

# Mechatronic Systems Engineering

## Western Engineering



### What is Mechatronics?

Mechatronics is the combination of mechanical, electronic, computer, control, and systems design engineering to create useful products. The combination of these engineering principles helps generate simpler, more economical, reliable and versatile systems.

In recent years, there has been a trend towards computerization of almost all engineered systems, including home appliances, tooling and industrial production equipment, and automatic control systems for aerospace and automotive industries. Students enrolled in Western's Mechatronic Systems Engineering program receive the background necessary to play a key role in this emerging area.

### Western's Mechatronic Systems Engineering Undergraduate Program

Our program is unique in its multi-year design focus. Throughout the program, students take core courses in Electrical and Computer Engineering (including basic circuit theory, computer design, software design, embedded computing and control systems) as well as core courses in Mechanical and Materials Engineering (including dynamics, material properties, machine design, and thermodynamics).

In addition to these core concepts, students also receive specialized instruction in mechatronic design principles through a three-year design curriculum, as well as specialized instruction in robotics and advanced sensing. Projects will be selected in the general area of mechatronics with a specific focus on health care and rehabilitation.

As students progress through the program and gain new skills, the same project will be revisited to allow students the opportunity to work through the entire design process, including mechanical, electronic and software subsystems. In fourth year, all students will complete a capstone design project that integrates all they have learned about mechatronic systems design.

Students can apply to the Mechatronic Systems Engineering program upon completing Western Engineering's common first year.

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## Shape your future with Western Engineering Plus

### Dual Degrees: Combined and Concurrent

Many Western Engineering students enhance their education by completing a dual degree.

Western Engineering offers two types of dual degrees: Combined Degrees (studying with one of Western's other professional schools) and Concurrent Degrees (studying with one of Western's other Faculty's across campus).

Normally, a student would choose to complete a Concurrent Degree with a major module in the Faculty of Science, Social Science or Arts and Humanities such as Environmental Science, Computer Science, Psychology, or English. Combining programs allows students to graduate with two degrees in less time than it would take to complete each degree independently.

### Co-op Programs

Our Internship and Summer Engineering Co-op programs provide students with opportunities to gain practical experience. The 12-to-16 month internship is available to students following their third year of study. Summer co-ops provide technical work experience during the summer months and are available to qualifying students at each level of undergraduate studies. Engineering students with practical experience are usually the first to secure employment following graduation.

### Accelerated Master's Program

This program is offered to current third-year Western Engineering students. Applicants must have an average grade of 80 per cent or higher (based on their second and third year courses). The Accelerated Master's Program allows students to receive an MEng within one year of receiving their BEng.

### Research Opportunities

Western's Departments of Electrical and Computer Engineering and Mechanical and Materials Engineering are leaders in the area of mechatronics and advanced robotics and control systems. The Mechatronic Systems Engineering program will leverage the Faculty's core strengths in surgical robotics and health technologies, through our close links with C-STAR and the Robarts Research Institute.

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