New Career Option for Math, Science and Engineering Students

Concern has been mounting about the quality of science, technology, engineering and math (STEM) education in the U.S. and students’ preparedness to compete in a technology-driven global economy. UMass Lowell has been awarded $1.6 million by the state to fund UTeach, an initiative to prepare a new generation of science, technology, engineering and mathematics (STEM) teachers.

Central to the program are intensive classroom experience and extensive feedback and support from faculty. The program has been introduced at 29 colleges across the country, with UMass Lowell the only university in New England to offer it.

“With the shortage of science and math teachers, STEM teaching provides a stable career path,” says Dean of the Graduate School of Education Anita Greenwood, who is a co-principal investigator for the UTeach grant.

Sophomore math major Corinne Clifford wants to be a high school math teacher so the opportunity to get classroom experience as an undergraduate is appealing. She likes the idea of getting her teaching certification without having to earn a master’s degree. “I’m excited about the program. It will save me time and money,” Clifford says. “And I know I’ll be getting hands-on experience.”

Prof. David Kazmer, associate dean of the Francis College of Engineering and a co-principal investigator for the UTeach grant, says schools will benefit from STEM teachers who are experts in the subjects they teach and can share their enthusiasm and knowledge with students. “High school students often aren’t aware of the opportunities that exist in pursuing a math or science degree. There’s a real need for better advising and more content expertise among teachers,” he says.
Unraveling the Secrets of Nature’s Wonder Fiber

Prof. Garb’s Research Focuses on Spider Silk

Spiders use the silk they spin to weave webs for catching prey or to build cocoons for their offspring, but this fine thread-like, protein-based fiber may have applications for humans.

Because it is lightweight and biodegradable as well as extremely tough with high tensile strength and elasticity, spider silk can potentially be used in applications requiring high-performance materials, such as body armor, bandages, surgical sutures, artificial tendons or ligaments, seat belts, airbags and parachutes.

UMass Lowell Biology Asst. Prof. Jessica Garb is studying the genetics behind spider silks and venoms; her findings were published in 2010 in the journals BMC Evolutionary Biology, Science and Proceedings of the National Academy of Science, among others.

“There are many kinds of spider silks,” explains Garb. “An orb-weaving spider makes seven different kinds of silk fibers, four of which are used to construct its orb web. These various silk types have distinctly different material properties—some spider silks have greater tensile strength, whereas others stretch better and some are primarily adhesive.”

Garb’s work involves the characterization of these various silk proteins to understand the evolution of their diversity at the molecular level, and how this molecular variation is linked to differences in silk fiber mechanics and ecological function.

Garb says more than 40,000 species of spiders have been discovered so far, and thousands more are yet to be discovered.

O’Leary Learning Commons Celebrated

Library Transformed into ‘Amazing’ Learning Center

Calling the transformation of O’Leary Library into the O’Leary Learning Commons “amazing,” Chancellor Marty Meehan praised the vision and dedication of all involved in the yearlong renovation project at the official opening of the facility recently.

“A revolution has taken place in this building,” Meehan told the students, faculty, staff and visitors gathered for the ribbon-cutting event. “Here, students are provided with the latest technology, access to the best scholarly databases and a radical new design that supports how they learn today.”

Offering a fresh approach to academic study and research, the Learning Commons has bright new gathering and study areas. A new library reference and research center features an open computer lab with more than 75 workstations.

There’s even a Starbucks café on the first floor. Outfitted with wireless Internet access throughout, the renovated space is enhanced by new lighting, ceilings, carpeting and furnishings, creating a welcoming and comfortable place to learn.

The library’s fourth floor was also completely renovated, with more than 100 seats for quiet study and room for the University’s reference, fine-arts book collections and circulation desk.

The newly expanded Centers for Learning and Academic Support Services at O’Leary provides students with academic guidance in new tutoring and advising rooms, and a new writing center.

ETIC Garners State, Private Support

$10 Million State Grant Will Outfit Nanotech Cleanroom, Biomedicine Lab

On April 24, the Massachusetts Life Sciences Center awarded a $10 million capital grant to help outfit the Emerging Technologies and Innovation Center (ETIC) under construction at UMass Lowell. The grant will equip the clean room for micro-nano fabrication and the third-floor nano-medicine laboratories.

“UMass Lowell is one of our state’s strongest contributors to innovative life sciences research and one of the many reasons that Massachusetts is considered a global leader in the life sciences,” said Susan Windham-Bannister, Ph.D., president and chief executive officer of the Massachusetts Life Sciences Center.

Scheduled to open in the fall, the $70 million, 84,000-square-foot facility will bring together experts in such leading-edge disciplines as nanotechnology, biomedicine and plastics engineering and will open the doors to new opportunities for collaboration between faculty, students and industry. Researchers will have the space and specialized lab equipment to develop the advanced materials that will improve the performance of everything from food packaging to life-saving medical products.

Construction of the ETIC got underway in 2010, with broad support from local, state and federal officials, as well as private industry. In addition to Mass Life Science Center’s $10 million award and $35 million in previously approved state funding from other sources, the ETIC has also attracted $7 million in donations from alumni and corporate partners.

A $10 million award from the Massachusetts Life Sciences Center will help equip the clean room at the new Emerging Technologies and Innovation Center at UMass Lowell.

Learning with Purpose
UMass Lowell Offers New Biomedical Engineering Minor

Program Highlights Engineering’s Role in Biology, Medicine

UMass Lowell’s Francis College of Engineering will offer a Biomedical Engineering Minor for undergraduate-degree programs starting this fall.

The new minor, to be administered with the College of Sciences and the School of Health and Environment, will provide students with the education and training they need to apply engineering principles and design concepts to medicine and biology.

“We seek to close the gap between engineering and medicine by combining the design and problem-solving skills of engineering with biological sciences to improve health-care diagnosis, monitoring and therapy,” says Engineering Dean John Ting.

The new biomedical engineering minor will help prepare undergraduates interested in entering medical school.

The demand for biomedical engineering graduates is growing. The U.S. Bureau of Labor Statistics’ “Occupational Outlook” notes that employment of biomedical engineers is expected to grow faster than the average for all occupations through 2012, and that the aging of the population and the focus on health issues will increase the demand for better medical devices and equipment designed by biomedical engineers.

$50 Million Endowment Milestone Reached

University Now Has More Than 300 Individual Endowment Accounts

UMass Lowell has reached a milestone of over $50 million in endowment funds. Over the past five years, the number of endowments has grown from 210 to 303—a 44 percent increase.

“These funds have a tremendous impact on our students and the quality of the education we provide,” says Edward Chiu, vice chancellor for University Advancement.

This academic year, $900,000 in scholarships were awarded to 1,150 students. Over the past five years, several key academic programs were enhanced and 11 faculty chairs, professorships and fellowships were funded by endowments.

Endowments have been created by alumni, faculty and staff as well as friends of the University, many as named memorials or in honor of individuals or families. “We are thankful to all who have made it possible for us to attain this significant achievement,” says Chiu.

Fundraising overall has increased significantly increased at UMass Lowell over the past five years. There has been an 83 percent increase in fundraising for a total of $61 million in pledges and gifts during that period. This includes several multimillion-dollar gifts, allowing the University to increase scholarships, construct new buildings on campus and advance educational and research programs that benefit the entire region.

To establish an endowed fund, a donor commits a minimum of $25,000 through an outright gift or a multi-year pledge. For more information on creating an endowment fund, call the Office of University Advancement at 978-934-3689.

New Education Model Aims to Improve Care for Older Adults

A new clinical-care education model is better preparing nursing students to care for aging patients.

UMass Lowell nursing faculty, in partnership with D’Youville Life and Wellness Community, developed the new education model to incorporate the best practices of treating physical and mental health problems in older adults. They are sharing the model nationwide to tackle the issues of caring for a growing, aging population with multiple chronic illnesses.

The Nursing Department was awarded a $50,000 grant from the Massachusetts Department of Higher Education to develop the Transitional Care Dedicated Education Unit with Lowell-based D’Youville. The model allows students to do rotations with long-term care nurses serving as clinical teachers under UMass Lowell faculty direction.

“The quality of education in the nursing program at UMass Lowell has exceeded my expectations,” says nursing student Kristiana Demers. “Working in this setting has completely changed my view of gerontology and it may be something I would like to specialize in during my future career as a nurse.”
New Residence Hall to Provide Housing for 472 Students

Calling UMass Lowell “a campus on the move,” UMass Building Authority executive director Katherine Craven was one of several officials to break ground in April on University Suites, a state-of-the-art, $54 million residence hall.

“This building will be a model; it is transformative,” she said of the all-suites facility, which will house 472 students in four- and six-bed units when it opens in the fall of 2013.

“This campus is undergoing a transformation,” added Craven told the faculty, staff, students and community members in attendance at the groundbreaking event.

“Student enrollment has climbed to more than 15,000—a 37 percent increase over the past three years—and with it, the demand for housing,” Meehan said. “This new residence hall, the University’s first since 1989, meets that demand, providing a state-of-the-art environment for student learning and living, while maintaining the inspired architectural style and landscaping of Lowell’s historic district.”

The residence will include two common kitchen/lounge areas, two quiet study rooms and a group study room on each floor. A first-floor common area, open to the UMass Lowell community, will feature a café, a multi-purpose room and a 70-inch, high-definition television. A courtyard outside the brick, U-shaped building will face the Campus Recreation Center and include a seating area for outdoor events.

The new residence hall will help UMass Lowell achieve its goal of a 50-50 split between commuter and residential students, a priority identified by Chancellor Marty Meehan shortly after he was named to the post in 2007.

University Suites will be constructed in part with recycled materials and with the goal of maximum energy efficiency throughout, striving for LEED Silver certification. The building’s architectural design evokes Lowell’s textile and industrial heritage and complements the Northern Canal neighborhood, which includes LeLacheur Park, home of the Lowell Spinners, and the former Lawrence Mills.

Research shows students who live on campus are more apt to be academically successful and the university community is more cohesive when a greater number of students live on campus.

“UMass Lowell has successfully encouraged students to live on campus. Today that number sits at 40 percent of undergraduates, up from 28 percent five years ago,” said UMass Lowell Dean of Students Larry Siegel. “Our vision is to increase the residential community to 50 percent while offering the ideal variety of living options in first-class facilities that are comparable to those at other leading institutions across the country.”

Surveys of UMass Lowell students have shown that more want to live on East Campus, near the rec center, ballpark and Tsongas Center at UMass Lowell, as well as the city’s downtown.

University Suites is the latest project in UMass Lowell’s multi-faceted building boom.

Also under construction is the $70 million Emerging Technologies and Innovation Center on North Campus. The 84,000-square-foot research and academic facility will be the hub of industry partnerships and new manufacturing technologies led by world-renowned, next-generation scientists. The building will open this fall.