



## Bringing Skills to Life

Engineering Systems and Computing is the only program of its kind in Canada that focuses on designing integrated computer-based engineering systems. It is a multi-disciplinary field that combines the base fundamentals of general engineering with the strength of computer hardware and software knowledge. The program prepares students to become specialists who can incorporate information into complex industrial processes.

Engineering Systems and Computing includes courses that cover software development, hardware design, signal processing and optimization control. These areas provide students with a unique systems perspective, making them a valuable addition in a variety of workplace settings.

Students may choose to specialize in one of the following areas:

- Digital Systems Design
- Operating Systems
- Signal Processing
- Micro Computer Interfacing

## University of Guelph Advantage

- Students begin their first work term after completing two years of their academic program and mastering the core skills needed to integrate into the workplace
- Co-op students complete a full semester course focused on job search skills and professionalism in the workplace
- Students are available for four or eight-month work terms
- Recruitment timelines are flexible, and employers can find the right student through our efficient, streamlined employment process

## Student Strengths

- Participation in interdisciplinary design groups focused on developing effective problem solving, communication and teamwork skills
- Completion of at least four programming courses, using multiple languages as well as a digital design course and Computer Organization and Design by their first work term
- Ability to design, document, implement and manage large-scale software projects
- Solid knowledge of structure and application of computing systems, from algorithms and chip-level design, to systems interfacing and data structures

# Engineering Systems & Computing Course Sequencing

YEAR	FALL (SEPT-DEC)	WINTER (JAN-APRIL)	SUMMER (MAY-AUG)
<b>ONE</b>	<ul style="list-style-type: none"> <li>• GENERAL CHEMISTRY I</li> <li>• PROGRAMMING</li> <li>• ENGINEERING AND DESIGN I</li> <li>• CALCULUS I</li> <li>• PHYSICS WITH APPLICATIONS</li> <li>• INTRODUCTORY PROGRAMMING FOR ENGINEERS</li> </ul>	<ul style="list-style-type: none"> <li>• OBJECT-ORIENTED PROGRAMMING FOR ENGINEERS</li> <li>• ENGINEERING ANALYSIS</li> <li>• CALCULUS II</li> <li>• INTRODUCTORY ELECTRICITY AND MAGNETISM</li> <li>• ENGINEERING MECHANICS I</li> </ul>	<b>OFF</b>
<b>TWO</b>	<ul style="list-style-type: none"> <li>• DATA STRUCTURES</li> <li>• FLUID MECHANICS</li> <li>• ENGINEERING SYSTEMS ANALYSIS</li> <li>• DIGITAL SYSTEMS DESIGN USING DESCRIPTIVE LANGUAGES</li> <li>• APPLIED DIFFERENTIAL EQUATIONS</li> <li>• INTRODUCTION TO CO-OPERATIVE EDUCATION</li> <li>• 7 RESTRICTED ELECTIVES</li> </ul>	<ul style="list-style-type: none"> <li>• MATERIAL SCIENCE</li> <li>• ELECTRIC CIRCUITS</li> <li>• NUMERICAL METHODS</li> <li>• ENGINEERING AND DESIGN II</li> <li>• PROBABILITY AND STATISTICS FOR ENGINEERS</li> <li>• 1 RESTRICTED ELECTIVE</li> </ul>	<b>WORK TERM ONE</b>
<b>THREE</b>	<ul style="list-style-type: none"> <li>• THERMODYNAMICS</li> <li>• SIGNAL PROCESSING</li> <li>• ELECTRONIC DEVICES</li> <li>• MICROCOMPUTER INTERFACING</li> <li>• 7 RESTRICTED ELECTIVES</li> <li>• LARGE-SCALE SOFTWARE ARCHITECTURE ENGINEERING</li> </ul>	<b>WORK TERM TWO</b>	<b>WORK TERM THREE</b>
<b>FOUR</b>	<ul style="list-style-type: none"> <li>• ENGINEERING ECONOMICS</li> <li>• REAL-TIME SYSTEMS DESIGN</li> <li>• 3 RESTRICTED ELECTIVES</li> </ul>	<ul style="list-style-type: none"> <li>• MODELLING COMPLEX SYSTEMS</li> <li>• ENGINEERING AND DESIGN III</li> <li>• SYSTEMS AND CONTROL THEORY</li> <li>• HEAT AND MASS TRANSFER</li> <li>• SCIENCE AND TECHNOLOGY IN A GLOBAL CONTEXT</li> <li>• SCIENCE AND TECHNOLOGY IN A GLOBAL CONTEXT</li> <li>• 1 RESTRICTED ELECTIVE</li> </ul>	<b>WORK TERM FOUR</b>
<b>FIVE</b>	<b>WORK TERM FIVE</b>	<ul style="list-style-type: none"> <li>• ENGINEERING SYSTEMS AND COMPUTING DESIGN IV</li> <li>• SAMPLED DATA CONTROL DESIGN</li> <li>• 2 ELECTIVES</li> </ul>	

BASED ON THE 2020/21 UNDERGRADUATE CALENDAR

PLEASE SEE THE CURRENT UNDERGRADUATE CALENDAR FOR MORE INFORMATION