

Happy Summer Greetings!

Summer / 2011

### In This Issue

Richard Higgins '79 wins Prestigious TBP Award  
 FALL 2011 Online Engineering Courses  
 UMaine Develops Novel Crimping Device for Maine Business  
 Thiaqaraian Named to Correll Presidential Chair in Energy  
 Grad student wins research competitions  
 Musavi named associate dean  
 Students Design, Test Mechanical Pill Crushers  
 AEWCA Awarded Patent for Stronger Beam  
 Graduate Student Receives Chase Distinguished Research Assistantship  
 Bridge in a Backpack Wins 2011 Charles Pankow Award for Innovation & New Bridge Going Up in Fitchburg, MA

Greetings!),

With summer now upon us, we are busy with summer camps and with plans for fall when we will welcome over 400 new students to the College of Engineering, our largest incoming class yet! We are also pleased to share with you that nearly a quarter of this incoming class is female, a statistic which has improved dramatically from where it typically stood at 15%. Faculty and students are forging ahead with game changing research and innovation and UMaine Engineering continues to be a driver of economic growth. There is a lot more great news to share, so thanks for allowing us to keep in touch with you.

Enjoy the rest of your summer and remember to keep in touch by checking us out on Facebook and sending us your updates and news too. Remember to let us know if your email changes so we can continue to send you our e-newsletters and updates to keep you informed about the UMaine College of Engineering.

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Dana Humphrey  
 Dean of Engineering  
 University of Maine  
 dana.humphrey@umit.maine.edu  
 Phone 207-581-2216  
 Fax 207-581-2220  
[www.engineering.umaine.edu](http://www.engineering.umaine.edu)

Mailing Address  
 University of Maine  
 College of Engineering  
 5796 AMC Bldg., Room 200  
 Orono, Maine, 04469-5796



## Richard Higgins '79 wins prestigious award

Richard Higgins, a 1979 UMaine graduate and retired Boeing executive, has won Tau Beta Pi's 2011 Distinguished Alumnus Award. The engineering honor society will formally recognize Higgins with the award at its October convention in Indianapolis. According to the Tau Beta Pi news release, the award honors Higgins' "lifetime achievements and commitment to engineering education." Higgins and his wife, Jean, a 1976 graduate, are generous UMaine benefactors. Their endowed gift made possible the College of Engineering's Richard and Jean Higgins



Materials Testing Laboratory in Boardman Hall.

## FALL 2011 Online Engineering Courses



**Classes Start August 29th and registration is open.** Want to take engineering courses from the comfort of your own home or office? Don't let geography stop you from furthering your engineering education. The College of Engineering at the University of Maine is offering online engineering courses, from accredited engineering programs, for the fall 2011 semester.

[ECE 498](#) Project Management and Systems

Engineering

[ECE 515](#) Random Variables and Stochastic Processes

[MEE 447](#) Flight Dynamics and Control of Aircraft and Space Vehicles

[MEE 697](#) Reliability Engineering

Check online for updates and new course information at  
[www.engineering.umaine.edu/online](http://www.engineering.umaine.edu/online)

## UMaine Develops Novel Crimping Device for Maine Business

A unique tube-crimping device created by students and staff at the [University of Maine's Advanced Manufacturing Center](#) for a Rockland marine products company has streamlined the company's operations to the point where its business emphasis may change.

Students and staff at the Advanced Manufacturing Center (AMC) last spring designed, machined and assembled a compressed air-powered stainless steel tube-crimping device for Gemini Marine Products & Custom Canvas. The device reduces hours of work to minutes by replacing a process in which employees previously clamped, drilled and

filed four small holes through stainless steel tubes and the plugs on either end of a hinge. They then used small-press fit pins to hold the pieces together. The hinged tubing forms folding support struts for canvas boat dodgers, awnings and bimini tops the company makes.



UMaine Advanced Manufacturing Center  
Creates Crimping Device for Maine Sail  
Company

For more on this story, go to [AMC Develops Crimping Tool for Business article.](#)

To go right to the source and learn more, contact:  
John Belding, (207) 581-2717; John LeMole, 1-888-767-7705

## Thiagarajan Named to Correll Presidential Chair in Energy



The University of Maine will bolster its research efforts in offshore wind and tidal energy with the appointment of Krish P. Thiagarajan as the first Alston D. and Ada Lee Correll Presidential Chair in Energy.

Thiagarajan, who will also have the title of professor of mechanical engineering, is currently a professor at the University of Western Australia in Perth, where he researches the hydrodynamics of floating structures. He is expected to arrive on campus in August.

The appointment is reported in the [June 20 Bangor Daily News.](#)

"Dr. Thiagarajan brings critical expertise in design of floating structures," says UMaine College of Engineering Dean Dana Humphrey. "This is critical to UMaine's efforts in offshore wind and tidal power, as well as to many Maine companies that design structures and vessels for the

marine environment."

Thiagarajan has also served as the program leader for the University of Western Australia's Offshore and Subsea Facilities Research Program. Other experience in his field includes visiting research specialist at CSO Aker Engineering in Houston and regional manager for Australian Maritime Engineering CRC, Ltd. He has more than 80 refereed journal and conference publications.

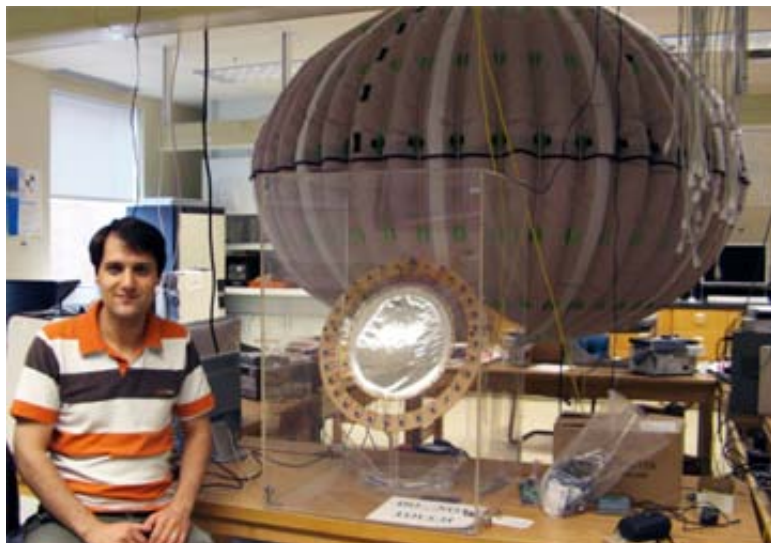
He has degrees from the Indian Institute of Technology, Memorial University in Canada, and a Ph.D. in naval architecture and marine engineering from the University of Michigan.

The Correll Chair was funded by a \$2 million gift from Alston D. "Pete" and Ada Lee Correll, who resided in Old Town, Maine, where Ada Correll taught middle school and Pete Correll completed UMaine masters degrees in chemical engineering and pulp and paper technology in 1966 and 1967. He went on to become one of the most respected paper executives in the country, and recently retired as chairman and CEO of Georgia Pacific.

Pete Correll now heads Atlanta Equity, a Georgia-based venture capital firm that works with mid-size businesses. In 2008 the Corrells were named Philanthropists of the Year by the Atlanta chapter of the Association for Fundraising Professionals.

## **Grad student wins research competitions**

Abolfazl Razi, UMaine Dept. of Electrical and Computer engineering doctoral student, recently won the best paper award at CANEUS/IEEE International Fly By Wireless Conference in Montreal. His paper, on Interference Reduction in Passive Wireless Sensor Networks, was chosen from a field of 38 entries.



Abolfazl Razi - PhD Student at the University of Maine, ECE Department, WiseNet Lab

"I am sitting in front of a small model of an inflatable lunar habitat. We use it to put our sensors for shape monitoring. We've got a bigger one in another building, you can check it out."

## Musavi named associate dean

The University of Maine College of Engineering has announced that Mohamad Musavi has been selected as associate dean for academics and research. He replaced Chet Rock, who retired May 13, 2011. Prior to this appointment, Musavi served as chair of the college's Electrical and Computer Engineering Department.

"I am very excited that Mohamad Musavi will be our new associate dean at the College of Engineering. He brings a wealth of experience as a department chair, faculty member, and researcher. He will play a key role in advancing the College of Engineering's education and research missions," says Dana Humphrey, dean of the college.



"At a time when our nation needs innovative engineering solutions to revive its economic prosperity, I am fortunate to be part of the College of Engineering team to work with Dean Humphrey in providing solutions through education, research, and development," Musavi says. "We will work with every school and industry to create pathways to rewarding employment and research opportunities for our young talented students. We will also rely on our alumni in supporting the Maine engine of economic vitality."

Musavi assumed duties as associate dean on July 1, 2011. Mohamad Musavi can be reached at 207-581-2218 or [musavi@maine.edu](mailto:musavi@maine.edu).

## Students Design, Test Mechanical Pill Crushers

Six teams of UMaine mechanical engineering technology (MET) students who squared off for an unusual engineering Senior Design Competition recently found that sometimes simplicity is best. The students, as part of their capstone projects, designed and built six distinctive pill-crushing devices to see which one might have commercial potential.

[Channel VII News Video Link](#)

The annual exhibition of newly designed projects by MET seniors is an annual event with an eye toward creating something that helps people, according to Herb Crosby, professor of mechanical engineering technology, who organizes and oversees the projects for his students. The design presentations represent a year of student creativity in mechanical engineering technology.

The pill-crushing devices were designed to be used in homes, hospitals or nursing homes. A panel of nurses and professional engineers evaluated and graded the six pill crushers for noise, efficiency, ease of use and other characteristics that could help or hinder nurses or staff at residential institutions. The pill-crushing competition followed. After motorized or hand-powered grinders and choppers ran the gamut, the small, quiet little pulverizer with a small hand crank won the day.

The object of the pill crushers is to reduce pills to a dust to facilitate dissolving in liquids or food for people who have difficulty swallowing pills.

"The MET capstone projects in particular are often aligned to improve a specific product for handicapped individuals with limited mobility, loss of extremities, or a number of other various products designed to improve the quality of life for members of society," says Ryan Keezer, the student whose wife suggested the pill crushers. "The capstone projects are what the MET program is all about."

Crosby's students determine their project at the beginning of the school year when they select a topic from the pool of ideas Crosby receives from the public and class members. Ideally, Crosby says, each project has a real-life client who can be consulted to help students understand the need. "You have to think, 'There must be a better way,'" says Crosby, whose hope is for his students not just to build something for a grade but to build something that works and has a real-world application. Students agree.

"That act of providing a product which is designed to help others feels great and is very motivating, knowing that someone is excited to see what the teams create," says Justin Hagelin, an MET senior in Crosby's class. "It gives teams experience dealing with the consumers and users of its product, which is often the hardest obstacle to overcome in a design." If the projects help students gain a greater understanding of the world around them, all the better, adds Crosby. About the 2009-10 adaptive tricycles for landmine victims in Mozambique, for instance, Crosby says developing and testing the designs helped students put their own struggles in context. "We tend to feel sorry for ourselves," he says. "Well, we have no problems at all.

"I think it speaks well of the students to pick something like this," Crosby says of the humanitarian projects.

Crosby says the top tricycle design, for landmine victims in Mozambique, are about to be sent to aid groups there for production. Information about the "orange team's" winning design is available on the [MET website](#). Detailed designs of some of the pill crushers and a list of prior year

projects are listed on the mechanical engineering technology [website](#).

## **AEWC Awarded Patent for Stronger Beam**

Contact: Habib Dagher, (207) 581-2138 or [hd@umit.maine.edu](mailto:hd@umit.maine.edu)  
The University of Maine's AEWCA Advanced Structures and Composites Center has been issued a patent (US Patent #7,862,675) for a method of prestressing glued-laminated timber beams that significantly increases the strength of the wood for use in bridges and other structures.

Associate Professor of civil engineering Mac Gray and Habib Dagher, director of the Advanced Structures and Composites Center, are the lead inventors on the patent.

Although not named in the patent, Olivia Sanchez, a research engineer at the center who has a master's degree in civil engineering from UMaine, has been involved in research for the project. Former UMaine graduate student Rodrigo Silva-Henriquez added research several years ago. The patent addresses a common problem of conventional glued-laminated (glulam) beams, which is they often fail in bending-induced tension. The Advanced Structures and Composites Center has found that adding small amounts of reinforcement to the tension side of the beam significantly increases its strength.

AEWCA researchers used a fiberglass tendon as reinforcement. The fiberglass is bonded to the wood, but before the adhesive can cure, the force on the tendon is released, building up tension in the middle of the bottom of the beam. This strengthens the area of the beam that is required to carry loads, and the now-patented method increases the beam's strength by 38%.

"What we found is we can tremendously strengthen wood by reinforcing it with a relatively small amount of fiberglass or other materials like that," Gray says. "The bottom line is we're seeing an increase in strength of a prestressed beam over a reinforced but not prestressed beam. You're gaining strength without using any more material."

## **Graduate Student Receives Chase Distinguished Research Assistantship**

Yang Lin, a graduate student pursuing her Ph.D. in Electrical and Computer Engineering was awarded a Chase Distinguished Research Assistantship (CDRA) for the 2011-12 academic year.

Ms. Lin has been a graduate student in the ECE Department since September 2007. She received her M.S. degree in August 2010 and is working towards completion of her PhD degree. She has been a teaching

assistant and research assistant for the ECE Department since 2007 and received a Summer Research Internship at IBM in 2008. Her work to date has resulted in three conference publications and the submission of one journal paper (currently under review). These publications describe innovations in circuit design leading to the realization of THz signal generation. They have been well received by the microelectronics community.

Her paper titled: "312GHz Fourthharmonic Voltagecontrolled Oscillator (VCO) Designed using 130nm SiGe BiCMOS Technology," was presented at the IEEE International Conference on Electronics, Circuits and Systems, in December 2009 and received the Best Student Paper Award at the conference.

## **Bridge in a Backpack Wins 2011 Charles Pankow Award for Innovation & New Bridge Going Up in Fitchburg, MA**

ASCE awarded Bridge-in-a-Backpack the prestigious Charles Pankow Award for Innovation. Dr. Habib Dagher accepted the award at the Outstanding Projects and Leaders Awards Gala in Washington DC. [Click here for the acceptance video.](#)

The [Worcester Telegram & Gazette](#) reported on a new bridge under construction in Fitchburg, Mass., which is the first in that state to use the bridge-in-a-backpack technology developed at UMaine's AEWCA Advanced Structures and Composites Center. Victoria Sheehan, manager of the state's Department of Transportation's Accelerated Bridge Program, said the low maintenance required for the carbon-fiber bridges is a major benefit.

The FUND is an opportunity for those closest to the University of Maine, our Alumni, Parents, Friends, and Faculty/Staff to play an important role in the University's present and in its future.

Last year, *The College of Engineering Gift Fund* which is dedicated solely to benefit our students, helped to provide scholarships, support research, improve in our labs, and strengthen our capacity to better serve our students with a proud tradition engineering excellence.

Our main objective is to ensure there are funds available to allow us to respond quickly and appropriately to the areas of greatest need within the department. Your donations, combined with those of others, make a significant and immediate impact on the quality of the 'UMaine Experience' for our students.

We invite you to become an active part of this campaign by making your gift on behalf of the ***College of Engineering*** to The FUND by visiting



uson-line at [www.umaine.edu/give](http://www.umaine.edu/give) or by calling 207-581-1148 or toll-free at 866-578-2156. **Remember, it isn't just about how much you give, but the fact that you give that makes a real difference.**



For more information about *The FUND*, contact Ulysses Tucker, Jr. ([ulysses.tucker@maine.edu](mailto:ulysses.tucker@maine.edu)), Director of Annual Giving at 207-581-1157.

Again, thank you very much for your consideration and support.