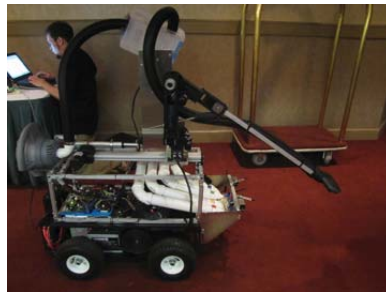


## ATMAE Student Chapter Brings Home More National Awards

by: Dr. John R. Wright, Jr.

The 2011 Association of Technology, Management, and Applied Engineering (ATMAE) Student Chapter/Robotics Team at Millersville University recently returned from the ATMAE National Conference held this past November 9-12 in Cleveland, Ohio. The team spent the last year developing MAC DADI (Millersville's Automatic Color-sorter with Dedicated Active Dual-drive Integration); a custom robot designed to retrieve colored ping pong balls, sort them, and deliver them to designated drop off locations. MAC DADI is the third semi-autonomous mobile robot developed by the team. In 2010, the team won the ATMAE Robotics Cup with SAM (Semi-autonomous Marauder).

This year's design was extremely sophisticated and the largest mobile robot the team has ever constructed. MAC DADI's control was distributed over three independent microcontrollers running in parallel sequencing a tremendous amount of inputs and outputs (I/O). "The project took approximately one year (including the summer) and over 3000 hours to complete" stated Dr. Wright, the team's advisor.



While MAC DADI did not win the overall competition, Millersville's entry did win the majority of the independent awards including Best Electrical/Control Methodology, Best Manufacturing, and Best Technical Paper. The team now boasts winning 24 awards across several engineering, technology, and computer science robotics competitions since 2001 when the robotics team was launched.

In addition to the robotics awards, Dave Campbell placed third in the Haig Vahradian Technology Challenge (Quiz Bowl Competition),



and Brandon Lalli won the Virtual Welding Competition placing 1<sup>st</sup> and winning himself a brand new Lincoln Electric MIG welder. "I am extremely proud of our team and our accomplishments" says Wright.

### **2011 Robotics Team Participants - Cleveland, Ohio**

**Front Row:** Pauline Gemberling (vice-president), Phil Grigonis, Ritchie Mauck,

Jake Girton (treasurer), Brandon Lalli, Dave Campbell

**Back Row:** Dr. John Wright (advisor), Wayne Lady, Bradley Sensenig (president/team captain), Jacob Covell, Robert Hopkin, Jon Hanson, Nate Miklos, Sean Carter,

Scott Espenshade, Melinda Johe (secretary)

## Department Takes New Name

by: Dr. Barry G. David

Effective fall 2011, the Department of Industry and Technology, ceased to exist to make way for its new designation: The Department of Applied Engineering, Safety & Technology. The new name is the result of extensive, yearlong, formal and informal conversations within the department, as well as with our external industry advisory council, alumni and other stakeholders. The change in department name is in large part to recognize and widely communicate the diverse undergraduate and graduate degree programs we offer.

Two undergraduate degree programs within the department also changed names.

The baccalaureate degree in Industrial Technology is now named Applied Engineering and Technology Management, and the associate's degree is now Applied Engineering & Technology. (Other degree programs within the department, Occupational Safety and Environmental Health and Technology Education remain unchanged.) With the name changes, we join the nationwide movement in adopting the new descriptor, "Applied Engineering". Recently, our accreditation organization, the National Association of Industrial Technology changed its name to the Association of Technology, Management and Applied Engineering.

The new names better reflect our department offerings and suggest the more contemporary nature of its career opportunities. It is expected that the new names will increase our visibility within the campus community, and among prospective students and those who are influential in helping them identify their college of choice.

Beyond the name change, curriculum revision has been ongoing, representing our commitment to remaining current with the latest developments within the profession and to be competitive in meeting the demands of an ever-changing technological world.

## Up on the Roof: ITEC 140 Bio-Related Technologies Learns About Green Roof Systems

by: Dr. Sharon A. Brusic

Students enrolled in the ITEC 140 Bio-Related Technologies class learn about all kinds of technologies that relate to living organisms. They commonly explore topics such as genetically modified foods, hydroponics, and prosthetics, to name a few. But, this fall they had a unique opportunity to delve into something that is relatively new to the Lancaster County area – green roof technology. In October, 25 students and I ventured into downtown Lancaster to a local business known as Tellus 360. There we climbed a few flights of stairs and headed out to the roof to learn firsthand about this environmentally friendly way of covering the top of an urban building. On this roof, you won't find shingles or black tar covering the more than 10,000 square foot space. Instead, you'll find thousands of tiny green plants soaking up the sunshine.

Tellus 360 installed the green roof several months ago as one part of their effort to bring economical and sustainable solutions to the community. In their store, you'll find a wide range of environmentally friendly products, including unique and beautiful furniture from reclaimed wood. But, it was on the roof that these technology education students learned about the value of replacing a traditional roof with a green one. Mairtin Lally, one of the Tellus 360 employees, led a tour of the green roof, explained how the roof was constructed,

and answered students' questions. Following the tour, students threw down some blankets and engaged in small group discussions about green roof (living roof) systems. Because green roofs insulate the building, there are positive impacts in terms of reduced energy costs for air conditioning and heating. In addition, green roofs improve air quality and reduce storm water runoff which can be a huge problem in urban areas. In their small groups, students discussed their perspectives on this roof construction system and engaged in some thoughtful analysis of how living roofs might one day become more commonplace on college campuses or anywhere in our world.

The class visit to the Tellus 360 green roof was one of the highlights of the class this semester. As one student, Phil Grigonis, stated, "It's good see something that's in theory on paper...applied to reality." And, local media thought the field trip was worthy of a little extra attention, too. On the day of the class trip, local television stations joined the tour to report on the class that took to the roof.



### TECA Students Build "Newton's Cradle"

Student members of the Millersville University Technology Education Collegiate Association (MU-TECA) proudly show off the Newton's Cradle Exhibit that they designed and constructed for the *Lancaster Science Factory*, a hands-on children's museum in Lancaster City. The Newton's Cradle exhibit can be used to describe scientific concepts such as conservation of momentum of energy.

This is the third exhibit that MU-TECA has designed, built and installed at the *Lancaster Science Factory*. The two previous donations demonstrate the concepts of mechanical advantage and potential and kinetic energy. The mechanical advantage exhibit uses weights and a series of pulleys to illustrate the concept and the potential and kinetic energy exhibit uses K'NEX parts for children to design and test drag racing models.

You can read more about the *Lancaster Science Factory* and MU-TECA's past contributions in the Spring 2008 *Millersville Review* at <http://www.millersville.edu/ucm/files/review/2008-spring-review.pdf>.



MU-TECA members (L-R) Erica Schmuck (TECA President), Ryan Haugh, Dale Shoop, Phil Erdley, Chris Liddic, Blake Bardman, and Nate Hanson.

## TECA Students Shine at Virginia Beach Conference

by: Dr. Sharon A. Brusic

Twenty-eight members of the Technology Education Collegiate Association (TECA) at Millersville University traveled to Virginia Beach along with two of their advisors for the annual TECA Eastern Regional Conference from November 13-15, 2011. Every student competed in at least one of ten events at the conference and TECA proudly brought home five awards. Members earned first place in three competitions: Automated Systems Design, Elementary Design, and Teaching Lesson. Third place awards were received in Transportation and the Technology Challenge competition.

The competition was tough, but TECA members engaged well in all events they entered. In addition to participating in competitive events at the conference, students interacted with potential employers at the job fair and networked with about 240 peers and professors from about a dozen universities throughout the Eastern seaboard region at meal and social functions.

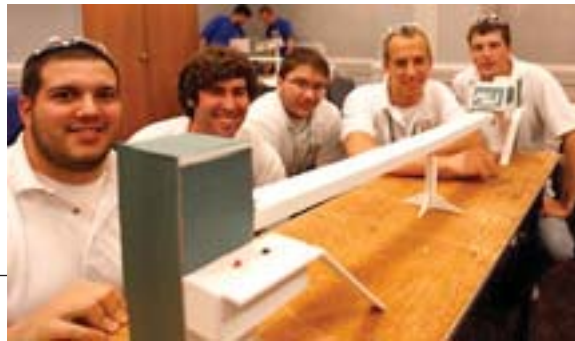
Congratulations go out to all TECA member participants. In addition, the TECA at MU executive board, led by President Erica Schmuck, is to be commended for helping to organize this highly successful professional development experience for its members.

### Award Winning Students

**Left:** Molly Miller and Erik Sheehan won first place in the Elementary Design competition. They had to design and build a point-of-purchase display that would collect coins for a worthy cause. They had to explain how that would fit into an elementary school curriculum.

**Middle:** Members of the Automated Systems competition designed and built the first place working monorail system controlled by switches, a relay, and other electronic components. Group members include (from left to right): Alex Gonzalez, Philip Thom, Brian Souder, Evan Kocon, and Chris Liddic.

**Right:** Lauren Atkins and Thomas Larson collaborated on the Teaching Lesson competition. They were thrilled with their first place award for a lesson on series, parallel, and combination circuits.



## EPT Inducts 22, Honors Dr. & Mrs. Perry Gemmill

The Beta Phi chapter of Epsilon Pi Tau, the international honor society for excellence in the study of technology, inducted 22 new members and honored Dr. and Mrs. Perry Gemmill on Friday, November 11, 2011. The banquet and ceremony was held in the Lehr dining room in Gordinier Hall and was attended by well over one-hundred students, family members, and guests.

Twenty-two industrial technology, occupational safety & environmental health, and technology education majors were selected for this honor. Students selected for invitation must demonstrate leadership accomplishments or potential and scholarship. Any student in the Department of Applied Engineering, Safety & Technology is eligible for membership in Epsilon Pi Tau if they meet academic and leadership requirements.

Dr. Perry R. Gemmill was honored by the Beta Phi chapter during the evening's events with a plaque designating him as "Trustee Emeritus." This designation is in recognition for his twenty years of exemplary service as chapter co-trustee, as well for his leadership in the fields of technology and technology education. Dr. Gemmill



Dr. Perry R. Gemmill

is retiring after the fall semester at Millersville University. His wife, Kay Gemmill, was also publicly recognized and given a small token of the department's esteem for the valuable contributions she has made as well.

### 2011 Beta Phi Initiates

Kevin T. Bond • Anthony S. Burkle • Catherine A. Edwards • Dana T. Fink  
Alexander L. Gonzales • Jared M. Hass • Ryan E. Haugh • Joseph A. Kahl  
Gregory S. Kline • Richard L. Lister • Zach J. Love • Ryan K. Mack  
Michael R. Marron • Molly S. Miller • Philip A. Nolt • Lucas C. Sandoe  
Erica R. Schmuck • Dale R. Shoop • Matthew J. Storm • Philip M. Thom  
George J. Wagenmann, III • Sarah E. Wilson



MU-TECA braves the rain and snow in Dr. Len Litowitz's 1923 International Harvester/Northern Fire Apparatus fire engine at the 2011 Homecoming Parade on October 29, 2011

## Thank you, Donna!

Mrs. Donna Hernandez, secretary for the Department of Applied Engineering, Safety & Technology was recognized for twenty-five years of service to the department at the December faculty meeting.

Mrs. Hernandez is a resource of immeasurable value to students, faculty, and staff alike. Pictured right, Dr. Perry Gemmill (soon to retire) presented Donna with a beautiful bouquet of flowers from the department along with the gratitude of her colleagues. Dr. Gemmill was on the committee that interviewed and hired Donna in 1986.



## AEST Advisory Council

The Applied Engineering and Technology Advisory Council is primarily private sector representatives who provide the department with valued guidance and direction from the business/industry perspective. Over the years the Council has reviewed curriculum, aided in the development of student recruitment and marketing initiatives, assisted with program accreditation and helped to refine and validate our degree competencies. During the October meeting Council Chair John Matthews charged the group with enlarging the Council's membership to ensure broad technical representation. To that end, if you are interested in becoming a member or know of someone who might, please contact Dr. Mark Snyder, Applied Engineering & Technology Coordinator ([mark.snyder@millersville.edu](mailto:mark.snyder@millersville.edu)). The Council gathers twice yearly for two-hour dinner meetings and on rare occasion holds special meetings on an as needed basis.

## 3-Dimensional Scanning and Digital Manufacturing

New methods for designing, manufacturing, and reverse engineering are being researched and applied in the Department of Applied Engineering, Safety & Technology. In the AETM-CADD area, the research is conducted using the latest technology available.



*The original object is scanned in a 3-D scanner (left), turned into a cloud of points (center), and then into a surface model.*

By utilizing a 3-dimensional scanner, existing products can be scanned and turned into a computer file. Then, CAD software with surface and solids modeling capability makes it

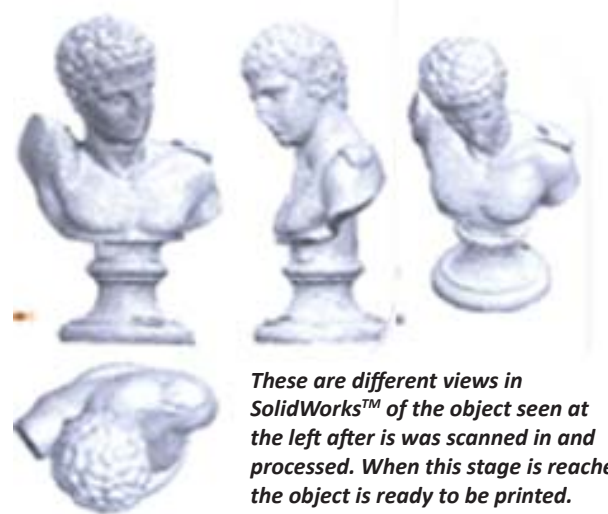
possible for the user to reproduce or modify the original product. This technology creates new horizons especially in the development of bio-engineered products and prostheses. With the use of a 3-dimensional printer, the scanned product can be printed and verified with the original object.

The NextEngine 3-dimensional scanner along with the ScanStudio HD software allows the user to scan the object and transform it into a final product. After the object is scanned, the cloud of points created must be converted into a surface model. Existing holes must be patched before converting it into a solid CAD model. The possibilities are endless when using this technology during the design process. A human skeleton can be scanned and joint replacement can be designed accordingly to increase the reliability and life on the replacement. Hard to find and obsolete parts can be replicated easily with high accuracy.

Here at Millersville University, this type of research can provide many possibilities that previously were only thought of. Improved technology is available and will continue to be improved on to provide higher accuracy and usability. 3-Dimensional printers are being designed to print the final product opening up new horizons in manufacturing. By using this technology and testing its limits, new

*by: Derek Nestor, Senior, ITEC -CADD Major*

ways of designing, prototyping, and manufacturing can be developed to further improve the quality of everyday products.



*These are different views in SolidWorks™ of the object seen at the left after it was scanned in and processed. When this stage is reached, the object is ready to be printed.*

## Millersville University

SEIZE THE OPPORTUNITY

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