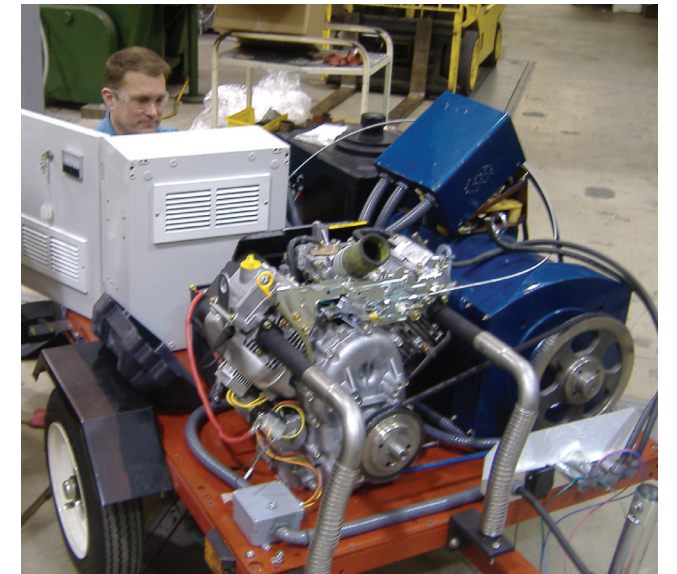




School of
Engineering
& Applied
Sciences

SENIOR *design* PROJECTS 2009

Department of Engineering Technology



April 24 • 10am-4:30pm

**Harry T. Wilks Conference Center
Miami University Hamilton**

What is Senior Design?

Student teams conduct major open-ended research and design projects. Elements of the design process including establishment of objectives, synthesis, analysis, and evaluation are integral parts of the capstone. Real-world constraints such as economical and societal factors, marketability, ergonomics, safety, aesthetics, and ethics are also an integral part of the capstone.

For more information on ABET accredited Engineering Technology program at Miami University regional campuses, contact:

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1601 University Blvd.
Hamilton, Ohio 45011
(513) 785-3132
webbp@muohio.edu

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Department of
Engineering Technology
Miami University Middletown
4200 E. University Blvd.
Middletown, Ohio 45042
(513) 727-3271
smithds1@muohio.edu



Engineering Technology senior design students spend a significant amount of time performing calculations for their projects. Engineering analysis, cost analysis, feasibility studies, and statistical analysis are all integral aspects of their selected projects. All projects have a sponsor to provide guidance and funding.

SCHEDULE OF EVENTS

10:00 – 10:25 AM

Distance Learning Remote Access and Control of Lab Apparatus

Students: **Jason Neal, Steve Norman**
Advisor: **Vipul Ranatunga**

This project is an experimental setup used commonly in dynamics and control methods is under consideration for allowing remote access and control of system parameters. The complete system will contain adjustable masses, interchangeable springs, and adjustable air damping. As a pilot test, only the damping is considered during this project.

10:30 – 10:55 AM

Fluids Trainer – Minor Losses Verification

Students: **Randy Meyer,Victor Willis**
Advisor: **Gary Drigel**

Student engineers are designing and building a testing apparatus to be used in fluid mechanics and heat transfer. The focus is verification of pipe and fluid flow energy losses within a steady flow, one dimensional connected pipe systems from components such as tees, elbows, reducers, and valves. This device will allow direct measurement of the losses and the verification of published information.

11:00 – 11:25 AM

Heat Pump and Hydronics Trainer

Students: **Sam Luckett, Richard Gable, Jeremy Williams**
Advisor: **Gary Drigel**

Student engineers are designing and updating a two dimensional Heating Ventilating and Air Conditioning (HVAC) laboratory device. The new multi-purpose trainer incorporates a heat pump, hydronics system, and a LabView based data acquisition system to gather the data for experimentation and applied calculations. It will be used in Engineering Technology classes such as thermodynamics, fluid mechanics and heat transfer. An addition novel feature will allow remote access via a computer server so that this trainer can be used for other distance classes.

11:30 – 11:55 AM

FIRST Robotics Competition

Students: **Marc Secoy, Chris Chisler, Ray Howland**
Advisor: **David Hergert**

This group is working with Lakota High School to enter the FIRST Robotics competition. The Miami students are designing the microcontroller interface and Labview programming. Their project won first place in the Buckeye Regionals in a competition with 59 other schools. Proctor and Gamble donated \$5000 to Miami for this project.

12:00 – 1:00 PM

LUNCH & AWARDS PRESENTATION

1:15 – 1:25 PM

Microcontroller Interface for Glaucoma Test Transducer

Students: **Chris Hogan, Scott Bidwell**
Advisor: **David Hergert**

This group is working with a research team at Purdue University to design a microcontroller based interface for a transducer that will eventually be implanted in a human eye. This project was featured as part of a newscast in Madison Wisconsin.

1:30 – 1:55 PM

Robotic Design for PLC Controlled Conveyor

Students: **Nate Settlemire, Adam Stahl, Jordan Heitmeyer**
Advisor: **David Hergert**

This group is designing a complete servo controlled robot that will be used in a pick and place operation on a conveyor. Students will use Labview to control the motor.

2:00 – 2:25 PM

Wonderware SQL Interface

Students: **Mike Rose, Jonathan Tully**
Advisor: **David Hergert**

This group is designing an interface incorporating Wonderware HMI software and Excel that will implement data mining for a bottling

operation. The results will be used in a new course, ENT 402 Industrial Automation Lab.

2:30 – 2:55 PM

Servomotor Design for Controls Course

Students: **Kehinde Ikuomenisan-Olatunji, Joe Watkins**
Advisor: **David Hergert**

This group is determining the transfer function of a series of motors. From this they will predict the rise time, and position and speed control for the motor with an encoder and tachometer. The results will be used in ENT 418 Electromechanical Control Systems.

3:00 – 3:25 PM

Power Augmentation Device for an Electric S-10 Truck

Students: **Bob Pigat, Ed Smeltzer, Cory Gleisinger**
Advisor: **David Hergert**

This project has a group of Miami students at North Central State college converting a Chevy S-10 pickup truck into an electrical generator assisted vehicle. This project has received over \$20,000 in funding.

3:30 – 4:00 PM

Power Grid Analysis for Walsh College

Students: **Steve Chumney**
Advisor: **David Hergert**

During the hurricane in September 2008, Walsh College experienced an unexpected loss of power from their auxiliary generators. This is a study of their entire power grid to help suggest improvements to stop this from happening in the future.

4:00 – 4:30 PM

Poster Judging

Senior Design Projects 2009

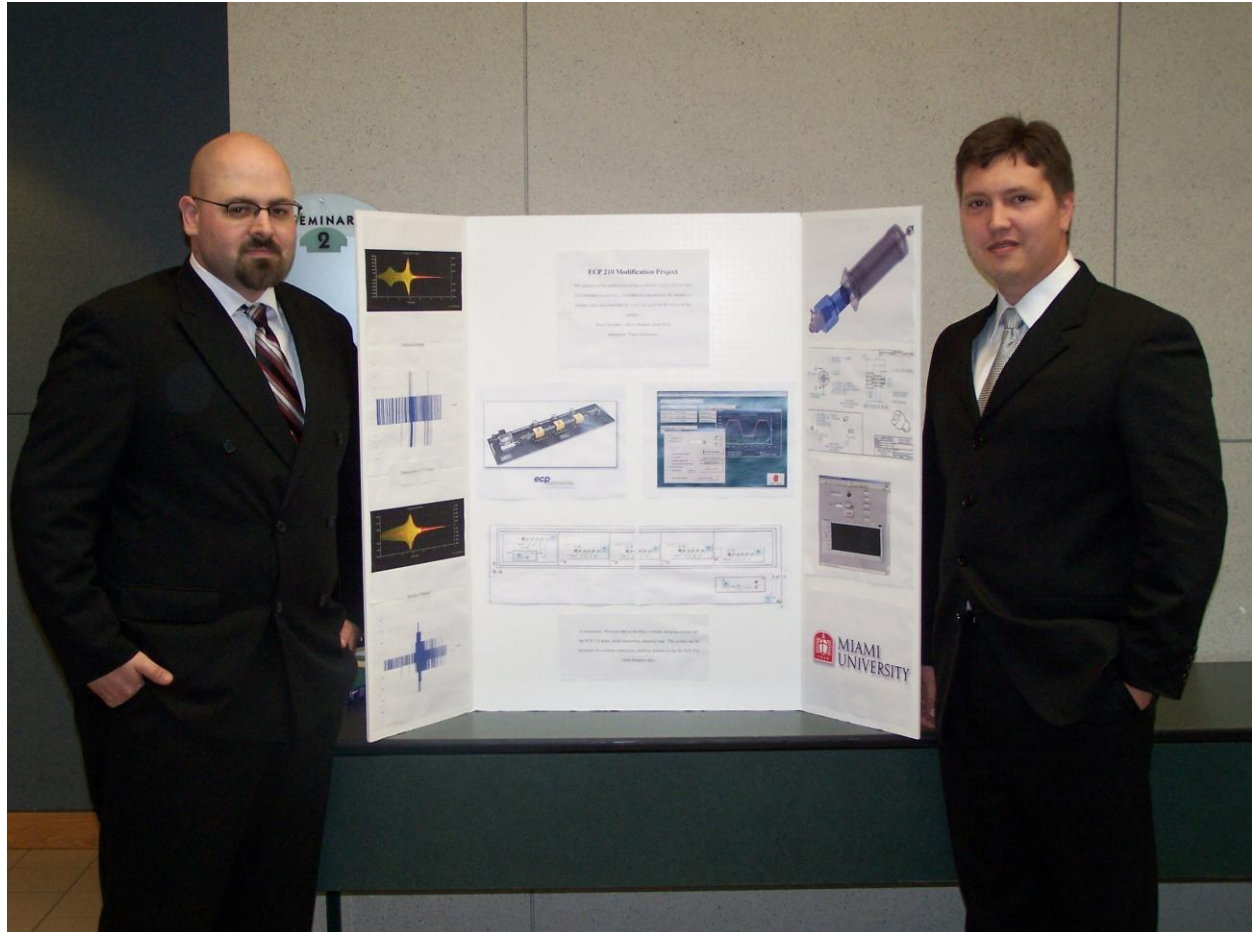
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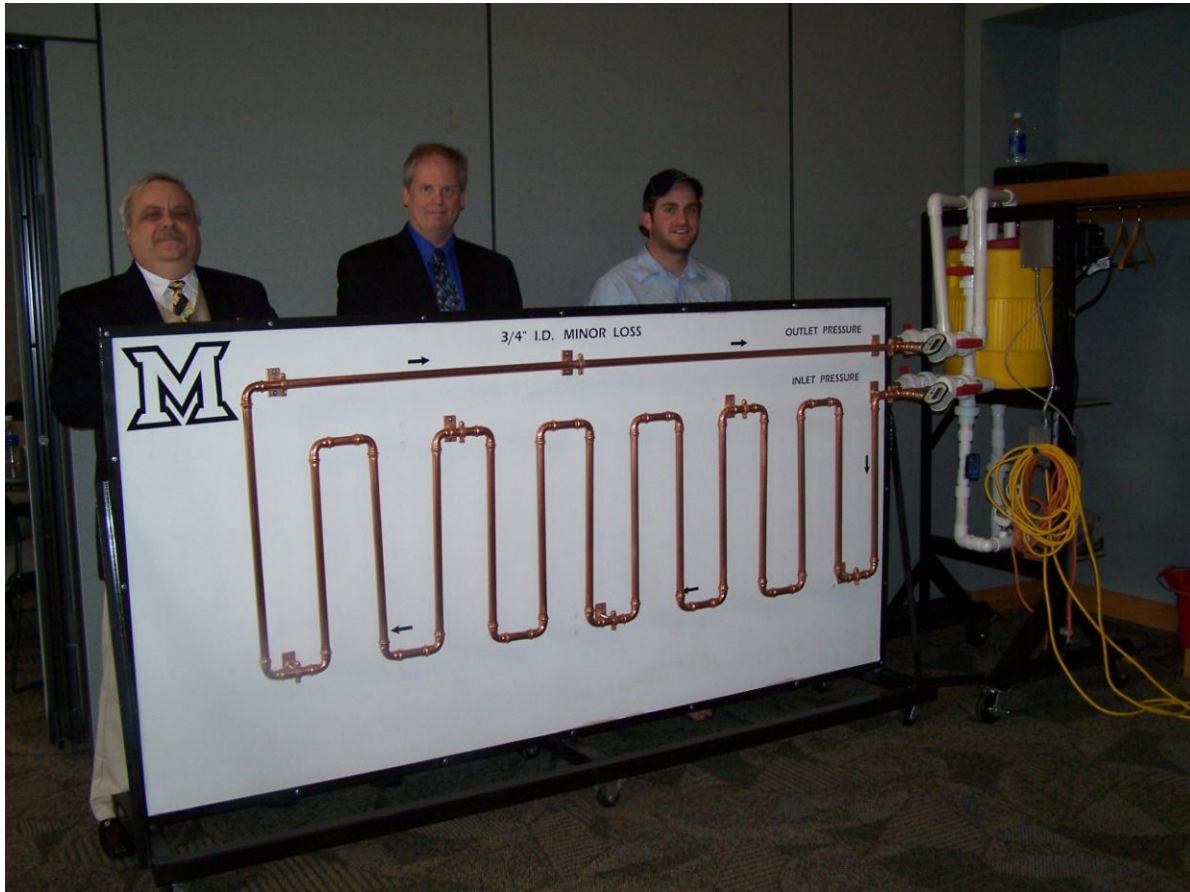


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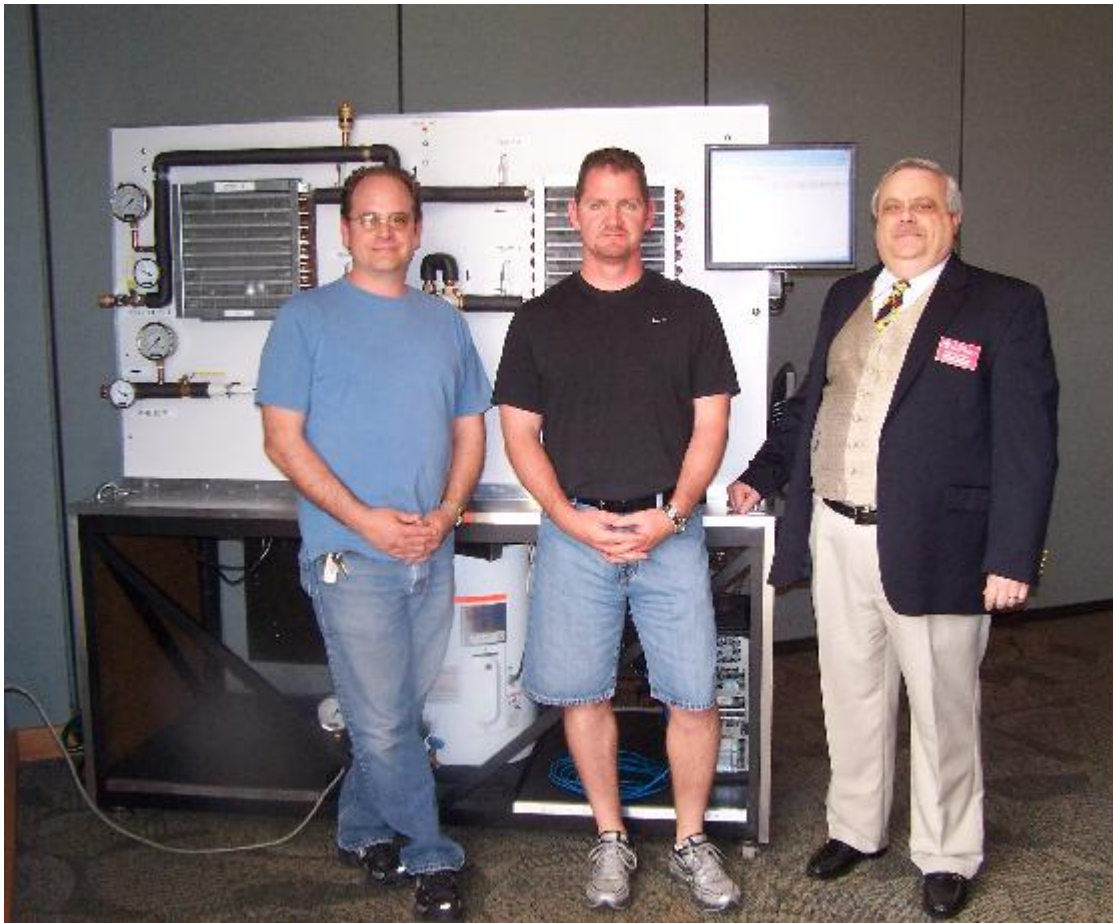
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