

Department of

Mechanical and Materials Engineering



FACULTY OF
Engineering and
Applied Science

The Department of Mechanical and Materials Engineering prides itself on being a leader in project based, team oriented and hands-on learning. Students can choose to remain in the general Mechanical Engineering Option (ME1) or select a more focused path in the Materials Option (ME2) or the Biomechanical Option (ME3). All students that successfully complete the program will graduate with a highly respected Mechanical Engineering degree.



The Queen's Mechanical Engineering curriculum provides a solid foundation in the basic engineering sciences of solid mechanics and dynamics, materials engineering, fluid mechanics, thermodynamics, and heat transfer. Building on this foundation are courses key to the discipline of mechanical engineering including machine design, manufacturing methods, and instrumentation and control

Many students are attracted to the mechanical engineering program because it is the most broadly based of the engineering disciplines. Mechanical engineers can be found working in analysis, consulting, design and development, maintenance, management, manufacturing, research and sales. The mechanical engineer's knowledge and skills are needed in a remarkable range of industries.



Learn more: me.queensu.ca ■ Email mme.advisor@queensu.ca

Department of Mechanical and Materials Engineering

2nd Year Common CORE

APSC 200 Engineering Design and Practice
APSC 293 Engineering Communications
CIVL 220 Statics and Solid Mechanics
ELEC 210 Introductory Electric Circuits & Machines
MECH 213 Manufacturing Methods
MECH 215 Instrumentation and Measurement
MECH 216 Instrumentation and Measurement Labs
MECH 228 Kinematics and Dynamics
MECH 230 Thermodynamics I
MECH 241 Fluid Mechanics I
MECH 270 Materials Science and Engineering
MTHE 225 Ordinary Differential Equations
MTHE 272 Application of Numerical Methods

3rd Year Common CORE

APSC 221 Engineering Economics
ELEC 310 Analog Electronic and Digital Circuits
MECH 321 Solid Mechanics II
MECH 323 Machine Design
MECH 328 Dynamics and Vibration
MECH 346 Heat Transfer
MECH 350 Automatic Controls
MTHE 367 Engineering Data Analysis
One - Complementary Studies or Technical Elective

3rd Year General Option

MECH 330 Applied Thermodynamics II
MECH 341 Fluid Mechanics II
MECH 398 Mechanical Engineering Lab I
MECH 399 Mechanical Engineering Lab II

3rd Year Materials Option

MECH 370 Principles of Materials Processing
MECH 371 Fracture Mechanics & Dislocation Theory
MECH 396 Materials Engineering Lab I
MECH 397 Materials Engineering Lab II

3rd Year Biomechanical Option

CHEE 340 Biomedical Engineering
MECH 393 Biomechanical Product Development
MECH 398 Mechanical Engineering Lab I
MECH 399 Mechanical Engineering Lab II

4th Year General and Materials Option

MECH 460 Team Project - Conceive and Design
MECH 464 Project Management & Communications
Complementary Studies
Technical Electives

4th Year Biomechanical Option

MECH 460 Team Project - Conceive and Design
MECH 462 Team Project - Implement and Operate
MECH 464 Project Management & Communications
Complementary Studies
Technical Electives

Electives by Concentration—Although there is no formal streaming of electives in MME, the following Areas of Concentration are provided to give students some guidance.

Note: Not all courses are offered every academic year.

Aerospace Engineering

MDEP 437 Fuel Cell Technology
MECH 371 Fracture Mechanics & Dislocation Theory
MECH 439 Turbomachinery
MECH 441 Fluid Mechanics III
MECH 444 Computational Fluid Dynamics
MECH 448 Compressible Fluid Flow
MECH 465 Computer Aided Design
MECH 480 Airplane Aerodynamics and Performance
MECH 481 Wind Energy

Biomechanical Engineering

CHEE 340 Biomedical Engineering
CHEE 450 Engineering Biology
MECH 370 Principles of Materials Processing
MECH 371 Fracture Mechanics and Dislocation Theory
MECH 478 Biomaterials
MECH 492 Biofluids
MECH 494 Kinematics of Human Motion
MECH 495 Ergonomics and Design
MECH 496 Musculoskeletal Biomechanics

Energy and Fluid Systems

CHEE 481 Air Quality Management
MDEP 437 Fuel Cell Technology
MECH 430 Thermal Systems Design
MECH 435 Internal Combustion Engines
MECH 439 Turbomachinery
MECH 441 Fluid Mechanics III
MECH 444 Computational Fluid Dynamics
MECH 448 Compressible Fluid Flow
MECH 481 Wind Energy

Manufacturing Engineering

MECH 370 Principles of Materials Processing
MECH 424 Sustainable Product Design
MECH 455 Computer Integrated Manufacturing
MECH 465 Computer Aided Design
MECH 476 Engineering of Polymers and Composite Materials
MECH 482 Noise Control

Materials Engineering

MECH 470 Deformation Processing
MECH 476 Engineering of Polymers and Composite Materials
MECH 478 Biomaterials
MECH 479 Nano-Structured Materials
MECH 483 Nuclear Materials
MECH 484 Introduction to Ceramics

Mechatronics Engineering

ELEC 271 Digital Systems
ELEC 274 Computer Architecture
ELEC 371 Microprocessor Systems
MECH 420 Vibrations
MECH 423 Introduction to Microsystems
MECH 452 Mechatronics Engineering
MECH 455 Computer Integrated Manufacturing
MECH 456 Introduction to Robotics
MECH 458 Machine Condition Monitoring & Fault Diagnostics

Learn more: me.queensu.ca ■ **Email** mme.advisor@queensu.ca