faces.
[this could be you].
We solve the grand challenges of the future - from energy supply to human health to information and communication technologies.

Our design tools are the particles that make up OUR world - electrons, photons, and neutrons.
In a nutshell, our students:

- **[nanotechnology]** engineer the way we communicate in and interact with our world.
- **[photonics]** engineer the way we see our world.
- **[nuclear/energy]** engineer the way we live and experience the world.
- **[interdisciplinary]** engineer novel solutions by applying concepts from mechanical, chemical, materials, and electrical disciplines.
You’ve already taken [or will be taking] an eng phys course in level I.

[applicable eng one courses]

ENG 1D04
Engineering
Computation

MATH 1ZA3 / MATH 1ZB3 / MATH 1ZC3

PHYS 1D03
Introductory
Mechanics

ENG PHYS 2CE4
Computation
Methods for Eng Phys

[applicable eng phys courses]

MATH 12A3 / MATH 12B3 / MATH 12C3
Engineering
Mathematics 1, II-A, II-B

PHYS 1E03
Waves and
Electromagnetism

ENG PHYS 2P04
Applied
Mechanics

MATH 2Z03 / MATH 2ZZ3

ENG PHYS 2A04/
2E04
Electricity and Magnetism
Analog and Digital Circuits

Engineering
Mathematics III and IV

Engineering
Computation
Methods for Eng Phys

Engineering
Mathematics I, II-A, II-B
this is nanotechnology
What is nanotechnology [in a nutshell]? Devices that are constructed on the nanometre or micrometre scale.

What role does nanotechnology play in the real world? These devices are the technological backbone of the modern age of computers and high-tech communications.

A combination of the theory and application of modern physics. Students will gain an understanding of device science and engineering through a series of hands-on device fabrication courses.

What can I learn?
- Electricity and magnetism, thermodynamics
- Engineering and classical mechanics
- Quantum mechanics and its applications
- Electronic devices and circuit design
- Computer modeling and signal processing
- Mathematics and mathematical physics
- Engineering design projects

Nanotech-specific curriculum
1. Fundamentals of physical optics
2. Semiconductor device design
3. Microsystem device technologies
4. Applied physics laboratory

Careers
- Consulting firms
- Start-ups
- Private industry
- Universities
- National laboratories
- National laboratories

Did you know? Students will learn the tools to make integrated circuits and communication...
[health] [energy] [digital]

this is photonics
What is photonics engineering?
Photonics involves the generation, control, and detection of light to provide useful applications for society.

What role does photonics play in the real world?
The application of light extends to industries including medicine, biophotonics, sensors, displays, nanotechnology, manufacturing, and traditional optical engineering.

A combination of the theory and application of modern physics.
Courses that explore the science behind the application of light and considers this from a theoretical and an applied industrial perspective.

What can I learn?
- Electricity and magnetism, thermodynamics
- Engineering and classical mechanics
- Quantum mechanics and its applications
- Electronic devices and circuit design
- Computer modeling and signal processing
- Mathematics and mathematical physics
- Engineering design projects

Photonics-specific curriculum
1. Fundamentals of physical optics
2. Applications of photonics
3. Lasers and electro-optics
4. Optical instrumentation
5. Optical communication systems

Core curriculum
1. Electricity and magnetism, thermodynamics
2. Engineering and classical mechanics
3. Quantum mechanics and its applications
4. Electronic devices and circuit design
5. Computer modeling and signal processing
6. Mathematics and mathematical physics
7. Engineering design projects

Careers
- Entertainment industry
- Electronics/consumer goods
- Military, defense, aviation
- Medicine and biomedical applications
- Instrumentation and process control

Entertainment industry
- Electronics/consumer goods
- Military, defense, aviation
- Medicine and biomedical applications
- Instrumentation and process control

did you know? students will make a solar cell, which are the building blocks of solar panels.
this is nuclear
What is nuclear engineering?
The application of scientific principles, engineering design and analysis, computer modeling and simulation, and government regulation for the peaceful use of nuclear energy.

What role does nuclear engineering play in the real world?
The design of energy systems and alternative energy sources; nuclear reactor physics, safety, and operation; the design of next generation nuclear reactors; the investigation of industrial and medical uses of nuclear materials; the design of solar electric devices.

A combination of the theory and application of modern physics.
Courses cover a broad range of skills, which are transferable among all energy sectors. Principles of alternative energy sources such as photovoltaics (solar cells), fuel cells, and wind power are explored in-depth.

What can I learn?
Electricity and magnetism, thermodynamics
Engineering and classical mechanics
Quantum mechanics and its applications
Electronic devices and circuit design
Computer modeling and signal processing
Mathematics and mathematical physics
Engineering design projects

Nuclear-specific curriculum
1. Principles of nuclear engineering
2. Introduction to energy systems
3. Industrial monitoring and detection
4. Nuclear reactor analysis

Core curriculum
1. Electricity and magnetism, thermodynamics
2. Engineering and classical mechanics
3. Quantum mechanics and its applications
4. Electronic devices and circuit design
5. Computer modeling and signal processing
6. Mathematics and mathematical physics
7. Engineering design projects

Careers
- Nuclear safety and policy
- Nuclear power plant design
- Electrical power generation utilities
- Private industry
- Consulting firms
- Research institutions

Did you know? Students will do experiments in McMaster’s Nuclear Reactor.
a handful of our alumni now work for:

- Amec-NSS
- IBM
- Hydro One
- Hatch Associates
- Siemens
- Texas Instruments
- Wescam Inc.
- Proctor and Gamble
- Celestica
- Celestica
- GE Medical Systems
- Intel
- Bell Canada
- Bruce Power
- MIT
- Bombardier Aerospace
- AMD
Multidisciplinary Design Engineer
Director of Business Development
Manufacturing Engineer
Controls Engineer
System Engineer
Doctoral Student
Master’s Student
Business Analyst
Entrepreneur
Project Engineer
CAR-
EERS
[for a comprehensive list, see our employment report]
Where do our graduates end up?

- 35% Manufacturing / Product Development
- 29% Energy Industry
- 12% Technician
- 18% Graduate Studies
- 12% Start-up Company
LET'S KEEP IN TOUCH

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