

# RESEARCH Laboratory Lineup



## Applied Computational Fluid Dynamics Laboratory

The applied Computational Fluid Dynamics (CFD) lab at the Mechanical Engineering department was established to use CFD as an analysis tool to understand the transport phenomena (fluid dynamics, heat and mass transfer, chemical reactions and electromagnetic effects) in industrial processes and as a design tool to optimize engineering components and system design. Transport phenomena are present in various industrial processes and engineered systems, such as energy conversion, automobile aerodynamics, electronics cooling, HVAC (heating ventilation and air conditioning), welding, casting, etc.

## Center for Sustainable Energy and Environment

The Center for Sustainable Energy and Environment (CEE) is led by Dr. Elif Kongar and serves as an interdisciplinary research facility at the School of Engineering to conduct extensive research on energy- and environment-related issues. The mission of the Center is to contribute to the body of knowledge in related areas while increasing awareness on greening activities.

Research areas include life cycle analysis, end-of-life (EOL) products, disassembly for environment, disassembly sequencing, disassembly scheduling, greening curricula, and increasing participation of women in engineering.

The Center also serves as a bridge between researchers and the community, aiming to create enthusiasm for Science, Technology, Engineering and Math (STEM). Dr. Jani Pallis and Dr. Kongar are respectively the current

Society of Women Engineers (SWE) counselor and faculty advisor and aim at increasing the female participation in STEM-related research.

## Cloud Computing Cluster

The Cloud Computing Cluster (CCC) develops and implements open-source technologies to support reliable, scalable, distributed computing in non-relational data environments for science and business.

## CNC Mini Milling Machine Laboratory

A Haas CNC mini milling machine in the Mechanical Engineering Lab at the School of Engineering is currently being used to support academics and engineering education. Courses offered through the Lab include MEEG 479: CNC Machine Control and Mill, MEEG 423: CAM & CNC Machining, MEEG 424: Advanced CAM & Automation, and some electrical engineering courses. Students acquire knowledge and experience in CNC programming, understand basic machining processes, learn to set up and adjust the tools and fixtures and follow safety procedures. The hands-on machining experiences in this mechanical lab benefit our engineering students in their current academic course learning as well as future career planning and employment.

## Digital/Biomedical Embedded Systems and Technology Laboratory

The D-BEST research lab focuses on digital/embedded systems designs, as well as wireless and computer networks with applications to bio-inspired research areas. D-BEST Lab members explore research findings on the following:

- Respiratory signal classification and synchronization with virtual medical animations to assist lung cancer patients
- Sleep disorders and apnea detection using ECG and SPO<sub>2</sub> signals
- EEG signal processing and classification for stress/fatigue early detection
- Multipath routing and error detection in wireless multimedia sensor networks
- Security in wireless infrastructure networks

## Interdisciplinary Robotics, Intelligent Sensing, and Control (RISC) Laboratory

The Interdisciplinary RISC Lab resides in the Computer Science and Engineering department at the University of Bridgeport. It was formed in 1995 by its founder and coordinator, Professor Tarek Sobh, in order to conduct research in a variety of robotics-related fields, and as a step toward the development of commercially applicable projects. Research interests include reverse engineering and industrial inspection; CAD/CAM and active sensing under uncertainty; robots and electromechanical systems prototyping; sensor-based distributed control schemes; unifying tolerances across sensing, design, and manufacturing; hybrid and discrete event control, modeling, and applications; mobile robotic manipulation; and developing theoretical and experimental tools to aid in performing adaptive goal-directed robotic sensing for modeling, observing, and controlling interactive agents in unstructured environments.