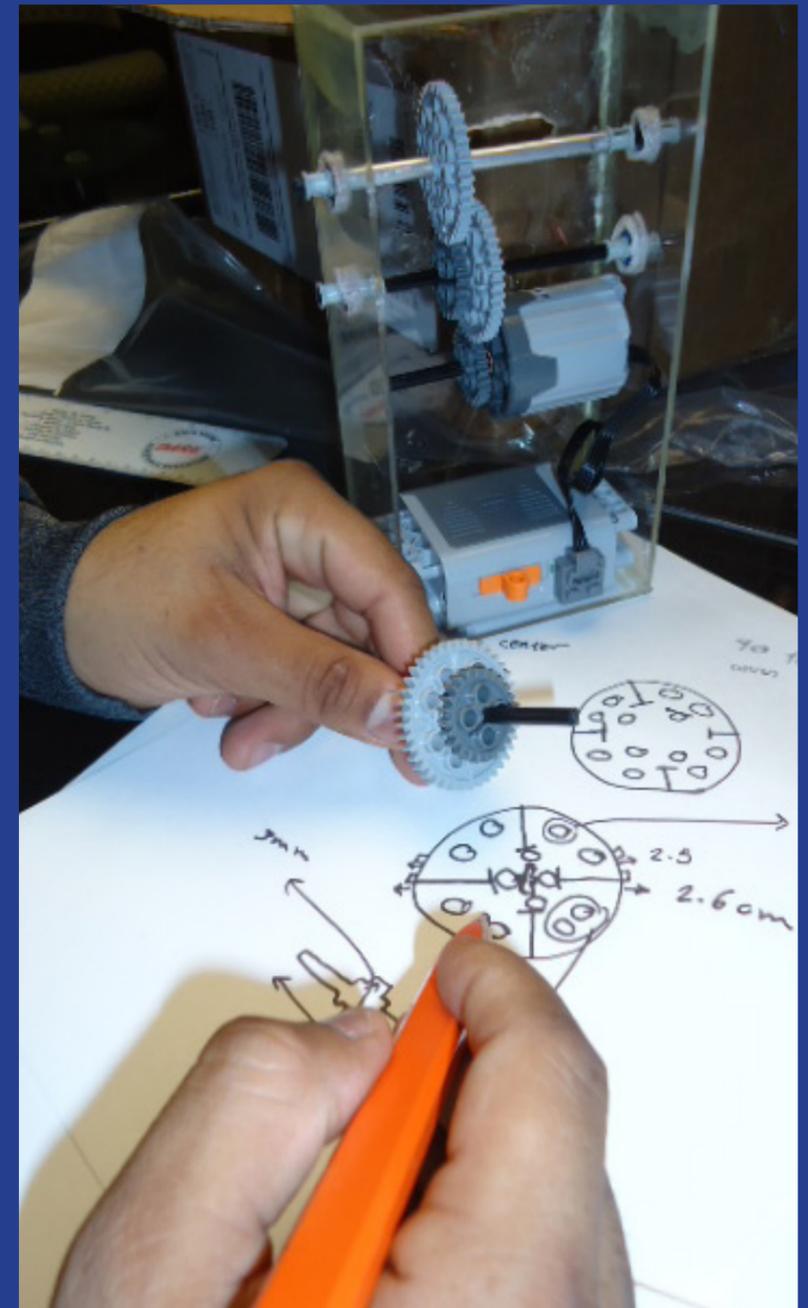
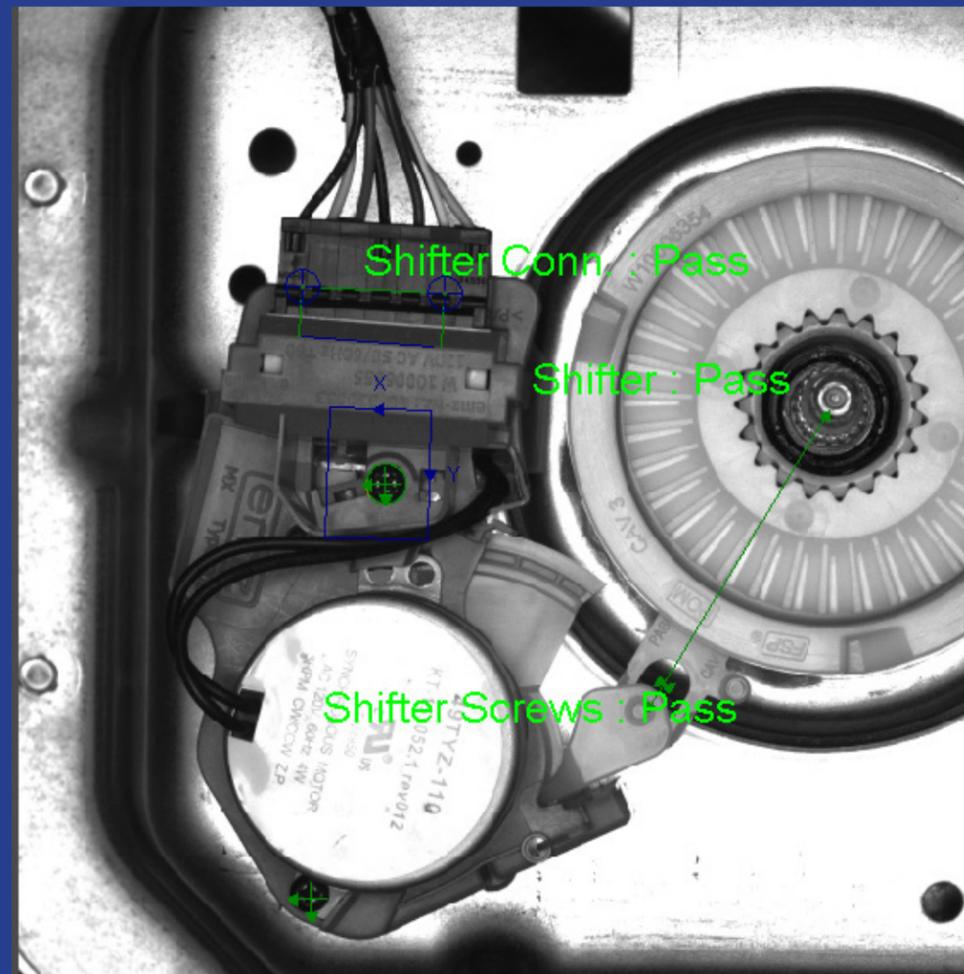


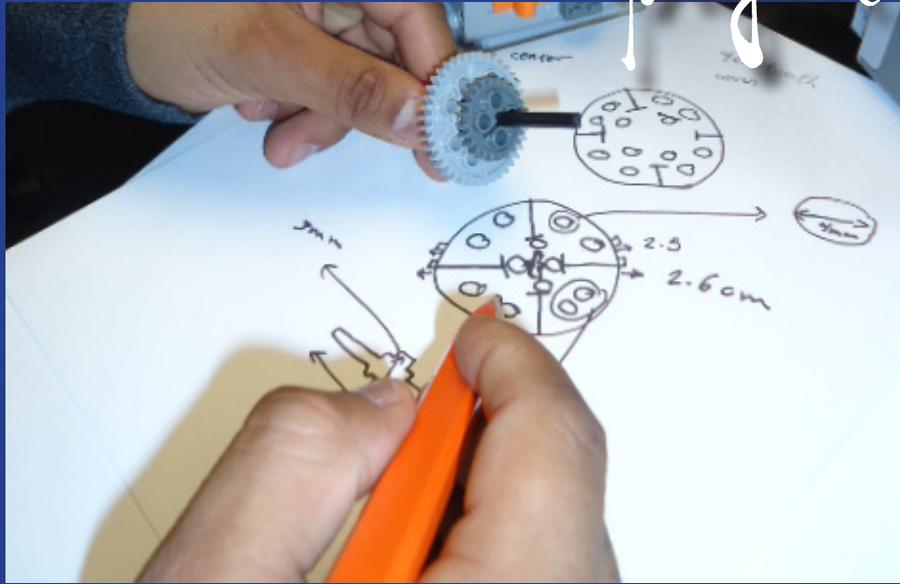
SENIOR DESIGN projects 2014

Friday, May 2 • 9:30am-4pm
HARRY T. WILKS CONFERENCE CENTER
MIAMI UNIVERSITY HAMILTON

CONCURRENT SESSIONS • FREE & OPEN TO THE PUBLIC



SENIOR DESIGN 2014 projects



M
MIAMI
UNIVERSITY
COLLEGE OF
PROFESSIONAL STUDIES
& APPLIED SCIENCES

Department of Engineering Technology

Concurrent Sessions
FREE & OPEN TO THE PUBLIC

Friday, May 2
9:30am-4pm

Harry T. Wilks Conference Center
Miami University Hamilton

Miami University

Hamilton | Middletown | West Chester

8-9:30am

Poster Judging

ROOM 1 PRESENTATIONS

For concurrent presentations, see other side.

9:30am

Kornylak Corporation:
Transdisc® Multidirectional
Wheels

**Shane Jelliffe, Jermaine Samuels,
Myanganbayar (Michael) Nyamdorj**

Student engineers used Transdisc multidirectional wheels produced by Kornylak to create a wirelessly controlled table that can be moved in several angular directions. This device will be used in industrial settings and for use in playing Robbo Soccer.

10am

Nature's Way:
Automated Breeding Bin
Washer Prototype

Cody Holthaus, Zachary Harris

Student engineers designed and engineered an automated five step process to properly and efficiently sanitize breeding bins used by Nature's Way in Ross Ohio. These bins are used to produce mealworms to feed animals at local zoos, pet shops, bait shops, and other types of exhibits.

10:30am

Bottle Capping Process

**David Livingston, Ed Mader,
Aaron Cassill**

Students designed a capping mechanism for an automated bottling process at the Miami Hamilton campus. This bottling system is used in the department's Industrial Automation course. The bottling process illustrates a real-time application of remote automation.

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 integral parts of the capstone. ENT 497: feasibility studies performed; ENT 498: implementation, testing, and production of design.

11am

Armor Metal Group:
Mine-Resistant Ambush
Protected All Terrain Vehicle
(M-ATV) Vital Component
Transport Containers

**Eric Duritsch, Jordan Hollen,
Henry Merrill**

Student engineers designed, analyzed and tested transport containers used by the Oshkosh Defense Mine-Resistant Ambush Protected All-Terrain Vehicles. Critical components such as engines, transmissions and transfer cases need to be packaged so that they are not damaged in transit worldwide. Military specifications require that these packaged items be protected from destructive forces.

11:30am

Fanuc America
Corporation: Portable Robotic
Demonstration Cell

Kris Woods, Lonnie Shewman

Student engineers designed, constructed and tested a portable robotic demonstration cell utilizing a Fanuc M2-iA/3S robot. The mobile structure is designed for ease of transportation to robotic and automation trade shows throughout the U.S. The cell incorporates the latest intelligent robot technology from Fanuc America.

12-1pm

LUNCH BREAK & AWARDS
CEREMONIES

1pm

Air Curtain Simulator:
ASHRAE Supported

**Steven Asbury, Wyatt Thesing,
Mohamed Gouiss**

Student engineers designed, manufactured, and tested a versatile air curtain simulator capable of testing the efficiency of refrigerated display cases. This system is flexible enough to accommodate different case sizes and has the ability to change the velocity and angle of the air curtain.

1:30pm

The Production, Processing
& Testing of Biodiesel

**Jon Lanham, Kyle Lucke,
Richard Hacker**

Student engineers developed a system to produce various types of bio fuels using a custom designed waste vegetable oil processor. Testing of these fuels is accomplished using a converted Volkswagen Jetta diesel with the intent of creating more easily accessible alternate fuel sources. Some of the work is in collaboration with the University of Northwestern OH Automotive & Alternative Fuels Technology Program.

2pm

Package & Product Testing:
Redesign & Rebuild of
Environmental Testing Chamber

Des'Za'Rae King, Stephen James

Student engineers designed and rebuilt an environmental chamber for testing packag-

More >>

ing systems used for shipping. The project incorporated the design of a new HVAC system to control temperature, and new humidifiers, dehumidifiers, and a touch screen controller. They also re-wired the system for more accurate and consistent control.

2:30pm

Laboratory Experiment Apparatus for ENT 301: Dynamics

Josue Bahr, Joe Gruber, Sam Rezazadeh

Students designed a series of mechanical pulleys, gears and linkages for use in the department's Dynamics course. Students in this course will be able to calculate and verify linear and angular displacements, angular velocity, angular acceleration, torque, force, and moments of inertia.

3pm

FIRST® Robotics

Stephen Dickson, Rebekah Farthing

Student engineers redesigned and built various mechanical fastening systems used in the production of competition robots for FIRST Robotics. They developed alternative light weight and strong materials systems that can be used in the production of these robots. This project is done in tandem with the mentoring of Lakota Robotics-FRC Team 1038 at Lakota East High School.

3:30pm

Crown Equipment Hall Sensor Test

Cory Borgerding, Jeremy Duling, Justin Duling

Students designed and implemented a functional tester for a Hall sensor. This automated testing system was sponsored by Crown Equipment. It will help reduce testing time and increase accuracy and precision for the company.



ROOM 2 PRESENTATIONS

9:30am

Alternative Energy Gasifier Project

Caleb Danison, Jason Massie

Students manufactured a gasification unit which converts waste into a flammable gaseous fuel capable of powering a generator. This project is directed towards improving the overall quality of life of people located in Malawi, Africa.

10am

Water Circulation Improvements

Kevin Cunningham, Travis Voll

Students in this project designed and implemented a process to correct a major flooding problem for Tosoh SMD, located in Grove City, Ohio. Electronically actuated valves and equipment were used to ensure a variable water supply would be consistently available for cooling an aluminum casting process.

10:30am

Automated Scoring Cornhole

Jonathan Iddings, Shaun Stewart, Tyler Sparks

Students used a microprocessor and force transducers to automatically score the game of cornhole for recreational use. The Project calculates the score of the game based on the weight of the bags recorded on the board and in the goal.

11am

Oil Distribution System

Gary King, Eric Swain, Kevin Wilfong

This group redesigned the mechanical and electrical systems of an oil distribution system at Pepperidge Farm® Inc. in Willard, Ohio. They incorporated national, industrial and company health and safety standards into their design.

11:30am

Hydro-Electric Generator

Weston Burch, Cody Sterling

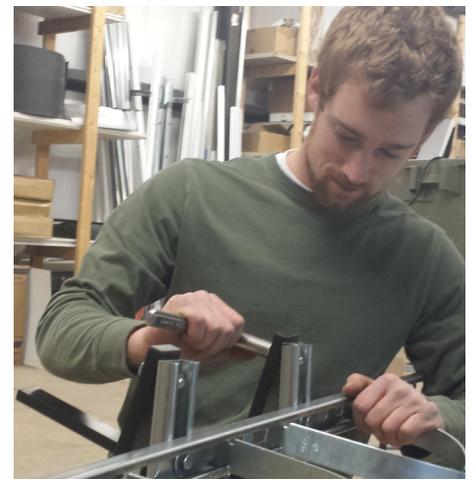
This group utilized water to power a turbine connected to a hydro-electric generator. The generator provides charge to the battery of an electric boat motor. Solar power is also used to provide a constant charge when the boat is stationary.

12-1pm

LUNCH BREAK & AWARDS CEREMONIES



Department of Engineering Technology



1pm

Outdoor Architectural Projector Enclosure for Zane State College

Brent Clark, Kyle LeMaster, Dakota McConaha

Students engineered and verified a full scale prototype of an outdoor architectural projector enclosure for Zane State College. This system protects a projector from the elements by monitoring and regulating the enclosures position, humidity and temperature. This project is funded and sponsored in part by Bi Con Engineering, DAM Media and Zane State College.

1:30pm

RC Rover with a Real-Time Self Leveling Top-Plate

Matt Pritchard, Devin Boggs

Students designed a remote controlled rover that is capable of handling mild off-road terrain while balancing a load its top. It includes real-time servo-loops and custom stepper motor driver circuits.

2pm

High Speed Vision System

Steve Lykins, Logan Henke

Students designed a quality checking system to be used in a high speed assembly environment at Whirlpool Corporation. Using a camera, the system inspects, identifies, and removes suspect parts from the assembly area for further inspection/ repair.

2:30pm

Water Purification Using Natural Material and UV Light

Jeff Lano

This student designed a water purification system that uses natural materials to filter the water of debris and UV light to disinfect water. The system partially relies on the power generated by a bike.

3pm

Remote Antenna Controller

Dave Rochte, Matt Steitz, Cortlind Chesser

This project involves remote access to a ham radio antenna using Visual Studio and Arduino hardware to aim the antenna assembly for specified reception and transmission. Remote access is achieved through web interface to local computer.