

NOTE: Students who were admitted before 2013/2014 calendar term. Important to follow term you were admitted in.



B.Sc. Honours Program in Physics: Theory Stream

Students who complete this program will have a choice of a science career applying physics in the industrial sector or further research studies in graduate school, in particular for work with a theoretical emphasis. The Co-Operative Education Option offers students the possibility of mixing academic study with work experience at high tech companies, government laboratories or hospitals. Typically each year, you will take 5.0 credits (10 "half-courses"), and shown below are the courses that are normally taken in a given year, designed to satisfy the prerequisite structure. Not specified are possible elective courses, as there is some flexibility starting in year two.

Your First Year

Physics: PHYS 1001 and 1002 (recommended) or 1003 and 1004 or 1007 and 1008 (with an average grade of B- or higher)
Mathematics: MATH 1004, 1005 and 1104
Experimental Science: CHEM 1001 and CHEM 1002 or CHEM 1005 and CHEM 1006 or BIOL 1003 and BIOL 1004 or EARTH 1006 and EARTH 1009
Electives: NSCI 1000 or 0.5 credits approved arts or social science

In first year university, much of your schedule will be required courses, which are prerequisites to upper year courses. These will give you the basics that you need in order to continue on in the program as well as some breadth of study into subjects other than your major.

Your Second Year

Physics: PHYS 2202 and 2604
Mathematics: MATH 2004, 2107, 3705, STAT 3502

1.5 credits from one of COMP 1005 and COMP 1006 or ECOR 1606 and ECOR 2606 plus 0.5 credit at the 2000-level or higher in COMP, MATH or PHYS
*COMP 1005,1006,ECOR 1606 to be taken in the 1st yr

Mathematics is important in theoretical physics, & your second year will contain courses on multivariable calculus, algebra, mathematical methods & probability. A programming course in C++ is useful for Physics, and your Physics courses cover modern physics and optics.
*Physics students have permission to take COMP 2401 with only COMP 1005 & then take COMP 2404 for 1.5 credits

Your third year will be comprised mostly of Physics courses, with electromagnetism, modern physics, quantum mechanics, advanced dynamics, mathematical physics and thermodynamics courses. A numerical analysis course complements the laboratories in Physics.

In your fourth year, you will perform an independent research project under the supervision of a professor at the university, as well as taking courses in quantum mechanics and computational physics. Electives are also available to suit your interests.

Your Third Year

Physics: PHYS 3007, 3308, 3606, 3701, 3802, 3807 and 4409
Mathematics: MATH 3806

1.0 credit in PHYS, COMP, MATH and/or STAT at 3000-level or above

Your Fourth Year

Physics: PHYS 4707, 4708 and 1.0 credit in PHYS at the 4000-level

Project: PHYS 4909 (full year) or PHYS 4907 (fall term) or 4908 (winter term) and 0.5 credit in PHYS at the 4000-level

Note: In addition to the above required courses, you must take 1.5 elective credits in approved Arts or Social Sciences and 1.0 credit in free electives as outlined in the Undergraduate Calendar.

Questions?

Please feel free to contact the department: **Loc:** 3302 Herzberg **Tel:** (613) 520-4320
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