



4-2003

32nd Conference on Senior Engineering Design

College of Engineering and Applied Sciences

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Senior Design Project

The 32nd Conference on Senior Engineering Design Projects

You are invited to attend the thirty second Conference on Senior Engineering Design Projects. The conference will be held from 9 a.m. to 4 p.m. **Tuesday, April 15, 2003** at the Bernhard Center on the campus of Western Michigan University. The College of Engineering and Applied Sciences sponsors the conference to showcase the work of its graduating seniors, who are required to complete a capstone project that puts into practice what they have learned. Many of the projects are sponsored by business and industry.

The conference is **free** and open to the public. You are welcome to attend all or part of the day's events. Reservations are not necessary.

High school and community college teachers are encouraged to bring students to the conference. Buses can drop off passengers in the circular drive in front of the Bernhard Center and then park in the lot in front of Hoekje Hall.

([See map](#) - take North Dormitory Road. Hoekje is #65 on the map.)

Teachers who cannot accompany their students to the conference may ask their students to sign in and out at the information table in the lobby on the second floor of the Bernhard Center. Sign-in sheets will be mailed to teachers the day after the conference.

Parking is available in the ramp near the Bernhard Center. Please park in metered spaces. There is a charge for parking. Meters accept quarters only.

Presentations begin on the hour and half hour. Please do not enter a room after a presentation has begun.

Session locations, starting times for project descriptions:

Construction Engineering	Faculty Lounge	9:00 to 11:30
Electrical and Computer Engineering	208	9:00 to 4:00
Industrial Design	Brown & Gold	9:00 to 1:30
Industrial and Manufacturing Engineering	209	11:00 to 3:00
Materials Engineering	Faculty Lounge	11:30 to 12:00
Mechanical Engineering and Aeronautical Engineering A-I	210	9:30 to 3:30
Mechanical Engineering and Aeronautical Engineering B-I	211	9:00 to 12:00
Mechanical Engineering and Aeronautical Engineering C-I	212	9:00 to 12:00
Paper and Printing Science and Engineering	213	9:00 to 3:00

Refreshments will be available in the lobby from 8:30 a.m. to 10:30 a.m.

A **lunch** break is scheduled from noon to 1 p.m.

For more information about the conference, call [Cathy Smith](#) at (269) 387-4017.

The 32nd Conference on Senior Engineering Design Projects

CE = Construction Engineering

ECE = Electrical and Computer Engineering

ID = Industrial Design

IME = Industrial and Manufacturing Engineering

MAE = Mechanical and Aeronautical Engineering

MSE = Materials Engineering

PPSE = Paper and Printing Science and Engineering

FL = Faculty Lounge

B&G = Brown and Gold Room

Time	Room	Dept.	Topic
9:00AM	FL	CE	Public Works Service Center
	208	ECE	Maze Mapping Mobile Robot
	B&G	ID	Optix*
	210	MAE A-I	Paint and Anodized Coating Removal System
	211	MAE B-I	Dynamic Analysis of Pneumatic Control System
	212	MAE C-I	Unmanned Aerial Vehicle(UAV) Design for a Cargo/Recon Mission
	213	PPSE	Reactor Cleanability and Solvent Delivery Optimization
9:30AM	FL	CE	Beck and Wixom Road Interchange Project
	208	ECE	Control of an Inverted Pendulum
	B&G	ID	Urban Response Vehicle
	210	MAE A-I	Sterling Cycle Demonstration Engine
	211	MAE B-I	Variable Sliding Mass Motion/Control Test Machine
	212	MAE C-I	Winglet Optimization
	213	PPSE	Membrane and Adsorbent Technology
10:00AM	FL	CE	Development of a Construction Schedule and Cost Estimate for a New Elementary School
	208	ECE	Device to Measure Characteristics of a DC motor
	B&G	ID	Public Safety Vehicle
	210	MAE A-I	Test Module for Oxygenating Microporous Fibers
	211	MAE B-I	Fixture for Measuring Forces in a Washing Machine
	212	MAE C-I	Energy Management System for In-Flight Engine Failures
	213	PPSE	Analysis and Optimization of a Resin Production Filter Booth

10:30AM	FL	CE	M-63 Bridge Reconstruction
	208	ECE	Electrical System Power monitoring
	B&G	ID	Concept Motor Cycle Sidecar
	210	MAE A-I	Range Interlock Design for a Ten-Speed Heavy-Duty Transmission
	211	MAE B-I	The Automation of Gray De-Gating System
	212	MAE C-I	Effects of Powered Nacelles on Wing Tip Vortices
	213	PPSE	Heat Transfer Systems Designed for Acrylamide Railcar Heater

11:00AM	FL	CE	Reconstruction of Grand River Avenue
	208	ECE	Regenerative Braking System for a Hybrid Electric Vehicle
	B&G	ID	Moda Commuter Bicycle
	209	IME	Ergonomic Assessment of a High Volume Stretcher Line
	210	MAE A-I	The Design of a Shock Absorber Dynamometer
	211	MAE B-I	Redesign of a Motorcycle Clutch Actuation System
	212	MAE C-I	Optimization of foil bearings
213	PPSE	Reactor Jacket Temperature Control	

11:30AM	208	ECE	Wireless Ignition Pyrotechnic System
	B&G	ID	The Contractor's Trailer
	209	IME	Redesign of Facility Layout and Workstations
	FL	MSE	Developing Zinc Oxide from Zinc Sulphide through Oxidation
	210	MAE A-I	Design and Construction of a Motorcycle Dynamometer
	211	MAE B-I	Coolant Reservoir and Air Filter Box Integration
	212	MAE C-I	Optimization Fluid Flow in an Axial Piston Pump Shoe
213	PPSE	Color Management for Digital Color Imaging	

1:00PM	208	ECE	Flexible Electrical & Software Programmable Tranceivers
	B&G	ID	Do It Yourself Vehicle
	209	IME	Geometric Dimensioning and Tolerancing Tutorial and Exercises
	210	MAE A-I	Variavle Camshaft Timing System
	213	PPSE	Turning Drystick Liner Weight Control of Multiple-Headbox Board Machines

1:30PM	208	ECE	Self-Diagnostic Controller
	209	IME	Thermal Distortion and Retained Strength in Various Silica Sand Systems
	210	MAE A-I	Snowboard Weight Reduction
	213	PPSE	Investigation into the Performance of New Microparticle Systems
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2:00PM	208	ECE	A Foolproof Labeling System Design and Operation
	209	IME	Center for Integrated Design
	210	MAE A-I	Press-Fit Prediction Process Using Finite Element Analysis
	213	PPSE	Enzymatic Control of Stickies in Recycled Pulp
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2:30PM	208	ECE	Virtual Hockey Simulator
	209	IME	The Reincarnation of the Prospect Hill trolley
	210	MAE A-I	Optimization of a Vacuum Generator
	213	PPSE	Differences in Fibril Angle Between Kenaf Core and Bast Fibers
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3:00PM	208	ECE	Metal Oxide-Based Electronic Nose
	210	MAE A-I	Sagittal Saw Testing System
3:30PM	208	ECE	Three-Axis Acceleration Sensor Data Acquisition System

The College of Engineering and Applied Sciences is grateful to these sponsors that have provided or cooperated in Senior Engineering Design Projects being presented in April 2003. If you have a project for our students or if you would like more information, please call Cathy Smith at (269) 387-4017.

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