BASC 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 2024-2025 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
MAT 1320	Calculus I	3 Units
MAT 1322	Calculus II	3 Units
MAT 1341	Introduction to Linear Algebra	3 Units
MCG 1101	Fundamentals of Mechanical Engineering	1 Unit
MCG 1102	Mechanical Drafting	2 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 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 of Mechanical Systems	3 Units
MCG 2108	Dynamics	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	
GNG 4930	Internship in Mechanical Engineering or Biomedical Mechanical Engineering	
HIS 2129	Technology, Society and Environment Since 1850	
PHI 2394	Scientific Thought and Social Values	
MCG 4308	Mechanical Vibration Analysis	3 Units
MCG 4322	Mechanical Engineering Capstone Project	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 [1]		3 Units
3 course units of science electives		3 Units
Total:		**132 Units**

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Complementary elective courses at the undergraduate level includes GNG 2101 (https://catalogue.uottawa.ca/search/?P=GNG%202101), GNG 4170 (https://catalogue.uottawa.ca/search/?P=GNG%204170), and GNG 4120 (https://catalogue.uottawa.ca/search/?P=GNG%204120), 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

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
MCG 4329	Reliability and Maintainability in Engineering Design	3 Units

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 4135	Deformation and Fracture of Engineering Materials	3 Units
MCG 4137	Micro and Nano Systems	3 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 4192	Selected Topics III	3 Units
MCG 4193	Selected Topics IV	3 Units
MCG 4220	Thesis	6 Units