



## B.Sc. Honours Program in Applied Physics

Students who complete this program will have a choice of a career applying physics in the industrial sector or further research studies in graduate school. 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. Students have an option of doing a Minor in Business. For more details, refer to the Business Programs section of the Undergraduate Calendar.

### 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  
**Computer Science:** COMP 1005 or ECOR 1606  
Electives: NSCI 1000 or 0.5 credit 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 and 3705  
**Computer Science:** \*COMP 1006 and 2401\* or SYSC 2004 and 2006  
**Engineering/Electronics:** ECOR 2606 or MATH 3806 ELEC 2501 and 2507

\* If you choose this combination, COMP 1006 should be taken in your 1st yr. COMP 2401 in your 2nd yr.

Electronics and Computer Science courses, which are useful for the set up of experiments in Physics, are taken in second year. Physics courses follow optics and modern physics, and Mathematics courses teach multivariable calculus and mathematical methods.

\* Physics students have permission to take COMP 2401 with only COMP 1005 and then take COMP 2404 for 1.5 credits.

Your third year will be comprised mostly of Physics courses, with electromagnetism, modern applied physics, quantum mechanics, advanced dynamics, mathematical physics and thermodynamics courses. A laboratory only (no lecture component) credit is also required.

In your fourth year, you will perform an independent research project under the supervision of a professor at the university. Your other courses will include a laboratory credit, quantum mechanics and computational physics as well as electives to follow your interests.

### Your Third Year

**Physics:** PHYS 3007, 3308, 3608, 3701, 3802, 3807 and 4409  
**Mathematics:** MATH 3806 and STAT 3502  
**Engineering:** ELEC 3509 or ELEC 3908  
Note: Requirement \*A7 is referenced below

### Your Fourth Year

**Physics:** PHYS 4008 and 4707 plus 1.0 credit from \*PHYS 3207 (taken in third or fourth year as offered), 4203, 4208, 4608 and 4807  
**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:** \*A7 - 1.0 credit in ELEC 3509, ELEC 3908, COMP at the 3000-level or PHYS at the 4000-level. (\*can be done in 3rd or 4th yr.). In addition to the above required courses, you must take 1.5 credits in approved Arts or Social Sciences and 1.5 credits 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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