BASIC 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 2019-2020 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
ITI 1100 Digital Systems I 3 Units
ITI 1120 Introduction to Computing 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
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 1

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:

ECO 1192 Engineering Economics 3 Units
GNG 2101 Introduction to Product Development and Management for Engineers and Computer Scientists 3 Units

3 course units from:

HIS 2129 Technology, Society and Environment Since 1850 3 Units

PHI 2394 Scientific Thought and Social Values 3 Units
SEG 2106 Software Construction 3 Units

3 complementary electives course units at the undergraduate level 1

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 1

3 course units from:

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

1 Complementary elective courses at the undergraduate level includes GNG 2101, 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 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

3 course units from:

List of Optional Courses

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>CSI 3140</td>
<td>WWW Structures, Techniques and Standards</td>
<td>3</td>
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<tr>
<td>CSI 4106</td>
<td>Introduction to Artificial Intelligence</td>
<td>3</td>
</tr>
<tr>
<td>ELG 2137</td>
<td>Circuit Theory II</td>
<td>3</td>
</tr>
<tr>
<td>ELG 3136</td>
<td>Electronics II</td>
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<tr>
<td>ELG 4137</td>
<td>Principles and Applications of VLSI Design</td>
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<td>ELG 4177</td>
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<td>SEG 3102</td>
<td>Software Design and Architecture</td>
<td>3</td>
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<tr>
<td>SEG 3125</td>
<td>Analysis and Design of User Interfaces</td>
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