BASC ELECTRICAL ENGINEERING

Electrical engineering is at the heart of today's exciting advances in technology. With five technical specializations—communications, systems, electronics, microwave and photonic, and power and sustainable energy—our curriculum will enable you to influence how the world communities communicate, generate sustainable energy and heal diseases. As an electrical engineer, you will work with other engineers or scientists on emerging technologies.

The option of Engineering Management will prepare you with necessary skills to pursue entrepreneurial activities and start your own technology-related business. The double degree program—BASc in Electrical Engineering and BSc in Computing Technology—will put you at the intersection of the two areas that propel the waves of technological development.

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 2018-2019 calendars (https://catalogue.uottawa.ca/en/archives/) for the previous requirements.

Compulsory First-Year Courses:		
CHM 1311	Principles of Chemistry	3 Units
ENG 1112	Technical Report Writing	3 Units
GNG 1103	Introduction to Engineering Design	3 Units
GNG 1105	Engineering Mechanics	3 Units
GNG 1106	Fundamentals of Engineering Computation	3 Units
ITI 1100	Digital Systems I	3 Units
MAT 1320	Calculus I	3 Units
MAT 1322	Calculus II	3 Units
MAT 1341	Introduction to Linear Algebra	3 Units
PHY 1124	Fundamentals of Physics for Engineers	3 Units
Compulsory Second-Year Courses:		
CEG 2136	Computer Architecture I	3 Units
ELG 2136	Electronics I	3 Units
ELG 2137	Circuit Theory II	3 Units
ELG 2138	Circuit Theory I	3 Units
ELG 2911	Professional Practice in Information Technology and Engineering	3 Units
GNG 2101	Introduction to Product Development for Engineers and Computer Scientists	3 Units
MAT 2322	Calculus III for Engineers	3 Units
MAT 2384	Ordinary Differential Equations and Numerical Methods	3 Units
PHY 2323	Electricity and Magnetism	3 Units
3 course units from:		3 Units
HIS 2129	Technology, Society and Environment Since 1850	
PHI 2394	Scientific Thought and Social Values	
3 complementary electives course units at the undergraduate level [4]		3 Units
Compulsory Third-Year Courses:		
CEG 3136	Computer Architecture II	3 Units
ELG 3106	Electromagnetic Engineering	3 Units
ELG 3125	Signal and System Analysis	3 Units
ELG 3126	Random Signals and Systems	3 Units
ELG 3136	Electronics II	3 Units
ELG 3137	Fundamentals of Semiconductor Devices	3 Units
ELG 3155	Introduction to Control Systems	3 Units
ELG 3175	Introduction to Communication Systems	3 Units
ELG 3316	Electric Machines and Power Systems	3 Units
3 complementary electives course units at the undergraduate level [4]		3 Units
Compulsory Fourth-Year Courses:		
One option from the following:		30 Units
Option 1: Communications		
ELG 4118	Wave Propagation and Antennas	
ELG 4139	Electronics III	
ELG 4156	Linear Systems	
ELG 4176	Communication Systems	
ELG 4177	Digital Signal Processing	
ELG 4179	Wireless Communication Fundamentals	
ELG 4912	Electrical Engineering Design Project: Part I	
ELG 4913	Electrical Engineering Design Project: Part II	
6 course units of technical electives		
Option 2: Systems Engineering		
CEG 4158	Computer Control in Robotics	
ELG 4137	Principles and Applications of VLSI Design	
ELG 4156	Linear Systems	
ELG 4157	Modern Control Engineering	
ELG 4159	Integrated Control Systems	
ELG 4177	Digital Signal Processing	
ELG 4912	Electrical Engineering Design Project: Part I	
ELG 4913	Electrical Engineering Design Project: Part II	
6 course units of technical electives		
Option 3: Electronics		
ELG 4115	Microwave Circuits	
ELG 4117	Optoelectronics and Optical Components	
ELG 4137	Principles and Applications of VLSI Design	
ELG 4139	Electronics III	
ELG 4176	Communication Systems	
ELG 4177	Digital Signal Processing	
ELG 4912	Electrical Engineering Design Project: Part I	
ELG 4913	Electrical Engineering Design Project: Part II	
6 course units of technical electives		
Option 4: Microwave and Photonic Engineering		
ELG 4115	Microwave Circuits	
ELG 4117	Optoelectronics and Optical Components	
ELG 4118	Wave Propagation and Antennas	

	ELG 4139	Electronics III
	ELG 4178	Optical Communications and Networking
	ELG 4179	Wireless Communication Fundamentals
	ELG 4912	Electrical Engineering Design Project: Part I
	ELG 4913	Electrical Engineering Design Project: Part II
	6 course units of technical electives	
	Option 5: Power and Sustainable Energy	
	ELG 4125	Electric Power Transmission, Distribution and Utilization
	ELG 4126	Sustainable Electrical Power Systems
	ELG 4139	Electronics III
	ELG 4157	Modern Control Engineering
	ELG 4159	Integrated Control Systems
	ELG 4179	Wireless Communication Fundamentals
	ELG 4912	Electrical Engineering Design Project: Part I
	ELG 4913	Electrical Engineering Design Project: Part II
	6 course units of technical electives	
Total:		**123 Units**

List of Optional Courses

List of Technical Electives: [1]

CEG 3185	Introduction to Data Communications and Networking	3 Units
CEG 4158	Computer Control in Robotics	3 Units
CEG 4186	Wireless Networks [2]	3 Units
CEG 4187	Optical Networks	3 Units
CEG 4188	Higher Layer Network Protocols	3 Units
CEG 4190	Computer Network Design [3]	3 Units
CEG 4316	Digital Image Processing	3 Units
CEG 4396	Computer Network Management	3 Units
ELG 4115	Microwave Circuits	3 Units
ELG 4117	Optoelectronics and Optical Components	3 Units
ELG 4118	Wave Propagation and Antennas	3 Units
ELG 4121	Topics in Electrical Engineering II	3 Units
ELG 4122	Topics in Electrical Engineering I	3 Units
ELG 4125	Electric Power Transmission, Distribution and Utilization	3 Units
ELG 4126	Sustainable Electrical Power Systems	3 Units
ELG 4137	Principles and Applications of VLSI Design	3 Units
ELG 4139	Electronics III	3 Units
ELG 4156	Linear Systems	3 Units
ELG 4157	Modern Control Engineering	3 Units
ELG 4159	Integrated Control Systems	3 Units
ELG 4176	Communication Systems	3 Units
ELG 4177	Digital Signal Processing	3 Units
ELG 4178	Optical Communications and Networking	3 Units
ELG 4179	Wireless Communication Fundamentals	3 Units

Note(s)

1

One graduate course may be substituted for a 4000 level course for those students with a DGPA of at least 7.0. Faculty approval required.

2

CEG 4186 cannot be chosen as a technical elective in the Communications option.

3

CEG 4190 cannot be chosen as a technical elective in the Computing Technology program.

4

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