CHEMICAL PHYSICS (CHPY)

Administered by the Office of the Dean, College of Engineering and Physical Sciences on behalf of the Department of Chemistry and the Department of Physics

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major may wish to consult the Faculty Advisor. A minimum of 20.00 credits is required. At least 1.00 credits must be from Liberal Education electives.

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/)

Code	Title	Credits
Semester 1		
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
Semester 2		
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
Semester 3		
CHEM*2060	Structure and Bonding	0.50
MATH*2200	Advanced Calculus I	0.50
MATH*2270	Applied Differential Equations	0.50
PHYS*2330	Electricity and Magnetism I	0.50
0.50 Liberal Education electives		0.50
Semester 4		
CHEM*2070	Structure and Spectroscopy	0.50
CHEM*2480	Analytical Chemistry I	0.50
PHYS*2180	Experimental Techniques in Physics	0.50
PHYS*2310	Mechanics	0.50
PHYS*2340	Electricity and Magnetism II	0.50
Semester 5		
CHEM*3860	Quantum Chemistry	0.50
PHYS*3130	Mathematical Physics	0.50
PHYS*3230	Quantum Mechanics I	0.50
CHEM*2820	Thermodynamics and Kinetics	0.50
or PHYS*2240	Thermal Physics	
IPS*3000	Science Communication (or 0.50 electives)	0.50
Semester 6		
CHEM*3430	Analytical Chemistry II: Instrumental Analysis	0.50
NANO*3600	Computational Methods in Materials Science	0.50
PHYS*3000	Optics: Fundamentals and Applications	0.50
PHYS*4040	Quantum Mechanics II	0.50
CHEM*3870	Molecular Spectroscopy [1]	0.50
or CHEM*4880	Topics in Advanced Physical Chemistry	
Semester 7		
CHEM*3440	Analytical Chemistry III: Analytical Instrumentation	0.50
PHYS*4120	Atomic and Molecular Physics	0.50
PHYS*4240	Statistical Physics II	0.50
PHYS*4001	Research in Physics (or 0.50 electives) [2]	0.50
0.50 electives		0.50
Semester 8		
CHEM*3870	Molecular Spectroscopy [1]	0.50
or CHEM*4880	Topics in Advanced Physical Chemistry	
PHYS*4002	Research in Physics (and 0.50 electives) [2]	1.00
or CHEM*4900	Chemistry Research Project I	
IPS*3000	Science Communication (or 0.50 electives)	0.50
0.50 electives		0.50

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One of CHEM*3870 Molecular Spectroscopy or CHEM*4880 Topics in Advanced Physical Chemistry is required for graduation

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Students must complete either (PHYS*4001 Research in Physics, PHYS*4002 Research in Physics in semester 7 and 8) or (CHEM*4900 Chemistry Research Project I in semester 8)

A minimum of 1.00 credits of Liberal Education electives is required for completion of this program. The list of Liberal Education electives for B.Sc. students can be found at: https://www.uoguelph.ca/bsc/

Credit Summary

(20.00 Total Credits)

Code	Title	Credits
First year science credits		5.00
Required science courses semesters 3 – 8		11.50
Liberal Education electives		1.00
Free electives - any approved elective for B.Sc. students.		2.50
Total Credits		**20**

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