NANOSCIENCE

Schedule of Studies

Nanoscience (NANO)
Administered jointly by the Department of Chemistry and the Department of Physics, College of Physical and Engineering Science

Major (Honours Program)
This major will required the completion of 20.0 credits as indicated below.

Semester 1
BIOL*1030 [0.50] Biology I
CHEM*1040 [0.50] General Chemistry I
MATH*1200 [0.50] Calculus I
NANO*1000 [0.50] Introduction to Nanoscience
PHYS*1000 [0.50] An Introduction to Mechanics
Students who are admitted deficient in one 4U course in Chemistry or Physics must take the equivalent introductory course in first semester. It is in the student’s best interest if the first-year science core in that subject is completed by the end of Semester 3.

Semester 2
BIOL*1040 [0.50] Biology II
CHEM*1050 [0.50] General Chemistry II
MATH*1210 [0.50] Calculus II
PHYS*1010 [0.50] Introductory Electricity and Magnetism
0.50 electives

Semester 3
CHEM*2060 [0.50] Structure and Bonding
MATH*2160 [0.50] Linear Algebra
NANO*2000 [0.50] Synthesis of Nanomaterials
PHYS*2310 [0.50] Mechanics I
PHYS*2330 [0.50] Electricity and Magnetism I

Semester 4
CHEM*2070 [0.50] Structure and Spectroscopy
MATH*2170 [0.50] Differential Equations I
NANO*2100 [0.50] Analysis of Nanomaterials
1.00 electives*

Semester 5
One of:
CHEM*3860 [0.50] Quantum Chemistry
PHYS*3230 [0.50] Quantum Mechanics I*
NANO*3500 [0.50] Thin Film Science
NANO*3600 [0.50] Computational Methods in Materials Science
1.00 electives*
Semester 6
NANO*3200 [0.50] Nanolithographic Techniques
NANO*3300 [0.50] Spectroscopy of Nanomaterials
NANO*3700 [0.50] Introduction to Quantum Computing
1.00 electives

Semester 7
NANO*4100 [0.50] Biological Nanomaterials
2.00 electives

Semester 8
NANO*4200 [0.50] Topics in Nanomaterials
*If a student wants to take PHYS*3230 Quantum Mechanics I in semester 5, then they must select PHYS*2320 and PHYS*2340 as electives in semester 4.
Selection of electives is subject to the following rules:

1. The student must select at least 1.00 credits in Arts and Social Sciences.
2. The program must include at least 6.00 science credits at the 3000 and 4000 level of which at least 2.00 must be at the 4000 level.
3. In semesters 7 and 8, the student must select to do either NANO*4900 Advanced Studies in Nanoscience or NANO*4910 Nanoscience Research Project.

In completing the science requirements for the degree, some suggested complementary areas of focus are:

Chemistry: Inorganic
Semester 4: CHEM*2480
Semester 5: CHEM*3640
Semester 6: CHEM*3650
Semester 7: CHEM*4620, CHEM*2820
Semester 8: CHEM*2700

Chemistry: Organic
Semester 4: CHEM*2700
Semester 5: CHEM*3750
Semester 6: CHEM*3760
Semester 7: CHEM*2820, CHEM*4730
Semester 8: CHEM*2480, CHEM*4720

Chemistry: Physical/Analytical
Semester 4: CHEM*2480
Semester 5: CHEM*2820
Semester 6: CHEM*3430 or CHEM*3870
Semester 7: CHEM*3440 or CHEM*3860
Semester 8: CHEM*3870 or CHEM*3430
Engineering
Semester 2: CIS*1500
Semester 4: ENGG*2450
Semester 5: ENGG*2410, ENGG*3450
Semester 6: ENGG*4550
Semester 7: ENGG*4080

Mathematics and Statistics
Semester 4: STAT*2040
Semester 5: STAT*3100
Semester 6: MATH*2130
Semester 7: NANO*4500, MATH*3240
Semester 8: NANO*4510, MATH*3160

Physics
Semester 4: PHYS*2320, PHYS*2340
Semester 5: PHYS*3240, MATH*2200
Semester 6: PHYS*3220
Semester 7: PHYS*4240, PHYS*4180
Semester 8: PHYS*4040

Note: Courses marked with an asterisk may require additional prerequisites. Students should consult the relevant course descriptions for further information.

For course descriptions, go to
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c12/index.shtml