Newsletter – June 2011

Whitfield Russell Inducted into Francis Crowe as Distinguished Engineer

l-r: ECE Chair, Mohamad Musavi, Whitfield Russell, Dean Dana Humphrey, Assoc. Dean Chet Rock

Whitfield A. Russell (Whit) is the founder of Whitfield Russell Associates, a public utility consulting firm in Alexandria, Virginia.

Whit received his BS in Electrical Engineering in 1968. He then went on to receive his MS degree in Electrical Engineering from the University of Maryland and his Juris Doctor degree from Georgetown University Law Center in 1976.

With his background in both engineering and law Whit often negotiates and testifies in his clients' disputes with investor owned utilities over who should pay what amount for such things as power, use of the transmission system, interconnections (especially of wind power and cogeneration). The firm's clients have included electric utilities owned by investors,

municipalities, cooperatives, States and State subdivisions; large industrial generators and energy consumers; State agencies and commissions; federal agencies, independent power producers, Canadian First Nations, Canadian provinces and agencies; and Native American governments and agencies.

Whit founded his consulting firm in 1976 after a succession of engineering jobs at Proctor and Gamble's Charmin Paper division, the Federal Power Commission, the Potomac Electric Power Company, and the Securities and Exchange Commission.

Whit grew up in Bangor and is married to Ellen, a high school classmate who is retired after a career in personnel policy with the Federal Government in Washington, DC. Whit and Ellen's daughter, Caroline, is a licensed clinical social worker and a practicing psychotherapist in New York. Their son, Andrew, is an electrical engineer specializing in telecommunications. He recently graduated from the Catholic University of America's Columbus School of Law.

Despite his current Virginia zip code, Whit's ties to the State of Maine remain strong. For several years, he owned two small hydro plants in Pittsfield and Frankfort and he served on the Board of the Great Pond Mountain Conservation Trust. Among his favorite outings are hikes up Great Pond Mountain and across the ice on Alamoosook Lake where in summer he kayaks with his grandsons Everett and Teddy across the lake to see the eagles.

UMaine Students Test Wireless Sensors on Rocket

On April 16, electrical and computer engineering students participated in a launch process as a rocket loaded with wireless sensors the students developed in a UMaine lab blasted off in California's Mojave Desert.

The students, working under UMaine electrical and computer engineering Associate Professor Ali Abedi, collaborated on the NASA-funded project with faculty and student researchers at California State University at Long Beach and Garvey Spacecraft Corporation (GSC), a Long Beach, Calif.-based R&D company that focuses on cost-effective development of advanced space technologies and launch systems. The students trained for more than a year to design wireless sensors in order to be able to design and build payloads for this project.

The UMaine payload which was integrated into a rocket known as the Prospector 18B, included sets of wireless sensors that detect acceleration in three dimensions to determine the amount of vibration of the rocket before and during liftoff. The vibration levels are crucial because even the most miniscule amount of vibration before launch could throw off a rocket from its intended path and reduce engine performance. The rocket had three payloads worth of wireless sensor technology, each about the size of an adult's hand, on board in case one failed.

The sensors sent back data to a laptop on the ground during the launch, and also stored data on board the payload when the sensors went out of range of the laptop. Dr. Abedi and his students will hand over their data to Cal State Long Beach, GSC and NASA so that those organizations can continue refining their models.

The 27-foot, 500-pound Prospector 18B rocket, which was built in part by Cal State Long Beach students under the management and sponsorship of GSC, was launched and reached a height of nearly 2,100 feet before falling back to the earth on a 1,000 square foot parachute. The entire launch took about two minutes. The rocket came down a few hundred feet away from the launch site (launch video).

The students who worked on the project were electrical and computer engineering seniors Zachary Janosik of Windham, Adam Marsano of Saco and John Murray of Raymond. Fred Schwaner of Hebron, who is pursuing a doctorate under Dr. Abedi and managed the project this year, participated as an ECE undergraduate in 2009 (full story).

Scientific Ballooning

ECE Professor Rick Eason recently received NASA funding through the Maine Space Grant Consortium to initiate a program in High Altitude Ballooning, also known as Scientific Ballooning. Over winter break Rick and two students travelled to Louisiana State University for a one-week training session in order to learn the ropes, and during spring semester a course was offered to undergraduate students.

High Altitude Ballooning involves attaching one or more payloads to a weather balloon and sending it to altitudes of perhaps 100,000 feet or more, a region designated as "near space." Temperatures on the way up can reach -70 Celsius and the pressure drops to around 1% that of sea level. On ascent the balloon rises steadily and eventually bursts, and the payloads drop by parachute. A typical flight might last two or three hours. Rather than send the data back in real time, the data is recorded and the balloons are tracked and recovered on landing.

The 12 first and second year students that took the course this spring semester built payload boxes to collect data on temperature, pressure, and humidity during the flight. Five seniors also participated and they worked on the launch vehicle infrastructure and other preparations including beaconing, tracking, amateur radio communications and on-board photography and video.

On April 30 the team conducted a two-balloon launch that also included payloads from the University of Southern Maine and Maine Maritime Academy, the other grant participants. They launched from the Pittsfield airport and all payloads were successfully recovered (launch video). For more photos and further information check the web page (eece.maine.edu/umhab), and for email updates on future launches join our google group at (groups.google.com/group/umhab).




Senator Susan Collins Commencement Address

On Saturday, May 7 Senator Susan Collins gave the Commencement Address at the University of Maine. In her address she referred to two projects lead by the ECE faculty and students, the Lunar Habitat project and the Scientific Ballooning. Below is an excerpt from her speech. The full text is at: http://umaine.edu/commencement2011/commencement-address/.

> *"From the earliest civilizations, humans have looked to the heavens for inspiration. Today, we look there for knowledge. It is a great tribute to our University that NASA built its inflatable lunar habitat here – the only structure of its kind in the world – and entrusted UMaine researchers and students to conduct the experiments that will help ensure the safety of astronauts undertaking extended missions to the moon, Venus, and Mars. And just last Saturday, UMaine students launched their first two high-altitude balloons to*

study the highest reaches of the earth's atmosphere. Increasing our understanding of our home planet, and of the moon and other planets, is a great good, and our University has joined it."

Space Day Fun at Challenger Learning Center

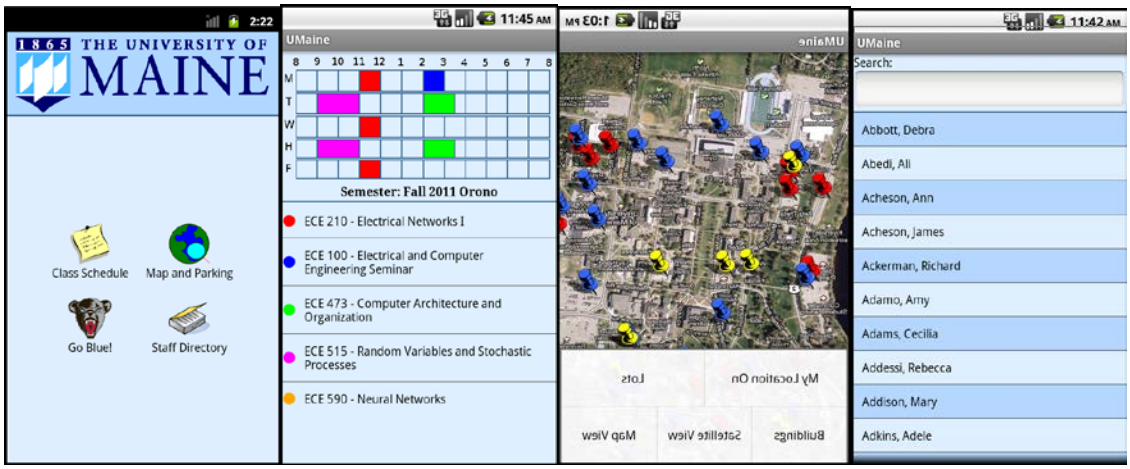
All systems were Go at the Challenger Learning Center of Maine on May 4. In honor of Space Day, kids and their parents both gathered at the center for a day of fun activities from rocket launches to R2D2. Electrical and computer engineering Professor Ali Abedi, along with students Joel Castro, Chris Farah, Dale Goodman, John Murray, and Alex Servadio hosted a table which included a rocket project, a balloon project and senior project demos.

l-r: John Murray, Dale Goodman, Dr. Abedi, Joel Castro

The Challenger Learning Center is a private, non-profit corporation offering educational programs for students and families throughout Maine. Their mission:

Through a diversity of programs we educate students and teachers in order to inspire an active lifelong passion for space and Earth science.

Students Develop Android Phone App for UMaine Navigation



Screenshots of a free smartphone app for managing academic life at the University of Maine. It allows faculty and students to view course weekly schedule, meeting location, textbook, and faculty/staff contact information. The tool also provides maps of building and parking to help visitors and new students navigate the campus.

As use of cell phones is banned in some universities classrooms, one course at the University of Maine requires them.

In a course offered in the spring of 2011 by the Department of Electrical and Computer Engineering (ECE), students developed a mobile application for smart phones to better manage their academic life on campus. The application, freely available through the online Android Market, is an open-source application that allows students and others to view weekly class schedules, class locations, textbooks, and contact information for instructors. It provides information on parking, a building map, a directory of all faculty and staff, which could be particularly helpful to new students and visitors, according to Yifeng Zhu, Associate Professor of ECE, who taught the class.

Seniors Jason Monk of Pittsfield, Maine and Robert King of Richmond, Maine (who are now computer engineering graduate students working as research assistants on projects funded by the National Science Foundation) and computer science undergraduate Jerry Zhu from China were in the class. The students created their own database for information retrieved from several University of Maine online databases and then wrote a script to collect data ranging from student, faculty and employee contact information and maps showing buildings and parking lots to university calendars, classes and sports and special events (newsvideo). Separate from the university servers, they say their independent server will not cause any security conflicts with university servers (full story).

Congratulations Class of 2011 Graduates!

This year we had 36 seniors of which 30 graduated in May and six plan on graduating in either August or December of 2011. Ten have accepted employment with an average salary of $58,000 and four are going on to graduate school. The ECE graduating students were inducted into the Francis Crowe Society on May 7 at a college ceremony attended by family members, distinguished inductees, and faculty. After the ceremony, family and friends gathered in the Engineering and Science Research Building for a luncheon. The picture below shows part of this gathering. Each year Hovey Awards are given to one senior in each department of engineering. The selection is based on character, scholastic attainment and general promise as an engineer. This year's Hovey Award winner was Jamie Reinhold. The outstanding senior award went to two students, Nathan Benamati and Kevin Demers. Other awards were given to students for their Senior Projects:

3rd Place Winner Senior Project – "Data Logger Weather Station" – Steven Pesut
2nd Place Winner Senior Project – "Protolyzer" – Tyler Lalime and Jason Monk
1st Place WinnerSenior Project – "Swan: Super Wicked Awesome Nerf Gun" –
Aaron McCollough and Jamie Reinhold

L-R: Evan Semle, Joel Castro, John Tkach, Nicholas Duquette, Adam Marsano, Yusef Nouri, Mark Guerrette, Kevin Demers, John Misener, Michael Lacasse, Derrill Vezina, Alex Bryant, Tyler Lalime, Joseph Grace, Jason Monk, Nathan Benamati, Raymond Pye, Jamie Reinhold, Steven Pesut, Eulan Patterson, Aaron McCollough, John Murray, Cameron McGary, Zachary Janosik, Matthew Dunn, Richard Pierce, Alex Servadio. (Absent from photo: Daniel Chamberland, Ryan Cota, Antoinette Demers, Ian Dorko, Matthew Edwards, Raymond Flagg, Craig Harrison, Nicholas Hayden, Paul Wilson)

ECE Francis Crowe Induction Ceremony

ECE Graduation Luncheon

This year's luncheon was partially sponsored by IEEE GOLD (Graduates of the Last Decade) and IEEE Student Activities by providing $1000 funding which was used to present graduating seniors with gift cards and information about IEEE benefits for young professionals.

ECE Scholarship/Summer Co-op Recipients for the 2011-12 Academic Year

Analog Devices
- Corey Birdsall
- Sara Nadeau

National Semiconductor
- Brian Grant
- Christopher Washburn

Fairchild Semiconductor
- Joseph Record
- Sean Rollins

Kepware
- Joshua Leger
- Steven Severance
- Craig Verrill

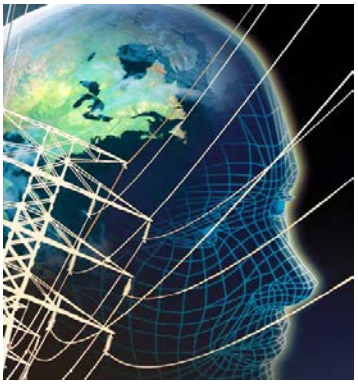
Beyond the Classroom

Some of our ECE faculty/students participated in the 2011 Kenduskeag Stream Canoe Race. The 16.5 mile race, held annually on the third Saturday of April, is the largest paddling event in New England and one of the largest in the country. It begins in the town of Kenduskeag and ends near the confluence of the Penobscot River in downtown Bangor. Ten miles of the race course are on flat water. The other 6.5 miles are more or less divided into Class I, II and III rapids, with Six Mile Falls being the most treacherous for paddlers. Fortunately, our veteran paddlers, Rick Eason and Don Hummels navigated the falls without any problems and both finished 3rd in their respective classes. For more information about the Kenduskeag Canoe Race visit: http://www.kenduskeagstreamcanoerace.com/index.html

Rick Eason (l) and ECE sophomore Sean Heath

Don Hummels (r) and Shawn Kennedy (BS ‘90, MS ’92). Shawn was Don’s first completed MS advisee. He now lives in Saunderstown, Rhode Island and works for the Naval Undersea Warfare Center Division Newport.

Smart Grid Conference



In continuation of our Haskell Energy conferences, we are pleased to announce the 2nd such conference on Smart Grid – Consumer and Utility Perspectives on June 24th. We would like to invite you to this informative conference. For registration and further information, please visit: http://www.eece.maine.edu/conference/.

Publications

Peer Reviewed Publications

A. Abedi, “Signal Detection in Passive Wireless Sensor Networks Based on Back-Propagation Neural Network,” IET Wireless Sensor Systems Journal, Mar. 2011, pp. 48-54.

J. Chen, **A. Abedi**, “Distributed Turbo Coding and Decoding for Wireless Sensor Networks,” IEEE Communications Letters, Feb. 2011, pp. 166-168.

Grants Received

A. Abedi, “Flight Test Wireless Sensors on Board of a P18 Rocket,” $24,950, NASA, April 2011.

A. Abedi, “Enhanced Codeset Passive Wireless Sensor Tags and System,” $28,079, ASR&D Corp. Annapolis, MD, April 2011.

Gifts/Donations

Gerald Palmer & Evelyn Lutz, $2,000 to Gladys and Lloyd C. Palmer Fund, March 31.
Fred & Sally Irons, $500 to Allison Whitney Fund, March 31.
Suresh Balakrishnan, $300 to ECE Fund, April 11.

Other

Since April the faculty have submitted proposals for a total of about $100,000.

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