

Mechanical and Electrical engineering programs receive EAC/ABET accreditation*



ENGINEERING PRIDE — University President Robert Arbuckle, Dean of the College of Engineering and Mathematics, and Chair of Mechanical Engineering Dr. Kevin Schmaltz, display the official certification from EAC-ABET in the Robotics and Automation Laboratory. Robotics is one of the options available to engineering students.

The School of Engineering and Technology's 10-month wait finally came to an end when it received official notification from EAC-ABET that its electrical engineering and mechanical engineering programs had been granted accreditation*.

The accreditation action affects those LSSU EE and ME graduates since October 1, 1999.

The School recognizes the efforts of all those throughout its alumni community and the

cooperation from all facets of the University - students, faculty, staff, administration and our advisory board - that assisted in its accreditation achievements.

"This is certainly exciting news for the School of Engineering and Technology. The development of engineering programs and the accreditation action demonstrates the University's commitment to develop superior programs to meet the personal needs of students and the desires of industry," said Ray Adams, Dean of the College of Engineering and Mathematics.

"My personal thanks go out to the faculty and staff of Engineering and Technology, and particularly to Morrie Walworth, chair of computer and electrical engineering and Kevin Schmaltz, chair of mechanical engineering."

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From the President

Robert D. Arbuckle



Robert D. Arbuckle

Oliver Wendell Holmes once remarked that, "The great thing in the world is not so much where we stand, as in what direction we are moving." The School of Engineering and Technology is not standing still; it is moving forward with vigor.

I would like to commend Dean Ray Adams, the faculty and staff of the School for boldly and decisively moving the mechanical and electrical engineering technology programs to engineering degrees that meet national accreditation standards.

The recent accreditation by EAC of ABET* underscores the quality of those programs and bodes well for the future of the School of Engineering and Technology.

**Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012; telephone: (410) 347-7700.*

Making Tracks

▶ Have knowledge will travel

When people think of a college professor's summer schedule, they typically think relaxation and time on their hands. But it "ain't necessarily so."

Summers for the Engineering & Technology professors do allow some squeeze time for vacations, but not much. Research and grant writing activities along with papers, presentations, summer camps and continuous learning amply fill the hours.

Prof. Morrie Walworth's summer was no exception. In addition to grant writings and summer camps for 8-12 graders, he flew to the California-based Marine Advanced Technology Education Center to spend two weeks of 13+ hour days during the end of July and early August to learn about underwater applications of remotely-operated vehicles (ROV).

Walworth's primary interest was in the engineering aspect of underwater vehicle design. The Center which is affiliated with the Monterey Bay Aquarium, sponsors ROV

competitions during the late spring. Walworth currently heads up a research class that is working on developing an underwater ROV that it hopes to take to the May competition being held at Cape Canaveral through NOAA and NASA in the ocean category.

"It's important to learn more about what goes into sealing the electrical components," said Walworth, chair of electrical and computer engineering. "With all the wiring that goes in and the shafts that come out, we need to know how to keep everything dry."

Members of the Industrial Advisory Board were also consulted for their suggestions based on their experiences.

Additionally, Walworth spent time at Adept Robotics in Cincinnati during August strengthening his knowledge of systems integration and machine vision and their utilization by Staubli and Adept robots.

Just another typical summer in the life of engineering & technology.

▶ Charlie Snyder Memorial Scholarship established



In January 2001 the Engineering and Technology Faculty and the Industrial Advisory Board (IAB) combined efforts to create an Engineering and Technology Scholarship.

The namesake of the Scholarship is Charlie Snyder of Delco Electronics for recognition of his years of leadership in the IAB and his unsurpassed contributions to LSSU Engineering and Technology.

Charlie had an infectious enthusiasm and brought skill, experience and understanding to our senior project students. He is greatly missed by all those whose lives were touched by him.

The scholarship's objectives are to remember Charlie, and to provide recognition and financial assistance

to incoming freshman enrolled specifically in Engineering and Technology programs.

Currently, the selection criteria and application process are being established.

Funds are being collected to support one or more annual scholarship offerings. If the necessary funds are received within the next academic year, the first offering of the scholarship will be available for Fall of 2003.

To offer any input or to contribute to the scholarship fund, please contact Jeanne Shibley, Assistant to the Dean at (906) 635-2597, or e-mail: jmshibly@lssu.edu; or Ray Adams, Dean, at (906) 635-2130, or e-mail: radams@lssu.edu.

Making Tracks

From logic to articulation: the robots of LSSU

What's yellow, can move with six degrees of articulation, can see and work as a member of a team?

The Staubli member of the Robotics and Automation Laboratory's L-Line system can do it! It is one of 15 robots housed within the lab, and one of four that make up the L-Line used by sophomore and junior level students.

The line includes two Adept A-1 SCARA type robots with four degrees of freedom, a Staubli RX90 and Staubli RX130 robots with six degrees of freedom. Rotary index tables are positioned between the pairs of Adept and Staubli robots. An L-shaped roller conveyor line for moving pallets completes the set-up.

The line's robots are programmed using the V+ programming language. The entire line is controlled by an Allen Bradley programmable logic controller (PLC).

The Adept robots are equipped with Adept vision systems and have vision cameras attached to the robot arms for acquiring images of objects and used for other vision related actions.

Lab projects involve the robots using the tables and pallets for assembly tasks.

The oval line system is comprised of four Fanuc robots of the Arcmate family. Senior-level students program these using Karel software and PLCs.

The articulated Fanucs have six degrees of freedom and work together on systems integration projects. The oval conveyor system is equipped with pallet lift stations, sensors and pneumatic devices.

A third line used by sophomores uses three IBM SCARA robots with four degrees of freedom that encircle a rotary index table. Parts are transferred between them using the table.

Prof. James Devaprasad, chair of manufacturing engineering technology is looking forward to the receipt of Adept robots to update the line,



ALL LINED UP - The oval-line provides top-notch equipment for robotics lab education and training.

replacing the IBM robots.

"We have a lot for which to thank our industrial supporters," said Devaprasad. Much of the equipment in the lab has come from partial donations from industry and member companies of the Industrial Advisory Board.

"The lab is easily valued at over \$1 million," said Devaprasad, "and enables LSSU to offer a nationally-reputed robotics education option for its engineering and engineering technology students.

The robotics option is now also available for the computer, electrical and mechanical engineering students.

Other robots utilized in the lab are Pumas - one of which was used for the Complete Engineering for Process Automation senior project that took first place at this spring's Robotics Industries Association's Scholarship competition (see CEPA's senior project description on page 4).

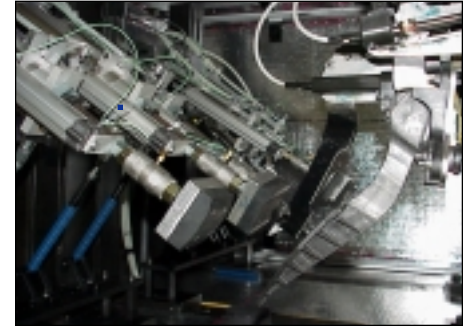
Spring 2001 Senior Projects



BREAKING CONCEPTS UNLIMITED

for Dura/Mancelona

ELECTRIC ADJUSTABLE PEDALS-DESIGN VALIDATION SIMULATOR



Designed and built a computer-based system to test Dura's pedal clusters that are electrically adjustable. The major goals were: detailed stand design, adhere to required specifications, and manufacturing and programming of the test stand.

Industrial Contact: Dean Reynolds
Faculty Advisor: David McDonald
Team Members: Todd Desing, Allan Frappier, Neal Osterhout, Greg Rawlings, Curtis Rehtzigel, Josh Slavens
Web Site: http://engineering.lssu.edu/senior/00_01/bcu.html

COMPLETE ENGINEERING FOR PROCESS AUTOMATION

for Dana-Mishawaka

TIE ROD LOADING AND UNLOADING AUTOMATION



Researched and designed a variety of components that can be used to produce an automated system for a tending process for two machines; handle two different types of tie rods and flexible enough to be moved easily and quickly.



Industrial Contacts: Harley Bull and Derek Crites
Faculty Advisor: Jim Devaprasad
Team Members: Bryan Coullard, Jason Long, Korey Manning, Mark Milito, Chad Ritchie, Robert Souliere
Web Site: http://engineering.lssu.edu/senior/00_01/cepa.html

Spring 2001 Senior Projects

INTEGRATIVE DESIGN IDEAS for Dura/Fremont

SHIFTER TESTER



Built a durability tester for Dura's quality control department simulating the environment experienced by a typical shifter in its life cycle to ensure routinely manufactured units will meet General Motors' Engineering requirements.



Industrial Contact:
Faculty Advisor:
Team Members:

Kurt McDowell
John Madl
John Belott, Maria DiValentin, Mike Johnson, Derek Love, Mike Schimmings, Andrea Sobeck, Stuart Terpstra
http://engineering.lssu.edu/senior/00_01/idi.html

Web Site:



Industrial Contact:
Faculty Advisor:
Team Members:

Dr. Matthew W. Witte
David Baumann
Scott Nisbett, Maja Pusara, Mark Rhine, Jaci Schroeder, Matthew Thompson
http://engineering.lssu.edu/senior/00_01/m5e.html

Web Site:

Engineering and Technology Newsletter

M5 ENGINEERING for Daimler-Chrysler

MISFIRE DATA COLLECTION DEVICE



Developed a diagnostic misfire data collection device that is directly connected to the onboard computer via SCSI to collect the misfire data, store it in MATLAB format, and generates misfires in the engine as specified by the user.

Spring 2001 Senior Projects

QUALITY TEST SYSTEMS

for Dura/Mancelona

END-OF-THE-LINE TEST STAND



Researched, designed and built a test stand that is placed at the end of an assembly line for electric parking brake construction to provide quality control. It measures and stores load applied, breaking distance, time to apply load, current draw and determine if a unit is good or bad.



Industrial Contact:
Faculty Advisor:
Team Members:

Mike Eby
Marcellin Zahui
Tyler Alleway, John Blasky, Dave Gasparich,
Tom Hayes, Ruth Latham, Matt Randall
http://engineering.lssu.edu/senior/00_01/qts.html

Web Site:



Industrial Contact:
Faculty Advisor:
Team Members:

Robert G. Andersen
Kevin Schmaltz
Don Balthazore, Shawn Bowes, Bart Redden,
Dominique Wilson, Jeremy Windle, George Yannelis
http://engineering.lssu.edu/senior/00_01/rde.html

Web Site:

RD ENGINEERING

for Continental-Teves

AUTOMATED TRANSDUCER CALIBRATION TEST STAND



Designed and built a test stand capable of calibrating vehicle scales and pressure, vacuum or force transducers. It reduces the effort and cost to maintain transducer accuracy, while improving the ability to track and predict transducer performance.

Lake Superior State University

Spring 2001 Senior Projects

SPHERICAL CONTROL SOLUTIONS

for/with the MSU Dept. of Electrical & Computer Engineering

EMBEDDED INTERNET APPLICATIONS



Developed an interface that allows electronic devices and products to communicate via the internet. It also allows two-way communications between an embedded system and users. They also developed an exercise to teach students about microcontrollers and distributed systems.



Industrial Contact:
Faculty Advisor:
Team Members:
Web Site:

Dr. Diane Rover, MSU
Al Niemi
James O'Dell, Scott Lemon, Trevor Swenson
http://engineering.lssu.edu/senior/00_01/scs.html



1998 Senior Project Update: ROLLING WHEEL ENGINEERING



STILL ROLLING - A Mercedes-Benz 230 Coup on display at the Papenburg Test Track booth at the Testing 2001 Expo, Stuttgart, Germany using the RWE prototype system.

RS Technologies of Farmington Hills sponsored the senior project "Rolling Wheel Engineering" in 1998. The team developed a data acquisition system that measured, graphically displayed, and stored signals produced by the wheel force transducer assembly.

Additionally, a portable mechanism to support and rotate one wheel of a car was also developed. The support made it possible to obtain the information from the wheel force transducer assembly.

The original system was sold to BMW (Munich, Germany) for use in set-up of test vehicles.

RS Technologies and its German partner, CAESAR DataSystems, GmbH displayed the rolling rig hardware along with its refined analysis software at the Testing 2001 Expo held in Stuttgart, Germany.

Feedback ...

Let us know what is happening with you, be it present employer, number of children, past experiences, suggestions for our department ... anything.

Your feedback is beneficial to faculty members and the newsletter might also find some interest as well. We would like to spotlight accomplishments and information about our engineering alumni.

Let your friends know what you are doing or if you have moved recently. **We want to know about you!**

Please fill out the form and mail it to: Engineering Newsletter, School of Engineering and Technology, Lake Superior State University, 650 W. Easterday Ave., Sault Ste. Marie, MI 49783. You can also contact us via email at jmshibly@gw.lssu.edu.

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City

State

Zip/Postal Code

New Address _____

Street

City

State

Zip/Postal Code

Degree/Major/Year _____

Profession/current position/employer _____

Tell us about yourself (include professional activities, honors, civic work, etc.)



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