Senior pole-vaulter Sean Busch was named by the Atlantic 10 Athletic Conference as its Student-Athlete of the Year for track and field and made the Academic All-Conference Team. In case you’re wondering, you earn those honors by holding down an impressive 3.7 GPA in the extremely demanding electrical engineering major while shattering the university record in the extremely challenging pole vault by clearing the magic 16-foot barrier.

“The pole vault is an incredibly difficult event,” Sean says. “Every time you compete you want to set a personal record, but that’s not going to happen. The mechanics are so demanding. It takes years to develop good enough mechanics to compete at even a high school level. And it’s very disconcerting to be in that upside-down position before you vault toward the bar. The event is all about muscle memory.”

The same kind of balance that helps Sean hover upside down for a tantalizing moment – poised at the slingshot end of a curving, 16-foot-long, fiberglass pole just before being catapulted over the bar – also helps him balance the rest of his life.

His professional goal is to work in a position that balances electrical engineering knowledge and customer service. Last summer he did an internship at the Littleton, Massachusetts, IBM facility and provided technical support for the Lotus Notes client, advising network administrators on how to properly use and troubleshoot problems with the product.

“I would like to have a job something like that,” he says, “in which success is defined by how satisfied your customers are.”

When asked about all his honors, Sean shrugs his shoulders. “I just showed up for practice,” he says with typical modesty.
A Do-it-yourself Water Pump for the Amazon

A team of students from the campus chapter of Engineers Without Borders (EWB) has designed a do-it-yourself water pump for the settlement of Divisão in the Brazilian Amazon and taught community members how to put together the device, using indigenous materials. The simple mechanism, which can be easily constructed from inexpensive PVC and rubber, is engineered to pump clean spring water for many households in the area. The pump provides the community with a home-made, sustainable technology for creating healthy drinking water.

As part of the trip to Divisão, the EWB team also taught Brazilians the fundamental techniques for protecting their springs from contamination.

“Every location, every house, every school, every building that has a water source probably needs work,” explains Phil MacClellan, a civil engineering student and member of the Amazon team. “But we don’t have the time or resources do that. The EWB idea is that we plant the technology, and they spread it themselves.”

The rubber tappers live sustainability in the Amazon rainforest, but are plagued by disease and infection. The objective of this EWB project is to work with community members to design drinking water and sanitation systems that meet the peoples’ needs and protect them from harmful diseases.

Intern Catches a Helicopter Into Her Future

Industrial engineering major Majdouline Touil is hoping to ride her very productive internship with the Sikorsky Aircraft Corporation, maker of the Black Hawk and Seahawk helicopters, right into her future. The multi-talented undergraduate has already made her mark at the Sikorsky plant in Stratford, Connecticut, where she was an intern last summer. She hopes it will leave a lasting impression.

At Sikorsky, she put her industrial engineering education to work by completing several projects related to lean manufacturing and continuous improvement.

I used lean manufacturing principles to implement a pull system of materials into the flight hangar,” she says. “Part of my job was to point out problems that needed to be corrected, but that nobody on their full-time staff had time to address. I really didn’t feel like an intern when working there, because these were projects that were really saving the company millions of dollars.”

Majdouline was able to receive an internship with Sikorsky through the INROADS program. INROADS partners with Fortune 500 companies to provide internship opportunities for the most promising undergraduate students. Only 20 percent of students who apply to the program are selected to receive an interview with a company.

“I was thrilled that I was accepted into the program,” she says. “The process to receive an interview was competitive but educational.”

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Student Wins Award from American Chemical Society

Recent chemical engineering graduate Matthew Coggon won a 2010 Undergraduate Student Award in Environmental Chemistry from the American Chemical Society (ACS) for his research on acid mine drainage. As his two faculty advisors said about Coggon: “Matt is capable of working at the interface between chemical engineering, environmental engineering, geosciences, and microbiology to make a contribution to our understanding of the worldwide environmental problem of acid mine drainage.”

Coggon began his research as a sophomore, helping a doctoral student investigate acid mine drainage bioremediation. He later worked as an REU at the University of Colorado, Boulder, investigating the microbial processes responsible for generation of this environmental problem.

Coggon’s honors thesis investigated the bioavailability of jarosite minerals to Fe(III) reducing bacteria at Davis Mine, an abandoned pyrite mine in Western Massachusetts. Coggon worked closely with faculty and students from environmental engineering, microbiology, and geosciences to characterize and study the mineralogy and microbiology at the site.

Undergraduate Researchers Tackle Key Problems

What if we could cure diabetes, relieve sleep deprivation in surgeons, and figure out a faster way to rescue disaster victims, all in one summer? In fact, those goals were only part of the agenda for 25 undergraduate students who were part of the College of Engineering Research Experience for Undergraduates (REU), in which they worked with nationally recognized faculty researchers to help solve some of society’s most pressing problems.

Chemical engineering student Vanessa Mukania researched ways to treat type 1 diabetes with polymer capsules carrying a payload of insulin-producing islets of Langerhans cells. Mukania was studying appropriate encapsulation conditions for optimal diffusion of insulin while she worked last summer on the research team of Chemical Engineering Professor Susan Roberts, who is developing the encapsulation technique.

Yet another project, carried out by electrical and computer engineering student Mikyle Bengtson, aimed to streamline the function of the revolutionary DIORAMA system, which is being developed by Electrical and Computer Engineering Professor Aura Ganz. DIORAMA uses RFID technology to communicate the locations of victims during mass disasters while also reporting the urgency of their injuries for the triage process.

Post Wins Scholarship from Associated General Contractors of America

Brian Post, an undergraduate student in the Civil and Environmental Engineering Department, was the recipient of the 2010 Steve L. and Pamela C. Massie Undergraduate Scholarship through the Associated General Contractors of America (AGC). Post was one of only two students from Massachusetts who received an award from the AGC Education and Research Foundation. Scholarships were awarded to 120 students from across the country enrolled in civil engineering or construction management programs.

Post has served as both the treasurer and president of the UMass Amherst Chapter of AGC, reestablished as a student organization in 2008. As an officer, he has scheduled meetings with guest speakers from the construction industry, organized OSHA 10-hour safety courses, secured donations for the chapter, and planned tours of construction sites.
Letter from the Director

Reflecting back on the 2010-2011 academic year, I feel a sense of hopefulness returning to the economic climate. Early survey results from the National Association of Colleges and Employers (NACE) show a projected increase of 13.5% in entry-level hiring (NACE Job Outlook 2011). We are certainly seeing an increase here in the College of Engineering where we doubled the number of corporate recruiting events over last year, resulting in an increase of both full-time and internship positions.

Engineering companies consistently tell us that they hire UMass students because of their technical acumen and their strong problem-solving abilities. Students continue to expand the boundaries of problem-solving through innovative solutions such as Vanessa Mukania’s research on polymer capsules which allow for the optimization of insulin release in diabetic patients and through interdisciplinary approaches such as Matt Coggon’s research on acid mine drainage.

In addition to our industrial partners, I would like to thank the UMass Engineering Alumni for their generous financial donations, connecting the center with corporate hiring managers, and through their participation in our first annual Engineering Networking Night. This event filled within 5 minutes after online registration opened, with over 80 students attending. The students connected with current engineers and learned how they developed their careers and what recruiters look for. To participate in upcoming career-related events, please contact Cheryl Brooks at brooks@ecs.umass.edu and don’t forget to register for our Fall Engineering Career Fair to be held on September 28th! Registration is found at: www.umass.edu/careers.

—Cheryl Brooks