UNIVERSITY OF THE FRASER VALLEY

ORIGINAL COURSE IMPLEMENTATION DATE: January 2004
REVISED COURSE IMPLEMENTATION DATE: September 2019
COURSE TO BE REVIEWED (six years after UEC approval)**:** October 2024
Course outline form version: 05/18/2018

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

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

Course Code and Number: CHEM 214 | **Number of Credits:** 4 Course credit policy (105)

Course Full Title: Organic Chemistry II
Course Short Title:
(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:

Continues the systematic examination of the reactions of common functional groups that were featured in CHEM 213. Aromatic compounds including phenols, carbonyl condensation reactions, carboxylic acids, and their derivatives are studied. Spectroscopy is studied and the importance of spectroscopic techniques in the analysis of organic compounds is emphasized.

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

Antirequisite Courses *(Cannot be taken for additional credit.)*
Former course code/number: **CHEM 212**
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	39
Experiential (field experience, practicum, internship, etc.)	
Supervised online activities	
Other contact hours:	
Total hours	**84**

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

Special Topics *(Double-click on boxes to select.)*
This course is offered with different topics:
☒ No ☐ Yes *(If yes, topic will be recorded when offered.)*

Independent Study
If offered as an Independent Study course, this course may be repeated for further credit: *(If yes, topic will be recorded.)*
☒ No ☐ Yes, repeat(s) ☐ Yes, no limit

Transfer Credit
Transfer credit already exists: *(See **bctransferguide.ca**.)*
☐ No ☒ Yes
Submit outline for (re)articulation:
☐ No ☒ Yes *(If yes, fill in transfer credit form.)*

Grading System
☒ Letter Grades ☐ Credit/No Credit

Maximum enrolment (for information only): 24

Expected Frequency of Course Offerings:
at least once a year *(Every semester, Fall only, annually, 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. Apply prerequisite knowledge of molecular structure and bonding to describe the properties and reactivities of organic molecules.
2. Describe the characteristic properties, reactivities and syntheses of aromatic, carbonyl, acyl derivatives and amines.
3. Determine the structure of a molecule based on its spectroscopic data.
4. Design reasonable synthetic reaction sequences to produce given target molecules.
5. Describe selected examples of relevance of organic chemistry in biochemistry, medicine, and the environment.
6. Perform multi-step synthetic lab experiments.
7. Characterize the products using modern spectroscopic techniques.

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) and laboratory sessions. Class sessions will promote active student participation to ensure continual mutual feedback in order to reinforce the learning process. YouTube and other internet resources will be used where appropriate. Problem assignments will be continually given. Some selected problems may 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.	Klein, David	Organic Chemistry, 3rd edition	☒	Wiley	2017
2.			☐		
3.			☐		
4.			☐		
5.			☐		

REFERENCES:

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

Laboratory supplies required. Students are encouraged to purchase a set of molecular models.

Typical Evaluation Methods and Weighting

Final exam:	40%	Assignments:	5%	Field experience:	%	Portfolio:	%
Midterm exams:	30%	Project:	%	Practicum:	%	Other:	%
Quizzes/tests:	5%	Lab reports and techniques:	20%	Shop work:	%	Total:	100%

Details (if necessary):

Typical Course Content and Topics

Spectroscopy and Structure Determination

IR Spectroscopy
^{1}H NMR

Nucleophilic Addition to Carbonyl Compounds

Acyl Substitution/Acyl Transfer

Reactions at the α-Carbon of Carbonyl Compounds

Chemistry of Aromatic Compounds

Representative Experiments:

1. Diels-Alder Reaction
2. Multi-step synthesis of 4-Iodo-benzene
3. Synthesis of aspirin from oil of wintergreen
4. Aldol reaction