

# PHYSICS CO-OP (PHYS:C)

Department of Physics, College of Engineering and Physical Sciences

## Program Requirements

The Co-op program in Physics is a five year program, including five 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/>).

Physics Academic and Co-op Work Term Schedule

Year	Fall	Winter	Summer
1	Academic Semester 1	Academic Semester 2	Off
2	Academic Semester 3 COOP*1100	Academic Semester 4	COOP*1000 Work Term I
3	Academic Semester 5	COOP*2000 Work Term II	COOP*3000 Work Term III
4	Academic Semester 6	Academic Semester 7	COOP*4000 Work Term IV
5	COOP*5000 Work Term V	Academic Semester 8	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

(22.50 Total Credits)

Code	Title	Credits
	First year science credits	5.00
	Required science courses semesters 3 – 8	8.50
	Restricted Electives	1.00
	Approved Science Electives	1.50
	Liberal Education Electives	1.00
	Free Electives - any approved elective for B.Sc. students	3.00
	Co-op Work Terms	2.50
	<b>Total Credits</b>	<b>22.5</b>

Of the total credits required, students are required to complete 16.00 credits in science of which a minimum of 2.00 credits must be at the 4000 level and an additional 4.00 credits must be at the 3000 or 4000 level.

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>		
CHEM*1040	General Chemistry I	0.50
CIS*1300	Programming	0.50
IPS*1500	Integrated Mathematics and Physics I	1.00
Select 0.50 credits from the following:		
BIOL*1070	Discovering Biodiversity	0.50
BIOL*1080	Biological Concepts of Health	0.50
BIOL*1090	Introduction to Molecular and Cellular Biology	0.50
<b>Semester 2 - Winter</b>		
CHEM*1050	General Chemistry II	0.50
IPS*1510	Integrated Mathematics and Physics II	1.00
MATH*1160	Linear Algebra I	0.50
Select 0.50 credits from the following:		
BIOL*1070	Discovering Biodiversity	0.50
BIOL*1080	Biological Concepts of Health	0.50
BIOL*1090	Introduction to Molecular and Cellular Biology	0.50
<b>Semester 3 - Fall</b>		
COOP*1100	Introduction to Co-operative Education	0.00
MATH*2200	Advanced Calculus I	0.50
MATH*2270	Applied Differential Equations	0.50
PHYS*2240	Thermal Physics	0.50
PHYS*2330	Electricity and Magnetism I	0.50
0.50 Liberal Education electives		0.50
<b>Semester 4 - Winter</b>		
PHYS*2180	Experimental Techniques in Physics	0.50
PHYS*2310	Mechanics	0.50
PHYS*2340	Electricity and Magnetism II	0.50
CIS*2500	Intermediate Programming (or 0.50 electives)	0.50
0.50 electives		0.50
<b>Summer Semester</b>		
COOP*1000	Co-op Work Term I	0.50
<b>Semester 5 - Fall</b>		
IPS*3000	Science Communication	0.50
PHYS*3130	Mathematical Physics	0.50
PHYS*3230	Quantum Mechanics I	0.50
PHYS*3400	Advanced Mechanics	0.50
0.50 electives		0.50
<b>Winter Semester</b>		
COOP*2000	Co-op Work Term II	0.50
<b>Summer Semester</b>		
COOP*3000	Co-op Work Term III	0.50
<b>Semester 6 - Fall</b> <sup>3</sup>		
PHYS*4180	Advanced Electromagnetic Theory	0.50
CIS*2520	Data Structures (or 0.50 electives) <sup>5</sup>	0.50
PHYS*4240	Statistical Physics II (or 0.50 electives) <sup>5</sup>	0.50

1.00 electives <sup>5</sup>		1.00
<b>Semester 7 - Winter<sup>3</sup></b>		
NANO*3600	Computational Methods in Materials Science	0.50
PHYS*3000	Optics: Fundamentals and Applications	0.50
PHYS*3510	Intermediate Laboratory	0.50
PHYS*4040	Quantum Mechanics II	0.50
MATH*3260	Complex Analysis (or 0.50 electives) <sup>4</sup>	0.50
<b>Summer Semester</b>		
COOP*4000	Co-op Work Term IV	0.50
<b>Fall Semester</b>		
COOP*5000	Co-op Work Term V	0.50
<b>Semester 8 - Winter<sup>3</sup></b>		
PHYS*4500	Advanced Physics Laboratory	0.50
PHYS*4130	Subatomic Physics (or 0.50 electives) <sup>4</sup>	0.50
PHYS*4150	Solid State Physics (or 0.50 electives) <sup>4</sup>	0.50
1.00 electives <sup>4</sup>		1.00

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Students going on to graduate school in physics should take PHYS\*4130 Subatomic Physics, PHYS\*4150 Solid State Physics, and PHYS\*4240 Statistical Physics II

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At least 1.00 credits must be from the restricted electives listed below.

### Restricted Electives

Code	Title	Credits
PHYS*4130	Subatomic Physics	0.50
PHYS*4150	Solid State Physics	0.50
PHYS*4240	Statistical Physics II	0.50