

# Mechanical Engineering

Mechanical engineering is a broad field that involves the application of physical principles for the analysis, design, manufacturing and maintenance of mechanical systems. Memorial University's mechanical engineering undergraduate program encompasses academic learning in the areas of mechanics, vibration, controls, design, thermodynamics, materials and mechanical systems, and basic electronics. In the last three terms of the program, technical streams in mechanics and materials, mechatronics, petroleum, thermofluids and biomedical are available.

Graduates of the mechanical engineering program will be able to implement academic knowledge and integrated co-operative education experiences in order to succeed in industries such as automotive, aerospace, offshore oil and gas, chemical, computer, communication, manufacturing, as well as paper and power generation. Increasingly, mechanical engineers are also needed in the environmental and bio-medical fields.

## Co-operative Education Opportunities

Co-operative education experiences of students within the Department of Mechanical Engineering include a wide range of industries and opportunities. Examples of what our students can provide to employers include:

**Offshore oil and gas** – providing support in the design of individual components or systems for exploration, recovery and processing; maintenance and operation of systems; safety and reliability of component design, processes and procedures;

**Component design** – designing and implementing individual mechanical components and systems and product development such as brakes, transmission and suspension systems;

**Manufacturing** – assisting engineers with layout concept and design of a manufacturing plant, designing the control system for individual components, and designing for manufacture and plant management;

**Thermofluids** – analyzing heating, ventilation, and cooling systems, designing and maintaining building systems, electronic components, and supporting aerospace engineering;

**Control systems** – designing individual controllers, design and implementation of control systems such as those used in HVAC design and power generators; and

**Robotics** – assisting in the design, construction and maintenance of robots to perform specified tasks.

# Mechanical Engineering Program Organizational Chart

| Term   | Fall                                                                                                                                                                                             | Winter                                                                                                                                                                     | Spring                                                                                                                                                               |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year 1 | <b>Engineering One</b>                                                                                                                                                                           |                                                                                                                                                                            |                                                                                                                                                                      |
|        | Engineering Statics<br>Introduction to Programming<br>Engineering Graphics & Design<br>Electric Circuits                                                                                         | Physics<br>Chemistry<br>Mathematics<br>English<br>Professional Development Seminars                                                                                        | <b>Work Term 1*</b><br><br>*If students complete engineering one requirements within first two terms.                                                                |
| Year 2 | <b>Academic Term 3</b><br>Engineering Professionalism I<br>Engineering Mathematics<br>Thermodynamics I<br>Chemistry & Physics of Engineering<br>Materials I<br>Dynamics<br>Production Technology | <b>Work Term</b><br>Work Term 1<br>Work Term 2                                                                                                                             | <b>Academic Term 4</b><br>Mechanics of Solids I<br>Advanced Calculus for Engineering<br>Thermodynamics II<br>Mechanisms & Machines<br>Fluid Mechanics I              |
| Year 3 | <b>Work Term</b><br>Work Term 1<br>Work Term 2<br>Work Term 3                                                                                                                                    | <b>Academic Term 5</b><br>Probability & Statistics<br>Chemistry & Physics of Engineering<br>Materials II<br>Mechatronics I<br>Fluid Mechanics II<br>Mechanics of Solids II | <b>Work Term</b><br>Work Term 2<br>Work Term 3<br>Work Term 4                                                                                                        |
| Year 4 | <b>Academic Term 6</b><br>Heat Transfer I<br>Mechanical Component Design I<br>Mechanical Vibrations<br>Control Systems I<br>Computer Aided Engineering<br>Applications                           | <b>Work Term</b><br>Work Term 3<br>Work Term 4<br>Work Term 5 (Optional)                                                                                                   | <b>Academic Term 7**</b><br>Mechanical Design Project I<br>Instrumentation & Experimental<br>Design<br>Mechanical Component Design II<br>Two (2) technical electives |
| Year 5 | <b>Work Term</b><br>Work Term 4<br>Work Term 5 (Optional)<br>Work Term 6 (Optional)                                                                                                              | <b>Academic Term 8</b><br>Engineering Professionalism II<br>Mechanical Design Project II<br>Three (3) technical electives                                                  | ** Start of Technical Stream courses<br>1. Biomedical                                                                                                                |

More information ...

Course specific information:

Mechanical and Mechatronics Engineering  
Departmental Office 709-864-2708  
[www.mun.ca/engineering/mech](http://www.mun.ca/engineering/mech)

