

# BASC IN MECHANICAL ENGINEERING

If it moves, a mechanical engineer designed it! Mechanical engineers are responsible for a wide range of mechanical, thermal and biomedical systems and devices, from computer parts to power plants, from manufacturing systems to spacecraft. This is a broad-based area of engineering, and graduates find work in almost every industrial sector, including high tech, aerospace, manufacturing, auto, energy, biomedical and consulting.

This program is offered in English and in French.

French courses are available in first year and almost all of second year. Most third and fourth year courses are offered in English only.

## 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	Engineering Design	3 Units
GNG 1105	Engineering Mechanics	3 Units
GNG 1106	Fundamentals of Engineering Computation	3 Units
MAT 1320	Calculus I	3 Units
MAT 1322	Calculus II	3 Units
MAT 1341	Introduction to Linear Algebra	3 Units
MCG 1100	Introduction to Mechanical Engineering	3 Units
PHY 1122	Fundamentals of Physics II	3 Units

### Compulsory Second-Year Courses:

CVG 2140	Mechanics of Materials I	3 Units
ELG 2336	Electric Circuits and Machines for Mechanical Engineering	3 Units
GNG 2101	Introduction to Product Development and Management 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
MCG 2101	Introduction to Design	3 Units
MCG 2108	Mechanics II	3 Units
MCG 2130	Thermodynamics I	3 Units
MCG 2131	Thermodynamics II	3 Units
MCG 2360	Engineering Materials I	3 Units
MCG 2361	Engineering Materials II	3 Units

### Compulsory Third-Year Courses:

ELG 3336	Electronics for Mechanical Engineers	3 Units
GNG 4170	Engineering Law	3 Units
MAT 3320	Mathematics for Engineers	3 Units

MCG 3110	Heat Transfer	3 Units
MCG 3130	Dynamics of Machinery	3 Units
MCG 3131	Machine Design	3 Units
MCG 3145	Advanced Strength of Materials	3 Units
MCG 3306	System Dynamics	3 Units
MCG 3307	Control Systems	3 Units
MCG 3340	Fluid Mechanics I	3 Units
MCG 3341	Fluid Mechanics II	3 Units

### Compulsory Fourth-Year Courses:

3 course units from:		3 Units
GNG 4120	Technology Entrepreneurship for Engineers and Computer Scientists	
HIS 2129	Technology, Society and Environment Since 1800	
PHI 2394	Scientific Thought and Social Values	
MCG 4308	Mechanical Vibration Analysis	3 Units
MCG 4322	Computer-Aided Design	6 Units
MCG 4328	Manufacturing	3 Units
MCG 4340	Mechanical Engineering Laboratory	3 Units
9 course units of technical electives from the list of optional courses		9 Units
3 complementary electives course units at the undergraduate level <sup>1</sup>		3 Units
3 course units of science electives		3 Units
Total:		132 Units

<sup>1</sup> Les cours au choix complémentaires de premier cycle incluent les cours de GNG 2501, GNG 4570 et GNG 4120 mais excluent tous les cours offerts par la Faculté des sciences et la Faculté de génie ainsi que tous les cours ayant un contenu en science, mathématiques ou génie.

Consultez la liste complète des cours au choix complémentaires (<https://engineering.uottawa.ca/undergraduate-programs/courses/complementary-electives>) sur le site web de la Faculté de génie

## List of Optional Courses

### Stream A: Fluid Mechanics - Heat Transfer:

MCG 4104	Building Energy Systems	3 Units
MCG 4110	Fluid Machinery	3 Units
MCG 4111	Internal Combustion Engines	3 Units
MCG 4126	Energy Conversion	3 Units
MCG 4128	Basic Nuclear Engineering	3 Units
MCG 4139	Computational Methods in Fluid and Heat Transfer	3 Units
MCG 4325	Gas Dynamics	3 Units
MCG 4345	Aerodynamics	3 Units

### Stream B: Solid Mechanics - Design and Synthesis:

MCG 4102	Finite Element Analysis	3 Units
MCG 4107	Dynamics II	3 Units
MCG 4127	Computational Methods in Mechanical Engineering	3 Units
MCG 4155	Advanced Engineering Materials	3 Units

*This is a copy of the 2019-2020 catalog.*

MCG 4329	Reliability and Maintainability in Engineering Design	3 Units
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**Stream C: CAD/CAM - Industrial Engineering:**

MCG 4130	Industrial Planning	3 Units
MCG 4132	Robot Mechanics	3 Units
MCG 4133	Automation Design and Control	3 Units
MCG 4134	Robot Design and Control	3 Units
MCG 4136	Mechatronics	3 Units

**Other Technical Electives:**

GNG 4128	Introduction to Nuclear Engineering	3 Units
MCG 4100	Thesis	6 Units
MCG 4142	Corrosion: Principles, Prevention and Control	3 Units
MCG 4143	Product Design and Development	3 Units
MCG 4144	Introduction to Composite Materials	3 Units
MCG 4190	Selected Topics I	3 Units
MCG 4191	Selected Topics II	3 Units
MCG 4220	Thesis	6 Units