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 2020-2021 calendars (http://catalogue.uottawa.ca/en/archives/) for the previous requirements.

Compulsory First-Year Courses:

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 [1]	3 Units
SEG 2901	Work Term I	3 Units
3 course units from: [2]		3 Units
CHM 1301	Principles of Chemistry	
CHM 1311	Principles of Chemistry	
3 course units from: [2]		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
GNG 2101	Introduction to Product Development and Management for Engineers and Computer Scientists	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:		
EVS 1101	Introduction to Environmental Science	
PHY 2104	Introduction to Circuit Theory and Electronics	
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

3 optional course units in Software Engineering from:		3 Units
CSI 2372	Advanced Programming Concepts With C++ [3]	
CEG 3136	Computer Architecture II	
CEG 3155	Digital Systems II	
CEG 4399	Design of Secure Computer Systems	
SEG 3904	Innovation Research Project	
SEG 4110	Advanced Software Design and Reengineering	
SEG 4135	Cloud Systems and Networks	
SEG 4156	Telecommunications Software Design and Analysis	
SEG 4170	Enterprise Architecture and Models	
SEG 4189	Introduction to Electronic Commerce	
SEG 4300	Topics in Software Engineering	
3 optional course units in Computing from:		3 Units
CSI 2120	Programming Paradigms	
or any course in software engineering (SEG), computer science (CSI), computer engineering (CEG), or electrical engineering (ELG) at the 3000 or 4000 level [4]		
3 complementary electives course units at the undergraduate level [5]		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:	126 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] CSI 2372 is recommended.

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

[5] 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.