Purpose of the Collection:

The Mechanical and Materials Engineering collection of Western Libraries is intended to support the research activities of faculty, students and staff and the instructional requirements of undergraduate and graduate programs. The collection also provides support for teaching and research in related fields such as other engineering departments and the sciences.

The Allyn & Betty Taylor Library is the primary location for material supporting the research and instructional needs of the Mechanical and Materials Engineering department. A strategic priority of Western Libraries is to acquire and provide access to information in digital formats. A significant number of holdings for Mechanical and Materials Engineering are digital available anywhere, anytime.

Program Information:

The department of Mechanical and Materials Engineering offers the following programs:

1. Undergraduate degree: BESc in Mechanical Engineering

2. Combined undergraduate degrees with professional faculties (Law, Business, or Medicine) are offered, as are dual degrees with other Western programs.

3. Graduate degrees:
   • MESc in Mechanical and Materials Engineering
   • MEng in Mechanical and Materials Engineering
   • PhD in Mechanical and Materials Engineering
Subject Areas Covered:

Library materials are selected to provide support to coursework and research.

Areas of focus for undergraduate instruction are:

• Engineering Dynamics
• Engineering Experimentation
• Finite Element Methods
• Fluid Mechanics
• Heat Transfer
• Industrial Materials
• Kinematics and Dynamics
• Materials Selection
• Mechanical Components Design
• Mechanics of Materials
• Product Design
• System Modeling and Control
• Thermodynamics

Major areas of focus for faculty and graduate research are:

• Biomechanics
• Design and Manufacturing
• Materials & Solid Mechanics
• Mechatronics, Robotics, Sensors, and Controls
• Musculoskeletal
• Thermofluids

More detailed areas of focus for faculty research, graduate research and coursework, and upper-level technical electives and fourth-year project work for undergraduate students include:

• Actuator Principles, Integration and Control
• Aerodynamics for Engineers
• Applied Computational Fluid Mechanics and Heat Transfer
• Applied Measurement and Sensing Systems
• Applied Mechanics
• Biomechanics of Human Joint Motion
• Biomechanics of Musculoskeletal System
• Biotransport Phenomena
• Building Systems Engineering
• Composite Materials
• Composite Processing
• Computational Fluid Dynamics and Heat Transfer
• Computational Methods in Engineering
• Computer Aided Design and Manufacturing
• Computer Integrated Manufacturing (CIM)
• Computer Numerically Controlled (CNC) Machining
• Computer-Aided Geometric Modeling
• Continuum Mechanics
• Control Engineering Systems and Automation
• Convection Heat Transfer
• Corrosion And Wear
• Deformation of Polymers
• Energy Conversion
• Engineering Dynamics
• Engineering Graphics
• Engineering Machinery
• Engineering Mathematics and Analysis
• Finite Element Methods
• Fluid Machinery
• Fracture Mechanics
• Fracture of Materials
• Fuel Cell Science and Engineering
• Fundamentals of MEMS and NEMS
• Heating, Ventilating and Air Conditioning
• Hydraulics
• Hydrodynamic Stability
• Industrial Control Systems
• Internal Combustion Engines
• Kinematics and Dynamics
• Machine Design
• Manufacturing and Process Engineering
• Mechanical Properties of Materials
• Mechanical Vibrations
• Mechanics of Materials
• Mechanics of Thin Films
• Mechanism and Theory of Turbulent Flow
• Mechatronic System Design
• Medical and Assistive Device Design
• Metallurgy
• Microfluids and Lab-On-a-Chip
• Microstructural Analysis
• Microstructure of Polymers
• Modern Control Systems
• Motors and Engines
• Nanomaterials and Nanotechnology
• Nuclear Engineering
• Optomechatronic Systems
• Physical Metallurgy
• Piezoelectric Materials
• Principles and Applications of Neural Networks
• Production and Operations Management
• Renewable Energy
• Robotics and Manufacturing Automation
• Solid Mechanics
• Spectral Methods in Fluid Mechanics
• Stochastic Dynamics and Stability of Mechanical Systems
• Strengthening Methods in Materials
• Surgical Mechatronics
• Theory and Practice of Plasticity
• Theory of Elasticity
• Thermal Systems Engineering
• Viscous and Boundary Layer Flow
• Wind Engineering
• X-ray Diffraction in Engineering

**Format:**

Acquisitions will include monographs, book series, journals, and engineering standards. Resources, particularly journals, in digital format are preferentially selected over their print counterparts. Alternate formats, such as CD-ROM, video, DVD, and microform, are considered on an individual request basis.

**Language:**

English is the primary language of collection. Materials in other languages may be acquired to support the curriculum. English translations of major works in other languages are also acquired.

**Source of Publication:**

Sources of publication are primarily Canada, the United States, the United Kingdom, and Western Europe. Material published in other regions may be considered on request and will be evaluated for quality and relevance.

**Date of publication:**

Materials with a recent imprint date are preferred. Older material will be considered upon request.

**Exclusions:**

With the exception of individual requests and some selective acquisitions, the following types of material are not acquired:

- Popular literature
- Conference proceedings
- Theses or dissertations from other institutions (that are not included as part of the ProQuest Dissertations & Theses Database)
- Course textbooks

**Related collections and cooperation:**

The Western Libraries collection for Mechanical and Materials Engineering is supplemented by collections in related fields, such as Chemical and Biochemical Engineering, Civil and Environmental Engineering, Computer Science, Electrical and Computer Engineering, and Physics.
Engineering Standards from various governmental bodies and organizations are collected to support undergraduate and graduate course instruction, thesis research at the MESc and PhD levels, and faculty research. The emphasis is on current and locally relevant standards, but some retrospective standards are available.

**Gifts:**

The library gratefully accepts gifts of materials in good condition. As considerable expense is incurred by Western Libraries in the receipt and processing, the library only accepts gifts of materials which support current teaching and research needs, or which are not adequately represented in the collection.

**Managing the Collection:**

In order to ensure that collections remain optimally useful for our patrons, it is necessary to analyze collection usage and available space regularly. Items will need to be selectively removed from the onsite collection from time to time.

Duplicate items that are no longer required to support the curriculum, and damaged items that can no longer be replaced may be removed from the collection at the discretion of the Subject Librarian.

Items that are unique to Western may be transferred to a storage facility. Material housed in these storage facilities is available on request through the Library Catalogue.

Criteria for transfer selection include, but are not limited to, the following:

1) Outdated or previous editions of titles
2) Medium- to low-use items
3) Material that is available in alternate formats, i.e., online
4) Materials that would benefit from storage in a more controlled environment.

Consult the Subject Librarian for further details about these criteria.

**Resources to aid in acquisition of material:**

- Profile developed in collaboration with Coutts Information Services to capture publications that match relevant Library of Congress Subject Headings
- Websites and catalogues of society publishers (ASME, IMechE, ASHRAE)
- Direct requests from library patrons