

Faculty of Engineering

OVERVIEW

The University of New Brunswick's (UNB) Faculty of Engineering is a research-intensive faculty. Over 90% of UNB Engineering faculty members are engaged in research. They attract and conduct an estimated \$17 million per year in research funded by public research councils, government organizations and industrial partners, public and private organizations from across the globe, with an emphasis on practical industry-driven solutions.

RESEARCH CAPABILITIES

Chemical

- Nuclear Engineering: Corrosion
- Catalysis: Biofuels, Nanoparticles
- Recirculation Aquaculture Systems
- Pulp and Paper: Bio-refinery, Mech. Pulping
- Nanotechnology
- Surfaces: Polymers, Adsorption, Porous

Civil

- Concrete Materials
- Environmental: Wastewater Mgmt.
- Transportation
- Highway Construction and Pavement
- Road Safety
- Soil Structure

Geodesy and Geomatics

- Geodesy
- Positioning and Navigation Systems
- Ocean Mapping
- Advanced Geomatics Image Processing
- GIS and Spatial Data Infrastructure
- Engineering and Mining Surveys

Electrical and Computer

- Controls, Instrumentation and Robotics
- Myoelectric Controls/Biomechanics
- Fibre Optic Systems
- Communications
- Sensor Networks
- Embedded System Design
- Biomedical Signal Processing; Neural Networks; Adaptive Signal Processing; Speech Recognition
- Power and Sustainable/Renewable Energy
- Software Engineering/Software Tools

Mechanical

- Acoustics and Vibration
- Biomedical
- Manufacturing and Materials Processing
- Mechatronics and Design
- Renewable Energy Systems
- Robotics, Controls and Applied Mechanics
- Thermofluids and Aerodynamics

MAJOR PROJECTS

UNB Advanced Hand

Researcher(s): *Dr. Glen Hughes*

Developing a prosthetic hand that features movable fingers and other interchangeable parts.

Wind Energy Strategic Network (WESNet)

Researcher(s): *Dr. Liuchen Chang*

Leading a Canada-wide multi-institutional research network focused on wind energy.

Oceanographic and Seabed Mapping Surveys

Researcher(s): *Dr. John E. Hughes Clark*

Producing oceanographic and seabed maps ranging from advanced processing of bathymetric sensors and data in Canada's Arctic to the geographic and natural forces at work in the Saint John harbour.

Microstructure-based Lightweight Materials Improvement and Application in the Automotive Industry

Researcher(s): Dr. Zengtao Chen

Focusing on a series of lightweight aluminum and steel alloy sheets. Modeling and optimizing the microstructure of materials for better forming performance in the automotive industry.

Smart Skin

Researcher(s): Dr. Felipe Chibante

Developing an artificial touch-sensitive skin using nanotechnology to detect and measure pressure.

PanSharp Technology

Researcher(s): Dr. Yun Zhang

Developing advanced satellite image sharpening algorithms.

Unmanned Underwater Vehicle (UUV) Docking Arm

Researcher(s): Dr. Juan A. Carretero, Dr. Rickey Dubay and Dr. Tiger Jeans

Designing, analyzing and testing of a robotic arm to autonomously capture UUVs from a submarine.

FACILITIES

Canadian Centre for Geodetic Engineering

Researching, developing, and implementing innovative precision surveying and geomechanics solutions.

Centre for Nuclear Energy Research

Focusing on corrosion process research, primarily in high-pressure/high-temperature water.

Construction Technology Centre Atlantic Bruce MacDonald Laboratory

Providing a bridge between recent developments in construction research and industry partners.

Institute of Biomedical Engineering

Furthering education, research and community service in biomedical engineering.

Limerick Pulp and Paper Research Centre

Developing technologies for Canada's pulp and paper industries including: pulping, bleaching, papermaking and effluent treatment.

For more information please visit: www.unb.ca/fredericton/engineering/