Sample Courses
Mechatronic Systems Engineering

YEAR 2			
Term A		**Term B**	
AM 2270a	Applied Mathematics for Engineering II	AM 2276b	Applied Mathematics for Electrical and Mechanical Engineering III
ECE 2205a	Electric Circuits I	MSE 2202b	Introduction to Mechatronic Design
MSE 2200q	Engineering Shop Safety Training	MSE 2213b	Engineering Dynamics
MSE 2201a	Introduction to Electrical Instrumentation	MSE 2233b	Circuits and Systems
MSE 2212a	Mechanics of Materials	ES 2211G	Engineering Communications
MSE 2214a	Thermodynamics	SS 2143b	Applied Statistics and Data Analysis for Engineers
CS 1037a	Computer Science Fundamentals II		
YEAR 3			
Term A		**Term B**	
AM 3415a	Applied Math for Electrical Engineering	ECE 3331b	Signal Processing
ECE 2277a	Digital Logic Systems	ECE 3375b	Microprocessors and Microcomputers
ECE 3330a	Control Systems	MSE 3302b	Sensors and Actuators
ECE 3332a	Electric Machines	MSE 3360b	Finite Element Methods for Mechatronic Systems Engineering
MSE 3301a	Materials Selection and Manufacturing Processes	MSE 3380b	Mechanical Component Design
MSE 3381a	Kinematics and Dynamics of Machines	One 0.5 non-technical elective from approved list	
YEAR 4			
Term A		**Term B**	
MSE 4401a	Robotic Manipulators	MSE 4499	Mechatronic Design Project
MSE 4499	Mechatronic Design Project	ECE 4460b	Real Time and Embedded Systems
ECE 4457a	Power Electronics	ECE 4469b	Applied Control Systems
		ES 4498G	Engineering Ethics, Sustainable Development and the Law
One 0.5 non-technical elective		One 0.5 non-technical elective	
Two 0.5 technical electives		One 0.5 technical elective	

Technical Elective List			
ECE 3380a/b	Advanced Digital Systems	MME 4425a/b	Mechanical Vibrations
ECE 4429a/b	Advanced Digital Signal Processing	MME 4459a/b	Advanced CAE: Manufacturing Technologies
ECE 4438a/b	Advanced Image Processing and Analysis	MME 4469a/b	Biomechanics of the Musculoskeletal System
ECE 4445a/b	Introduction to Digital Image Processing	MME 4470a/b	Medical and Assistive Devices
ECE 4455a/b	Engineering Analysis of Physiological Systems	MME 4473a/b	Computer Integrated Manufacturing
ECE 4468a/b	Systems Optimization	MME 4480a/b	Advanced CAE: Reverse Engineering
ECE 4470a/b	Microcomputer Engineering	MME 4482a/b	Fundamentals of MEMS
MME 4424a/b	Mechanical Properties of Materials	MME 4492a/b	Production Management

NOTE: Not all technical electives may be offered each year.

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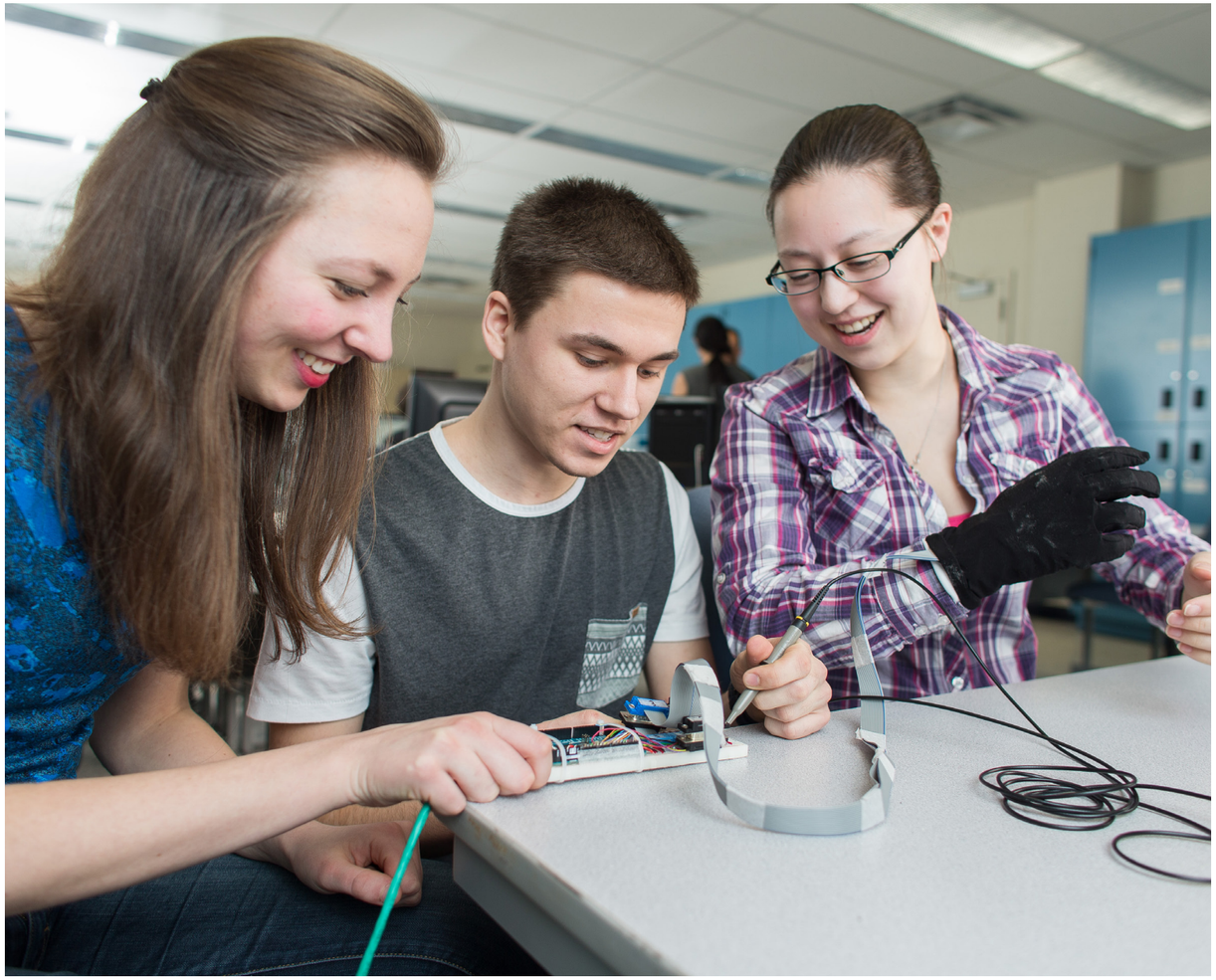
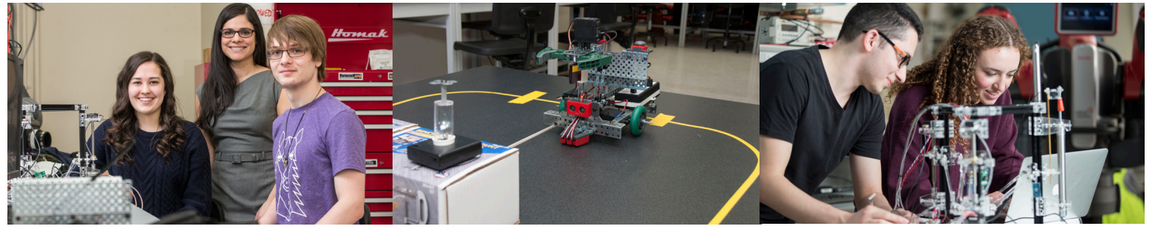
Western Engineering

Mechatronic Systems Engineering



Western Engineering



What is Mechatronic Systems Engineering?

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

Western's Mechatronic Systems Engineering Program

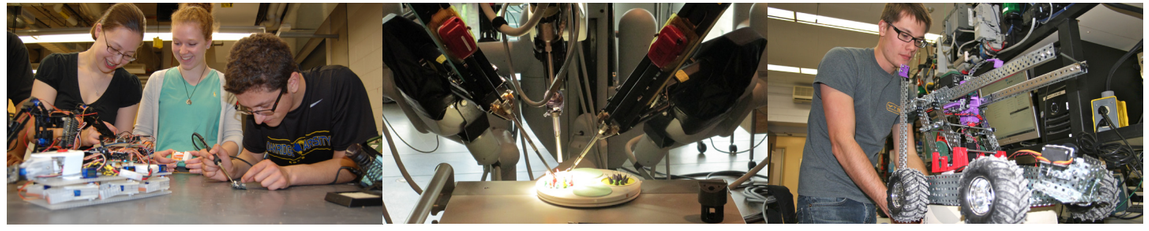
Common First Year

All first-year students complete a common first year. Courses include: Applied Mathematics — Calculus, Applied Mathematics — Linear Algebra, Business for Engineers, Chemistry, Computer Programming Fundamentals, Introductory Engineering Design and Innovation Studio, Physics, Properties of Materials and Statics. Upon completing Western Engineering's common first year, students apply to the Mechatronic Systems Engineering program.

Mechatronic Systems Engineering

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 with a mechanical engineering focus (including dynamics, material properties, finite element methods, machine design, and thermodynamics).

As students progress through the program and gain new skills, they will have the opportunity to work through the entire design process, including mechanical, electronic and software subsystems. In fourth year, all students will work in small teams to tackle a comprehensive open-ended design project, building upon the overall undergraduate course material offered through the Mechatronic Systems Engineering program at Western.



Individualize Your Mechatronic Systems Degree

Dual Degrees

A dual degree allows you to gain a competitive edge towards a rewarding career. You will have the engineering skills and knowledge to become a successful problem solver, prepared to address and find solutions to current and future problems around the world in a traditional engineering career or a profession of your choice. We offer the following dual degrees with our Mechatronic Systems Engineering program:

Mechatronic Systems Engineering and Business

After two years in Engineering, you can apply to the Ivey Business School. If admitted to Ivey, you will take a combination of HBA courses and Mechatronic Systems Engineering courses for the next three years. At the end of five years, you will graduate with both BESc and HBA degrees.

Mechatronic Systems Engineering and Law

After three years in Engineering, you can apply to Western Law after writing the LSAT examinations. For the next three years, you will take a combination of Law courses and Mechatronic Systems Engineering courses. At the end of six years, you will graduate with both BESc and LLB degrees.

Dual Degrees with Other Faculties

We also offer more than 50 other dual degrees involving a major module in faculties such as: Science, Music, Social Science or Arts & Humanities.

Internship and Co-op Programs

Our optional Internship and Summer Engineering Co-op Program provides you with opportunities to gain practical experience while earning a salary. The 12 to 16-month internship is available following your third year of study. Summer co-ops provide technical work experience during the summer months (May-August). You can complete a co-op every year or choose to complete just one during your time at Western.

Accelerated Master's Program

This program is offered to 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 provides you with the opportunity to receive a research master's degree within one year of receiving your bachelor's degree.

Career Opportunities

Sample Careers

- R&D Engineer
- Robotics and Automation
- Applications Engineer
- Electrical/Instrumentation Engineer
- Control Systems Engineer
- Industrial Engineer
- Automation Mechanical Design Engineer

Types of Employers

- Engineering Consulting Companies
- Electrical Equipment and Products Manufacturers
- Machinery and Equipment Manufacturers
- Motor Vehicle Manufacturers
- Aircraft and Parts Manufacturers
- Electric Power Companies
- Controls and Systems Integration Companies

Student Leaders

A team of Mechatronic Systems students won second place in the Innovative Design category at the 2014 Canadian Engineering Competition for an electro-mechanical arm designed to help stroke victims recover movement and sensation. The group won first place in the same category in 2013 for a system that allows intubated patients to communicate through eye movement.