

# BASC COMPUTER ENGINEERING

Building on a solid foundation of traditional engineering skills, this program covers many different aspects of computer software and hardware design, and allows for more specialized studies in microprocessor-based systems, computer architecture, programming concepts, real-time operating systems, software engineering and robotics. This program provides multiple paths to a variety of careers.

This program is offered in English and in French.

All courses are available in English and French. Advanced courses are sometimes offered only in English.

## Program Requirements

Co-operative education is available with this program.

Requirements for this program have been modified. Please consult the 2024-2025 calendars (<https://catalogue.uottawa.ca/en/archives/>) for the previous requirements.

### Compulsory First-Year Courses:

CHM 1311	Principles of Chemistry	3 Units
GNG 1105	Engineering Mechanics	3 Units
GNG 1106	Fundamentals of Engineering Computation	3 Units
ITI 1100	Digital Systems I	3 Units
ITI 1121	Introduction to Computing II	3 Units
MAT 1320	Calculus I	3 Units
MAT 1322	Calculus II	3 Units
MAT 1341	Introduction to Linear Algebra	3 Units
MAT 1348	Discrete Mathematics for Computing	3 Units
PHY 1124	Fundamentals of Physics for Engineers	3 Units

### Compulsory Second-Year Courses:

CEG 2136	Computer Architecture I	3 Units
CSI 2110	Data Structures and Algorithms	3 Units
ELG 2136	Electronics I	3 Units
ELG 2138	Circuit Theory I	3 Units
ELG 2911	Professional Practice in Information Technology and Engineering	3 Units
ENG 1112	Technical Report Writing	3 Units
GNG 2101	Introduction to Product Development for Engineers and Computer Scientists	3 Units
MAT 2322	Calculus III for Engineers	3 Units
MAT 2377	Probability and Statistics for Engineers	3 Units
MAT 2384	Ordinary Differential Equations and Numerical Methods	3 Units
PHY 2323	Electricity and Magnetism	3 Units
SEG 2105	Introduction to Software Engineering	3 Units
3 complementary electives course units at the undergraduate level <sup>1</sup>		3 Units

### Compulsory Third-Year Courses:

CEG 3136	Computer Architecture II	3 Units
CEG 3155	Digital Systems II	3 Units
CEG 3156	Computer Systems Design	3 Units

CEG 3185	Introduction to Data Communications and Networking	3 Units
CSI 3131	Operating Systems	3 Units
ELG 3125	Signal and System Analysis	3 Units
ELG 3155	Introduction to Control Systems	3 Units
3 course units from:		3 Units

HIS 2129	Technology, Society and Environment Since 1850	
PHI 2394	Scientific Thought and Social Values	
SEG 2106	Software Construction	3 Units
3 complementary electives course units at the undergraduate level <sup>1</sup>		3 Units

### Compulsory Fourth-Year Courses:

CEG 4136	Computer Architecture III	3 Units
CEG 4166	Real-Time Systems Design	3 Units
CEG 4912	Computer Engineering Design Project I	3 Units
CEG 4913	Computer Engineering Design Project II	3 Units
3 complementary electives course units at the undergraduate level <sup>1</sup>		3 Units
3 course units of science electives		3 Units
12 course units of technical electives from the list of technical electives		12 Units

**Total:** **129 Units**

<sup>1</sup>

Complementary elective courses at the undergraduate level includes GNG 4170 and GNG 4120, but excludes all courses offered by the Faculty of Science and the Faculty of Engineering as well as all courses that have a science, mathematics or engineering content. For a complete list of courses please refer to the list of complementary elective courses (<https://www2.uottawa.ca/faculty-engineering/undergraduate-studies/courses-and-course-sequences/complementary-electives/>) on the Faculty of Engineering website

## List of Optional Courses

### List of Technical Electives:

CEG 4112	Topics in Computer Engineering II	3 Units
CEG 4140	Digital Control Systems	3 Units
CEG 4158	Computer Control in Robotics	3 Units
CEG 4186	Wireless Networks	3 Units
CEG 4187	Optical Networks	3 Units
CEG 4188	Higher Layer Network Protocols	3 Units
CEG 4190	Computer Network Design	3 Units
CEG 4195	Applied Machine Learning for Computer Engineering	3 Units
CEG 4198	Distributed Systems Design	3 Units
CEG 4316	Digital Image Processing	3 Units
CEG 4396	Computer Network Management	3 Units
CEG 4399	Design of Secure Computer Systems	3 Units
CSI 2120	Programming Paradigms	3 Units
CSI 2132	Databases I	3 Units
CSI 2372	Advanced Programming Concepts With C++	3 Units
CSI 3120	Programming Language Concepts	3 Units
CSI 3140	WWW Structures, Techniques and Standards	3 Units
CSI 4106	Introduction to Artificial Intelligence	3 Units

*This is a copy of the 2025-2026 catalog.*

ELG 2137	Circuit Theory II	3 Units
ELG 3136	Electronics II	3 Units
ELG 4137	Principles and Applications of VLSI Design	3 Units
ELG 4177	Digital Signal Processing	3 Units
SEG 3102	Software Design and Architecture	3 Units
SEG 3125	Analysis and Design of User Interfaces	3 Units