ORIGINAL COURSE IMPLEMENTATION DATE:	September 1993
REVISED COURSE IMPLEMENTATION DATE:	September 2019
COURSE TO BE REVIEWED (six years after UEC approval)**:**	October 2024

Course outline form version: 10/27/2017

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: CHEM 311

Number of Credits: 4 Course credit policy (105)

Course Full Title: Intermediate Organic Chemistry I

Course Short Title: Intermediate Organic Chem. I

(Transcripts only display 30 characters. Departments may recommend a short title if one is needed. If left blank, one will be assigned.)

Faculty: Faculty of Science

Department (or program if no department): CHEMISTRY

Calendar Description:

An intermediate-level organic chemistry course involving a detailed study of the influence chemical structure has on reaction outcomes. Covers stereoelectronics, stereoselectivity in ring systems, and diastereoselectivity in detail, and introduces more contemporary knowledge topics such as organometallic synthesis.

Prerequisites (or NONE):	CHEM 213 and CHEM 214.
Corequisites (if applicable, or NONE):	NONE
Pre/corequisites (if applicable, or NONE):	

Antirequisite Courses *(Cannot be taken for additional credit.)*

Former course code/number:

Cross-listed with:

Dual-listed with:

Equivalent course(s):

(If offered in the previous five years, antirequisite course(s) will be included in the calendar description as a note that students with credit for the antirequisite course(s) cannot take this course for further credit.)

Typical Structure of Instructional Hours

Lecture/seminar hours	45
Tutorials/workshops	
Supervised laboratory hours	45
Experiential (field experience, practicum, internship, etc.)	
Supervised online activities	
Other contact hours: Exams	
Total hours	**90**

Labs to be scheduled independent of lecture hours: ☐ No ☒ Yes

Special Topics

This course is offered with different topics:

☒ No ☐ Yes *(Double-click on box to select it as checked.)*

If yes, different lettered courses may be taken for credit:

☒ No ☐ Yes, repeat(s) ☐ Yes, no limit

(The specific topic will be recorded when offered.)

Transfer Credit

Transfer credit already exists: *(See **bctransferguide.ca**.)*

☒ No ☐ Yes

Submit revised outline for rearticulation:

☐ No ☒ Yes *(If yes, fill in transfer credit form.)*

Grading System

☒ Letter Grades ☐ Credit/No Credit

Expected Frequency of Course Offerings:

Every other year

(Every semester, Fall only, annually, every other Fall, etc.)

Department / Program Head or Director: Dr. Cory Beshara	**Date approved:**	May 18, 2018
Faculty Council approval	**Date approved:**	September 7, 2018
Dean/Associate VP: Dr. Lucy Lee	**Date approved:**	September 7, 2018
Campus-Wide Consultation (CWC)	**Date of posting:**	n/a
Undergraduate Education Committee (UEC) approval	**Date of meeting:**	October 26, 2018

Learning Outcomes:

Upon successful completion of this course, students will be able to:

1. Utilize chemical models and theory to approach a multi-faceted problem in organic synthesis.
2. Use resources to apply the basic principles underlying organic chemistry and apply them to new situations using a systematic and logical approach (e.g., in reaction syntheses).
3. Perform laboratory syntheses and analyses with care, precision, and confidence
4. Produce laboratory procedures independently.
5. Extrapolate information obtained in class sessions into the laboratory.
6. Describe the usefulness of organometallic reagents in their very broad applicability.

Prior Learning Assessment and Recognition (PLAR)

☒ Yes ☐ No, PLAR cannot be awarded for this course because

Typical Instructional Methods *(Guest lecturers, presentations, online instruction, field trips, etc.; may vary at department's discretion.)*

Presentation of the course will be by inter-related class (theory), seminar, and laboratory sessions. Class sessions will promote active student participation to ensure continual mutual feedback in order to reinforce the learning process. Problem assignments will be continually given. Some selected problems will be collected and marked.

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Typical Text(s) and Resource Materials *(If more space is required, download Supplemental Texts and Resource Materials form.)*

	Author (surname, initials)	Title (article, book, journal, etc.)	Current ed.	Publisher	Year
1.	Clayden, J.; Greeves, N.; Warren, S.	Organic Chemistry 2nd edition	☒	Oxford Univ. Press	2012
2.			☐		
3.					
4.			☐		
5.			☐		

Required Additional Supplies and Materials *(Software, hardware, tools, specialized clothing, etc.)*

Typical Evaluation Methods and Weighting

Final exam:	35%	Assignments:	15%	Field experience:	%	Portfolio:	%
Midterm exam:	30%	Lab Work	20%	Practicum:	%	Other:	%
Quizzes/tests:	%	Term Paper:	%	Presentation:	%	Total:	100%

Details (if necessary):

Typical Course Content and Topics

Chemoselectivity: Clayden
Allows for a review while learning a new concept (chemoselectiity).

Saturated heterocycles and stereoelectronics
An introduction to Baldwin's Rules and an exploration of molecular orbital geometries that arise to explain this empirically derived paradigm.

Stereoselectivity in cyclic molecules
A study of molecular shape the effect of shape on transition state energies. Students learn in finer detail what stereoselectivity is and various conformational analysis methods to visualize this issue.

Diastereoselectivity
Students will be exposed to the effect a proximal stereocenter will have on a reaction site. Students will be introduced to Cram's Rule, Felkin/Ahn's re-interpretation, and the chelate rule. Time permitting, students will also study assymetic synthesis through utility of the CBS reagent and the production of diastereomeric transition states in reactions involving molecules with no stereocenters.

Organometallic chemistry
Students will explore Pd-catalyzed carbon-carbon bond formation and discover its near ubiquitous use in contemporary synthesis.