

# BASC SOFTWARE ENGINEERING

Software engineering is a CO-OP only program that emphasizes innovation and teamwork to develop practical, solution-driven thinking. During their fourth-year project, students in this program can form teams and leverage their work experience to create real applications; some students even start their own companies. They learn how to apply engineering principles—including rapid prototyping, requirements analysis, system modelling, design, implementation, testing and project management—to develop software. Software engineers are key professionals in fields such as high tech, finance, telecommunications, government, health care, transportation and entertainment.

The French Immersion Stream is newly available to students who want to continue their French immersion studies during their university career.

This program is offered in English and in French.

## Program Requirements

Co-operative education is mandatory with this program.

The French immersion stream is available with this program.

Requirements for this program have been modified. Please consult the 2023-2024 calendars (<http://catalogue.uottawa.ca/en/archives/>) for the previous requirements.

### Compulsory First-Year Courses:

|                                   |                                       |         |
|-----------------------------------|---------------------------------------|---------|
| ECO 1192                          | Engineering Economics                 | 3 Units |
| ENG 1112                          | Technical Report Writing              | 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 1322                          | Principles of Physics II <sup>1</sup> | 3 Units |
| SEG 2901                          | Work Term I                           | 3 Units |
| 3 course units from: <sup>2</sup> |                                       | 3 Units |

CHM 1301 Principles of Chemistry

CHM 1311 Principles of Chemistry

3 course units from: <sup>2</sup> 3 Units

PHY 1321 Principles of Physics I

PHY 1331 Principles of Physics I

### Compulsory Second-Year Courses:

|          |  |         |
|----------|--|---------|
| CEG 2136 | Computer Architecture I                  | 3 Units |
| CSI 2101 | Discrete Structures                      | 3 Units |
| CSI 2110 | Data Structures and Algorithms           | 3 Units |
| CSI 2132 | Databases I                              | 3 Units |
| MAT 2377 | Probability and Statistics for Engineers | 3 Units |
| SEG 2105 | Introduction to Software Engineering     | 3 Units |
| SEG 2106 | Software Construction                    | 3 Units |

|                      |   |         |
|----------------------|---|---------|
| SEG 2900             | Professional Communication and Responsibility | 3 Units |
| SEG 2911             | Professional Software Engineering Practice    | 3 Units |
| SEG 3901             | Work Term II                                  | 3 Units |
| 3 course units from: |   | 3 Units |

EVS 1101 Introduction to Environmental Science

PHY 2390 Astronomy

### Compulsory Third-Year Courses:

|          |  |         |
|----------|--|---------|
| CEG 3185 | Introduction to Data Communications and Networking | 3 Units |
| CSI 3105 | Design and Analysis of Algorithms I                | 3 Units |
| CSI 3131 | Operating Systems                                  | 3 Units |
| SEG 3101 | Software Requirements Analysis                     | 3 Units |
| SEG 3102 | Software Design and Architecture                   | 3 Units |
| SEG 3103 | Software Quality Assurance                         | 3 Units |
| SEG 3125 | Analysis and Design of User Interfaces             | 3 Units |
| SEG 3902 | Work Term III                                      | 3 Units |

### Compulsory Fourth-Year Courses:

|          |  |         |
|----------|--|---------|
| SEG 4105 | Software Project Management                  | 3 Units |
| SEG 4145 | Real Time and Embedded Software Design       | 3 Units |
| SEG 4910 | Software Engineering Capstone Project Part 1 | 3 Units |
| SEG 4911 | Software Engineering Capstone Project Part 2 | 3 Units |

### Optional Fourth-Year Courses

6 course units of technical electives in software engineering (SEG), computer science (CSI), computer engineering (CEG), electrical engineering (ELG) at the 3000 or 4000 level, or CSI 2120, CSI 2372. <sup>3</sup>

3 complementary electives course units at the undergraduate level <sup>4</sup> 3 Units

9 elective course units 9 Units

The following courses in the field "Impact of technology and/or engineering on society" are recommended as electives.

ADM 2372 Management Information Systems

ADM 3378 Emerging Topics in Management Information Systems

ENG 3170 Writing for Digital Media II

GEG 2320 GIS and the Digital Earth

GNG 4120 Technology Entrepreneurship for Engineers and Computer Scientists

GNG 4170 Engineering Law

GNG 4171 Intellectual Property and Technology Law for Engineers

HIS 2129 Technology, Society and Environment Since 1850

SEG 4901 Work Term IV

SEG 4902 Work Term V

SEG 4903 Work Term VI

**Total:** 129 Units

Note(s)

**1**

Under special circumstances and only when granted permission, students who have completed PHY 1331, PHY 1322, CHM 1301, PHY 2104 in a previous program may be allowed to substitute them by an alternative sequence of 4 different science courses.

**2**

Students who have not taken Physics 4U must take PHY1331 instead of **PHY 1321**. Students who have not taken Chemistry 4U must take CHM1301 instead of **CHM 1311**.

**3**

Suitably qualified students, with permission, may also take graduate courses offered in the School of Electrical Engineering and Computer Science.

**4**

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.