BACHELOR OF SCIENCE, MAJOR IN PHYSICS FOR MODERN TECHNOLOGY

At a Glance

Faculty

www.kpu.ca/science (http://www.kpu.ca/science/)

Area of Study:

www.kpu.ca/science/physics/modern-technology (https://www.kpu.ca/science/physics/modern-technology/)

Academic Level:

Undergraduate

Credential Granted:

Baccalaureate Degree

Start Date:

Fall (September)

Spring (January)

Summer (May)

Intake Type:

- Open

Minimum Credits Required:

127

Curriculum Effective Date:

01-Sep-2019

Description

The B.Sc. Major in Physics for Modern Technology will give students a solid background in physics and also in the applications of physics to modern technology. The program has been designed with the needs of local high-tech industry in mind and will equip students to work in a wide variety areas including (but not limited to):

- Green Energy Technology
- Industrial Process Control
- Electronics
- Robotics
- Technical Sales
- Teaching

In order to ensure students' future success in the workplace, the program includes a work placement and business courses.

Please note: Most first-year courses in this program are offered on both the Surrey and Richmond campuses. However, the second, third, and fourth-year physics courses required for the degree are offered on the Richmond campus.

Requirements

Admission Requirements

Students pursuing a major in Physics for Modern Technology must be admitted to the Faculty of Science & Horticulture (https://calendar.kpu.ca/programs-az/science-horticulture/admission-requirements/).

Declaration Requirements

Students intending to graduate with this Faculty of Science and Horticulture degree must declare the credential by the time they complete 60 credits of undergraduate coursework. At the time of declaration, the student must satisfy all of the following requirements:

- In good academic standing with the University
- Completion of a minimum of 24 credits of undergraduate coursework, including the following:
  - 3 credits of ENGL at the 1100 level or higher
  - PHYS 1102 with a minimum grade of "C" or PHYS 1220 with a minimum grade of "C"
  - MATH 1220 with a minimum grade of "C" or MATH 1230 with a minimum grade of "C"

Curricular Requirements

All students must meet the following minimum requirements:

- 120 credits from courses at the 1100 level or higher.
- 45 credits from a minimum of 15 courses at the 3000 level or higher, including 9 credits at the 4000 level.
- 18 credits of breadth electives (see Electives below) including:
  - at least 12 credits from courses that are offered outside the Faculty of Science & Horticulture; and
  - up to 6 credits from fields of science not prescribed in the Major requirements; and
  - 3 credits from a course at the 3000 level or higher.
- Cumulative GPA of 2.0 or higher
- At least 50% of all courses for the BSc, and at least 66% of upper-level courses for the BSc, must be completed at KPU.

The Physics for Modern Technology Major requires the completion of a minimum of 127 credits, including the following specific course requirements.

Year 1		Credits
BIOL 1110	Introductory Biology I	4
CHEM 1110	The Structure of Matter	4
CHEM 1210	Chemical Energetics and Dynamics	4
ENGL 1100	Introduction to University Writing	3
PHYS 1600	Introduction to Modern Technology	3
MATH 1120 or MATH 1130	Differential Calculus (recommended) or Calculus for Life Sciences I	3
MATH 1220 or MATH 1230	Integral Calculus or Calculus for Life Sciences II	3
Select one of the following:		4
PHYS 1101	Physics for Life Sciences I	
PHYS 1120	Physics for Physical and Applied Sciences I (recommended)	
Select one of the following:		4
PHYS 1102	Physics for Life Sciences II	

PHYS 1220	Physics for Physical and Applied Sciences II (recommended)	
Select one Breadth Elective (p. 2)		3
	Credits	**35**
Year 2		
MATH 2721	Complex Numbers and Linear Algebra	3
MATH 2821	Multivariate and Vector Calculus	3
PHYS 2010	Modern Physics	3
PHYS 2030	Classical Mechanics	3
PHYS 2040	Thermal Physics	3
PHYS 2100	Experimental Physics	3
PHYS 2420	Intermediate Electricity and Magnetism	3
PHYS 2600	Electronics	3
PHYS 2610	Sensors and Actuators	3
Select one Breadth Elective (p. 2)		3
	Credits	**30**
Year 3		
CHEM 2315	Analytical Chemistry	4
PHYS 3610	Introduction to Control	3
PHYS 3620	Process Control	3
PHYS 3700	Signal and Image Processing	3
PHYS 3710	Applied Optics & Optoelectronics	3
PHYS 3900	Project in Physics & Technology	3
PHYS 3950	Work Experience - Part I	3
PHYS 3951	Work Experience - Part II	3
PHYS 4900	Special Topics	3
Select one Business Elective (p. 2)		3
Year 3 includes work experience. Several courses in the Spring semester will be taken in compressed mode, January to February, in order to make the period from March through August available for work placement. The exact starting date will be determined in consultation with the work experience host.		
	Credits	**31**
Year 4		
CHEM 4610	Instrumental Analysis	4
PHYS 4010	Quantum Mechanics	3
PHYS 4199	Senior Project I	3
PHYS 4299	Senior Project II	3
PHYS 4600	Programming for Instrumentation	3
PHYS 4700	Solid State Physics: Theory and Practice	3
Select three Breadth Electives (p. 2)		9
Select one Business Elective (p. 2)		3
	Credits	**31**
	Total Credits	**127**

Electives

As part of the major program, students are required to complete 21 credits of electives, including 6 credits of Business Electives. These electives must satisfy the General Requirements for 18 credits of breadth as stated above.

Breadth Electives

Breadth electives must be selected from subject areas outside of Physics. No more than six of these credits may be from the Faculty of Science & Horticulture.

Business Electives

At least six credits (two courses) must be selected in consultation with Physics faculty to meet Business Elective requirements. Courses must be selected from:

- Accounting (ACCT) – any course other than ACCT 1130
- Business & Quantitative Methods (BUQU) – any course other than BUQU 1130 or BUQU 1230
- Business (BUSI) – any course other than BUSI 1204 or BUSI 1209
- Economics (ECON) – any course
- Marketing (MRKT) – any course

Credential Awarded

Upon successful completion of the major program students are eligible to receive a **Bachelor of Science**. Transcripts will indicate a **Major in Physics for Modern Technology**.