

# CHEMISTRY CO-OP (CHEM:C)

Department of Chemistry, College of Engineering and Physical Sciences

## Program Requirements

The Co-op program in Chemistry is a four and a half year program including four work terms. Students must follow the academic work schedule as outlined below (also found on the Co-operative Education website: <https://www.recruituelph.ca/cecs/>).

Chemistry Academic and Co-op Work Term Schedule

Year	Fall	Winter	Summer
1	Academic Semester 1	Academic Semester 2 COOP*1100	Off
2	Academic Semester 3	COOP*1000 Work Term I	Academic Semester 4
3	Academic Semester 5	Academic Semester 6	COOP*2000 Work Term II
4	COOP*3000 Work Term III	Academic Semester 7	COOP*4000 Work Term IV
5	Academic Semester 8	N/A	N/A

To be eligible to continue in the Co-op program, students must meet a minimum 70% cumulative average requirement after second semester, as well as meet all work term requirements. Please refer to the Co-operative Education program policy with respect to work term performance grading, work term report grading and program completion requirements.

For additional program information students should consult with their Co-op Co-ordinator and Co-op Faculty Advisor, listed on the Co-operative Education web site.

## Credit Summary

(22.00 Total Credits)

Code	Title	Credits
	First year science credits	4.50
	Required science courses semesters 3 – 8	7.25
	Restricted electives (#1 and 2 in restricted electives list)	3.00
	Approved science electives	1.25
	Liberal Education electives	1.00
	Free electives - any approved elective for B.Sc. students.	3.00
	Co-op Work Terms	2.00
	<b>Total Credits</b>	<b>22</b>

The recommended program sequence is outlined below.

## Major (Honours Program)

Students who are lacking one 4U /grade 12 course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The required first-year science courses in that subject should be completed according to the revised schedule of studies available at: [https://www.uoguelph.ca/bsc/revised\\_SS](https://www.uoguelph.ca/bsc/revised_SS) ([https://www.uoguelph.ca/bsc/revised\\_SS/](https://www.uoguelph.ca/bsc/revised_SS/))

Code	Title	Credits
<b>Semester 1 - Fall</b>		
BIOL*1090	Introduction to Molecular and Cellular Biology	0.50
CHEM*1040	General Chemistry I	0.50
IPS*1500	Integrated Mathematics and Physics I	1.00
	0.50 Liberal Education electives	0.50
<b>Semester 2 - Winter</b>		
CHEM*1050	General Chemistry II	0.50
COOP*1100	Introduction to Co-operative Education	0.00
IPS*1510	Integrated Mathematics and Physics II	1.00
MATH*1160	Linear Algebra I	0.50
BIOL*1070	Discovering Biodiversity	0.50
	or BIOL*1080 Biological Concepts of Health	
<b>Semester 3 - Fall</b>		
BIOC*2580	Introduction to Biochemistry	0.50
CHEM*2060	Structure and Bonding	0.50
CHEM*2400	Analytical Chemistry I	0.75
MATH*2270	Applied Differential Equations	0.50
	Electives to a maximum of 2.75 total credits in this semester <sup>2</sup>	0.50
<b>Winter Semester</b>		
COOP*1000	Co-op Work Term I	0.50
<b>Semester 4 - Summer</b>		
CHEM*2070	Structure and Spectroscopy	0.50
CHEM*2700	Organic Chemistry I	0.50
CHEM*3430	Analytical Chemistry II: Instrumental Analysis	0.50
	1.00 electives <sup>2</sup>	1.00
<b>Semester 5 - Fall</b>		
CHEM*2820	Thermodynamics and Kinetics	0.50
CHEM*3640	Chemistry of the Elements I	0.50
CHEM*3750	Organic Chemistry II	0.50
CHEM*3860	Quantum Chemistry	0.50
	0.50 electives <sup>2</sup>	0.50
<b>Semester 6 - Winter</b>		
CHEM*3650	Chemistry of the Elements II	0.50
CHEM*3760	Organic Chemistry III	0.50
	1.50 electives or restricted electives <sup>2,3</sup>	1.50
<b>Summer Semester</b>		
COOP*2000	Co-op Work Term II	0.50
<b>Fall Semester</b>		
COOP*3000	Co-op Work Term III	0.50
<b>Semester 7 - Winter</b>		
	2.50 electives or restricted electives <sup>2,3</sup>	2.50
<b>Summer Semester</b>		
COOP*4000	Co-op Work Term IV	0.50
<b>Semester 8 - Fall</b>		
CHEM*3440	Analytical Chemistry III: Analytical Instrumentation	0.50
	2.00 electives or restricted electives <sup>2,3</sup>	2.00

## 2 Chemistry Co-op (CHEM:C)

### 2

Selection of electives is subject to the following:

1. At least 1.00 credits of Liberal Education electives are required. The list of Liberal Education electives for B.Sc. students can be found at: <https://www.uoguelph.ca/bsc/>
2. Approval of the Faculty Advisor must be obtained for the selection of courses not listed as restrictive electives
3. Options for an "Area of Focus" or a minor are available. Subject areas include Biochemistry, Computing and Information Science, Earth Sciences, Environmental Sciences, Mathematical Sciences, and Physics. Please consult with your Faculty Advisor for more detail.

### 3

3.00 credits from the 3000/4000 level as follows:

1. 1.50 comprising of (CHEM\*3870 Molecular Spectroscopy or CHEM\*4880 Topics in Advanced Physical Chemistry), (CHEM\*4620 Advanced Topics in Inorganic Chemistry or CHEM\*4630 Bioinorganic Chemistry), (CHEM\*4720 Organic Reactivity or CHEM\*4730 Synthetic Organic Chemistry)
2. 1.50 chosen from CHEM\*3870 Molecular Spectroscopy, CHEM\*4010 Chemistry and Industry, CHEM\*4400 Advanced Topics in Analytical Chemistry, BIOC\*4520 Metabolic Processes, BIOC\*4540 Enzymology, BIOC\*4580 Membrane Biochemistry, CHEM\*4620 Advanced Topics in Inorganic Chemistry, CHEM\*4630 Bioinorganic Chemistry, CHEM\*4720 Organic Reactivity, CHEM\*4730 Synthetic Organic Chemistry, CHEM\*4740 Topics in Bio-Organic Chemistry, CHEM\*4880 Topics in Advanced Physical Chemistry, CHEM\*4900 Chemistry Research Project I, CHEM\*4910 Chemistry Research Project II, MCB\*4050, TOX\*4590 Biochemical Toxicology

#### **Note:**

Some of these courses are offered only in alternate years, and some have additional prerequisites for which the student must plan ahead, with the assistance of the faculty advisor.