text book (and accompanying study guide). Molecular model kit.

Online Course Components: Lecture material and past exams will be posted on the D2L site. Online assignment and self-assessment material is administered through a MOODLE site. There is also an e-text organic chemistry site (<http://www.chem.ucalgary.ca/courses/351/Carey5th/Carey.html>) which may be useful.

6. Examination Policy Model kits and non-programmable calculators are allowed in examinations but **no other aids** such as "cheat" or "data" sheets. Students should also read the Calendar, [Section G](#), on Examinations, subjects or researchers. See also [Section E.5](#) of the University Calendar.

7. OTHER IMPORTANT INFORMATION FOR STUDENTS:

- (a) **Academic Misconduct:** (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties
- (b) **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).
- (c) **Academic Accommodation Policy:** Students with documentable disabilities are referred to the following links: [Calendar entry on students with disabilities](#) and [Student Accessibility Services](#).
- (d) **Safewalk:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- (e) **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also <http://www.ucalgary.ca/secretariat/privacy>.
- (f) **Student Union Information:** VP Academic Phone: 220-3911 Email: suvpaca@ucalgary.ca.
SU Faculty Rep. Phone: 220-3913 Email: sciencerep@su.ucalgary.ca; [Student Ombudsman](#)
- (g) **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.
- (h) At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference - please participate in USRI Surveys.

Department Approval: Approved by Department Head

Date: December 2, 2014

Outcome Goals of CHEM 357 *Industrial Organic Chemistry for Engineers*:

- To develop an understanding of fundamental concepts of organic chemistry
- Understand how the properties of an organic material are linked to its structure

Major topics covered include:

Basic Organic Nomenclature and Terminology

Chemical Bonding

Isomerism

Physical Properties (intermolecular forces and conformational analysis)

Kinetics, Thermodynamics & Equilibrium

Curly Arrows & Reaction Mechanisms including:

- Radical reactions
- Acid base chemistry
- Addition reactions
- Substitution reactions
- Elimination reactions
- Aromatic substitution reactions

Polymers

- Types of synthetic polymers
- Selected reactions of:
 - Alcohols, phenols & thiols
 - Ethers & epoxides
 - Carbonyl containing compounds
 - Amines & other nitrogen containing compounds