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:
  - GNG 4120 Technology Entrepreneurship for Engineers and Computer Scientists (3 Units)
  - HIS 2129 Technology, Society and Environment Since 1800 (3 Units)
  - PHI 2394 Scientific Thought and Social Values (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 (3 Units)

3 course units of science electives (3 Units)

Total: 132 Units

1 Complementary elective courses at the undergraduate level includes GNG 2101 (https://catalogue.uottawa.ca/search/?P=GNG%204120), 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://engineering.uottawa.ca/undergraduate-programs/courses/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)


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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 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