SCHOOL OF ENGINEERING
& APPLIED SCIENCE
Department of Engineering Technology

CONCURRENT PRESENTATIONS

Friday, April 22 9:30am-5pm

FREE & OPEN TO THE PUBLIC.

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NC North Central State College

SENIOR DESIGN 2011 projects

CONCURRENT MORNING PRESENTATIONS

Miami University Regionals
Hamilton Campus
Harry T. Wilks Conference Center

9:30am
Mobile Access Ramp Development Specializing in Pontoon Boat

Bradley Rogers, Randy Zeiser

Student engineers designed and built a prototype of a mobile equal access ramp to facilitate the safe and convenient transport of handicapped individuals in wheelchairs on and off a standard pontoon boats.

10am
HVAC Trainer Thermodynamics & Heat Transfer Labs

Anthony Dahlinghaus, Jason Morningstar, Scott Harper

Student engineers utilized an existing HVAC trainer to develop educational laboratories for Miami University Engineering Technology courses. Labs include specific heat, log mean temperature difference, and coefficient of performance equations that provide comparisons of measured and theoretical values.

10:30am
Wireless Medical Motion Detection System

Michael Dando, Eric Seebohm, David Ryan

Students designed a wireless device for tracking the movement of elderly or special needs patients that are prone to falls and injuries. The wireless device is small, portable and suitable for carrying in a pocket or attached to a dress.

11am
Engineering Concepts & Components – Instrumentation Labs

Andrew George, Ben Risner, Brad Sanders

Students constructed lab demonstrations to portray basic engineering concepts related to dynamics and strength of materials. These lab demonstrations implemented various types of lab equipment along with interactive computer software used for system analysis and data collection.

11:30am
Modular Oxygen Sensor & Application Analysis

Andy Bowden and Justin Clark

Students designed and demonstrated the capabilities of a modular oxygen sensor manufactured by Marathon Monitors Inc. Students heated the sensor to 17500F, simulated an in-situ atmosphere, and described applications which require oxygen sensors.

North Central State College
Kehoe Center, Shelby, OH

9:30am
Web-Monitored Prony Brake Torque Transducer

Ross Lee, Brent Fogg

This project had several objectives: measure the torque created by a capacitor start AC electric motor utilizing a Prony brake; store and analyze the collected data with Labview software; and share that information using a client/server network. This project will be used in EMET courses at Miami.

10am
Automated Guided Vehicle (AGV) Using Webcam Based Vision

Aaron Siferd, Jonathon Cron

Students implemented artificial intelligence to control an Automated Guided Vehicle (AGV). An RC car will be controlled to navigate a target using a webcam based vision system.

10:30am
Automated Indexing Table

Colton Krupp, Paul Molnar, Joshua Storrer

The purpose of this project was to design and develop an automatic material storage and handling system for multi-robotic assembly operations. The system consists of a servo motor driven rotary indexing table which is fully controlled by a PLC microcontroller unit that can integrate with an industrial automation system infrastructure.

11am
Improvement of Rolling Mill Process at Tosoh SMD, Inc.

Drew Thomas, Ryan Volant, Mike Sestito

The objective of this project was to improve the current rolling mill process at the Tosoh SMD, Inc. Improvements were made in the areas of automation of the system, efficiency, operating cost, man power, reduction of time to complete the process, and implementation of safety requirements for OHSA.

11:30am
Robot/Bottling System for Zane State College

Karli Niswonger, Matt Jenkins, Andrew Keister

Students proposed and designed a bottling-conveyor operation for Zane State College. Students designed the bottle fill apparatus, brackets for the conveyor, as well as programming the robot and conveyor through a PLC.

CONCURRENT AFTERNOON PRESENTATIONS

WEBCAM AUTOMATED GUIDED VEHICLE

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Miami University Regionals
Hamilton Campus
Harry T. Wilks Conference Center

1pm
Smartphone-Based RFID Reader
Lyndon Pearson, Eric Duritsch

Students developed a hardware and software interface to interface an RFID reader to a cellular phone or a pocket-size computing platform in order to obtain information from objects in proximity. Miami University IT services is interested in this application for inventory control applications.

1:30pm
Automated Drool Cart — Lyondell Basell Industries
Scott Weber, Dan Baber, Craig Caudill

Student engineers designed and built an automated drool cart for the extrusion coating operations at LyondellBasell Industries R&D center located in Cincinnati Ohio. This project focuses on the automation of a manual dumping process of heavy waste pans from the production line.

2pm
2010 Basic Utility Vehicle Competition Team
Justin Welling, Greg Robertson, Mitchell Jones

Students designed, fabricate and built a Basic Utility Vehicle (BUV) to aid impoverished citizens in the African country of Ghana.

Their design conformed to performance specifications provided by IAT (Institute for Affordable Transportation).

2:30pm
Toyota Solara Automated Vehicle Control System
Bryan Allen, Andrew Rapach, Ronald Sorrell

Student engineers designed and built systems to enable a Toyota Solara to be operated remotely. This vehicle was donated to Miami University by Toyota Motor Engineering & Manufacturing for student projects.

3pm
Wireless Network of Programmable Logic Controllers for Three Phase Motor Control
Brandon Anderson, Harold Dicks, Andrew Knipp

Students developed a wireless network of Programmable Logic Controllers (PLCs) for monitoring and control of industrial processes. The wireless network is constructed through the low-level integration of wireless adapters of a selected communication protocol (WiFi, Bluetooth or ZigBee) and conventional PLC systems.

3:30pm
FIRST Robotics Competition
Sean Grubb, Roscoe Jeffries, John Schroder

Student mentored the FIRST Robotics Team 1038 at Lakota East High School. They had a technical support role in the design and build of a robot in (6) weeks that will participate in the FIRST® Robotics national competitions.

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Kehoe Center

1pm
Improve and Expand Functions of a Hydraulic Test Bench with NI Modules
Tyler Rauh, Brandon Hoffman, Tyler Goecke

Students revamped a hydraulic test bench used by Crown Lift Trucks to test various hydraulic components. By incorporating NI modules, this project will enable the general purpose setup for a test and make the test bench more expandable.

1:30pm
Improving the Control System Efficiency in an Electric Truck
Richard Gast, Josh Reagan

Students upgraded an electric truck by adding an auto power delivery system and a temperature monitoring system so that an on board generator can provide power on demand to the truck. This project is sponsored by North Central State College.

2pm
Wind Turbine Simulation Facility Design and Implementation
Clifford Green

Students designed a wind turbine simulation facility to test a rectifier which can optimize wind turbines operation and generate more power. An alternative energy mounting design was modeled and built to attach energy harnessing devices onto cell phone towers.

2:30pm
Strain Gage Measurements on a Cantilever Beam
Jake Nicodemus, Joe Panico, Marcus Lott

Students designed a cantilever beam with a strain gage mounted on it. This project will be used in EMET courses at Miami.

3pm
Position Control Servomotor
Ethan Kirkman, Harold Marlatt, Billy Rich

The objective of this group was to improve the ENT 418 Servo Position Control Lab experiencefor Miami University. The group demonstrated speed control and transfer function modeling for this project. To accomplish this, a servo motor with a tachometer, PWM driver, and an operating program was utilized.