



ORIGINAL COURSE IMPLEMENTATION DATE: September 2000  
 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.**

<b>Course Code and Number:</b> CHEM 409	<b>Number of Credits:</b> 6 <a href="#">Course credit policy (105)</a>														
<b>Course Full Title:</b> Undergraduate Research in Chemistry <b>Course Short Title:</b> Undergraduate Research in Chem <i>(Transcripts only display 30 characters. Departments may recommend a short title if one is needed. If left blank, one will be assigned.)</i>															
<b>Faculty:</b> Faculty of Science	<b>Department (or program if no department):</b> Chemistry														
<b>Calendar Description:</b> Students pursuing a major in chemistry will complete a research project designed in consultation with a supervisor.  Note: This course is intended to be completed during the fourth year of study, and can be completed in either one or two semesters.															
<b>Prerequisites (or NONE):</b>	B or better in three 300-level chemistry courses and permission of the department head.														
<b>Corequisites (if applicable, or NONE):</b>	NONE														
<b>Pre/corequisites (if applicable, or NONE):</b>	NONE														
<b>Antirequisite Courses</b> <i>(Cannot be taken for additional credit.)</i> Former course code/number: Cross-listed with: Dual-listed with: Equivalent course(s): <i>(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.)</i>	<b>Special Topics</b> This course is offered with different topics: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <i>(Double-click on box to select it as checked.)</i>  If yes, different lettered courses may be taken for credit: <input type="checkbox"/> No <input type="checkbox"/> Yes, repeat(s) <input type="checkbox"/> Yes, no limit <i>(The specific topic will be recorded when offered.)</i>														
<b>Typical Structure of Instructional Hours</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Lecture/seminar hours</td><td></td></tr> <tr><td>Tutorials/workshops</td><td></td></tr> <tr><td>Supervised laboratory hours</td><td></td></tr> <tr><td>Experiential (field experience, practicum, internship, etc.)</td><td></td></tr> <tr><td>Supervised online activities</td><td></td></tr> <tr><td>Other contact hours: Self-directed learning</td><td style="text-align: center;">180</td></tr> <tr><td style="text-align: right;"><b>Total hours</b></td><td style="text-align: center;"><b>180</b></td></tr> </table>	Lecture/seminar hours		Tutorials/workshops		Supervised laboratory hours		Experiential (field experience, practicum, internship, etc.)		Supervised online activities		Other contact hours: Self-directed learning	180	<b>Total hours</b>	<b>180</b>	<b>Transfer Credit</b> Transfer credit already exists: <i>(See <a href="http://bctransferguide.ca">bctransferguide.ca</a>.)</i> <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes  Submit outline for (re)articulation: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <i>(If yes, fill in transfer credit form.)</i>
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Other contact hours: Self-directed learning	180														
<b>Total hours</b>	<b>180</b>														
	<b>Grading System</b> <input checked="" type="checkbox"/> Letter Grades <input type="checkbox"/> Credit/No Credit														
Labs to be scheduled independent of lecture hours: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	<b>Expected Frequency of Course Offerings:</b> Every semester <i>(Every semester, Fall only, annually, every other Fall, etc.)</i>														
<b>Department / Program Head or Director:</b> Dr. Cory Beshara	<b>Date approved:</b> May 18, 2018														
<b>Faculty Council approval</b>	<b>Date approved:</b> September 7, 2018														
<b>Dean/Associate VP:</b> Dr. Lucy Lee	<b>Date approved:</b> September 7, 2018														
<b>Campus-Wide Consultation (CWC)</b>	<b>Date of posting:</b> n/a														
<b>Undergraduate Education Committee (UEC) approval</b>	<b>Date of meeting:</b> October 26, 2018														

**Learning Outcomes:**

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

- Carry out a literature search on their chosen research topic.
- Formulate a written research proposal in which the rationale for their choice of research topic is presented.
- Perform the necessary experimental work and/or use the relevant computer software in order to complete the project in a timely, safe, and effective manner.
- Handle all necessary equipment and chemicals in a safe and effective manner.
- Master any specific techniques required to complete the chosen project.
- Produce a written report on their research, written in a clear and scholarly way, and in the style of a major scientific journal.
- Present the results of their research by means of a seminar or other form of presentation approved by the supervisor and department head.

**Prior Learning Assessment and Recognition (PLAR)**

Yes       No, PLAR cannot be awarded for this course because there is no way to standardize the content of the course.

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

Student directed learning. The student will work closely with a faculty member who has expertise in the selected research area.

**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.*)

Students will be expected to access the chemical literature using online and/or traditional methods.

Author (surname, initials)	Title (article, book, journal, etc.)	Current ed.	Publisher	Year
1. Various	All relevant chemical journals	<input type="checkbox"/>	various	
2.		<input type="checkbox"/>		
3.		<input type="checkbox"/>		
4.		<input type="checkbox"/>		
5.		<input type="checkbox"/>		

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

All necessary laboratory materials and/or computing facilities will be provided.

**Typical Evaluation Methods and Weighting**

Final Report:	30 %	Assignments:	%	Field experience:	%	Portfolio:	%
Midterm exam(s):	%	Project:	%	Practicum:	%	Reports:	15%
Quizzes/tests:	%	Student Proposal	10%	Oral presentations:	45%	Total:	100%

**Details (if necessary):****Typical Course Content and Topics**

Course content varies by research project. The requirements of the individual project will be devised in consultation with the student's supervisor.