



COLLEGE OF ENGINEERING



(left) Yemi Akinsinde, NUWC Division Newport's African American Special Emphasis Program Manager chats with Donald McCormack at a brown bag lunch where students discussed their summer working experiences as participants in the federal government's Student Career Experience Program.

Applying skills learned at UMass Dartmouth in the real world

The Naval Undersea Warfare Center (NUWC) is the Navy's research, development, engineering and fleet support center for submarine systems, headquartered in Newport, RI. One of UMass Dartmouth's own, Don McCormack '85, is Technical Director for the Center and has been since 2005, managing a \$1 billion budget and over 4,000 employees. That was until he took on a second post for the Navy. In the spring of 2012, McCormack was named Acting Technical Director (TD) of the Naval Surface Warfare Center (NSWC) at the Washington, DC Navy Yard, in addition to his TD duties in Newport. "We now have a combined budget of \$8 billion dollars and almost 20,000 employees devoted to research and new systems development," says McCormack.

NSWC's core focus for 'surface' includes research and development efforts toward integrating weapons and combat systems into surface ships and vehicles. 'Undersea' according to McCormack, includes research, development and engineering improvements for submarines, autonomous underwater systems, and for undersea offensive and defensive weapons systems impacting homeland security and national defense." Not a small mouthful or a small job.

With time split between Washington DC, Newport, RI, and his home in Dartmouth, McCormack is a problem-solver. He reflects

back on his time at UMass Dartmouth and sees how key skills he learned in the College of Engineering come in handy today. "I have lasting memories of the project management [today's Senior Capstone Design course] that Professor Curry taught where he split us up into teams and assigned us projects. He provided the requirements and we had to do the rest." McCormack stresses "we continue to need college graduates today that are ready to work in teams and ready to solve complex issues." "Can students communicate—that's a big one. Can they develop a white paper and with verbal and written skills make their technical point?"

NUWC has long sponsored Senior Capstone Design team projects and staff on site in Newport act as thesis advisors for engineering students. In May of 2012, NUWC employees met with faculty from the College of Engineering and the School for Marine Science and Technology (SMAST) at an organized research forum to expand joint research capacity for signal processing, ocean sensing/monitoring and underwater autonomous vehicles.

The College of Engineering is planning to expand programs in scientific computing and data-intensive computing. McCormack was pleased to hear this. "Systems engineering—I still see this as the strongest suit. As an engineer, if you aren't looking at the whole picture, you end up with a sub-standard product.

"In his eyes, "students today should have superior computer skills, statistical and analytical skills so that performance data shapes the future design of products and solutions." That's what his work with the Navy is all about.

We continue to need college graduates today that are ready to work in teams and ready to solve complex issues.

—Don McCormack

So what does McCormack do for fun? Luckily, his twin daughters attend college in Washington, D.C., so he gets to convene for

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Message from the Dean



Dear Alumni and Friends,

The College continues to graduate outstanding engineers and scientists who enter the workplace or continue their education. Our class of 2012 included over 200 Bachelor's and graduate degree recipients including three Commonwealth Scholars. We continue to offer, along with

Physics and a new major in Bioengineering, ABET accredited programs in Civil, Computer, Electrical and Mechanical Engineering.

In August we hosted over 80 freshman from the class of 2016 who spent a week sharpening their mathematics skills, working on team projects and acclimating to life here on campus. Mentoring new students helps to improve their university experience and increase the likelihood that they will complete their program. Similarly, in this newsletter we highlight Professor John Buck's role with the Office of Faculty Development.

This year marks the second for our Bioengineering department whose enrollment has doubled and I hope you'll read more about Professor Tracie Ferreira's research with zebrafish. Our focus on biotechnology and biomedical fields coincides with the opening of the SouthCoast Life Science and Technology Park and June groundbreaking for the UMass Dartmouth Biomanufacturing Center in Fall River.

Innovation is another theme in this fall's newsletter and we highlight the work of two outstanding alumni, Don McCormack '85 (Electrical) of the Naval Undersea Warfare Center (NUWC) and George Costa '99 (Mechanical) of Rennen Design. Both are strategic thinkers and have mastered how to lead multi-disciplinary teams to develop innovative solutions.

The College research enterprise has been greatly expanded by the newly established Ph.D. program in Engineering and Applied Sciences. This unique program enjoins faculty and students across 8 departments and 3 Colleges to work collaboratively on complex interdisciplinary projects. Featured research on photonics (Dr. Yifei Li) and computational fluid dynamics (Steven Codyer who will go on to join the staff at NUWC this fall) are described.

In December of 2011, we began offering COE-news updates on a timelier basis electronically. If you haven't received these notices, please email us. We'll make sure you receive news more often.

As always, I welcome your suggestions for supporting and advancing the College

Sincerely,

Robert E. Peck, Ph.D.
Dean, College of Engineering



Costa '99 shown here with his 2011 team about five minutes after they won the East Coast Factory Team Championship for a second year in a row.

Applying skills *continued from pg 1*

dinner once a week. A man does have to eat. The UMass Dartmouth connection continues at home, with McCormack's wife, Jean (BA '85 and MA in Teaching '11). And then there's the basement, where the family fondness for science and engineering is evident. "My son and I always have a project going in the basement," says McCormack. His son's high school hobby had him take top prize in the March 2012 51st Annual Massachusetts Region III Science & Engineering Fair. His son's also dreaming up code for his own computer operating system or enlisting McCormack's support to create an exoskeleton. Looks like the basement might have to be expanded—all this in his spare time.

Extreme Innovation: BMX Rider Changing how Riders Ride

George Costa '99 has always felt most at home on his BMX bike, donning a mud-splashed helmet and tearing through dirt courses at high speeds. However, this UMass Dartmouth grad is also a brilliant engineer.

Costa '98 found a way to combine his love of BMX racing with the engineering that he learned to love at the University of Massachusetts Dartmouth when he opened Rennen Design Group in Middleboro in 2003. The rider-owned-and-operated company specializes in high-tech BMX parts and training tools engineered by Costa.

"We're known in the BMX industry as developing the most technologically-advanced parts. Every time we come out with a part, it's the most innovative thing on the market," said Costa. Three of his inventions, in particular, are changing the way BMX riders train. Those parts are the G-Cog, Rennen IT and Decimal Gearing.

"Decimal Gearing has been called 'revolutionary', by many people" Costa says. "The concept behind it is modifying how existing chain bicycle gear systems work—those principals have been in place since the 1800s since the roller gear was invented. We found we can change the size of gearing besides normal comprehension of how gearing works through modification of the gear tube geometry and pitch diameter."

New this year is "Project 187," aka "Rennen IT," an Inertia Training, or resistance training plate that "helps make you faster by slowing you down," according to the Rennen Web site. This invention is essentially a training

wheel for BMX racing. By stacking plate, riders can change the inertia of the wheel, allowing them to simulate uphill and downhill sprints on flat ground.

But Costa is most famous in the BMX world for inventing the G-cog. In the industry he's oft-referred to as "the man behind the G-cog." The cog, which attaches to a riders rear wheel, is piece of engineering gold, and the primary reason he started Rennen Design Group. In a way, G-Cog is like a Nike Fuel Band for a BMX bike. It uses advanced sensor technologies to measure dynamic motion; training with G-Cog allows riders to measure torque, speed, power, distance, acceleration, rider wobble and reaction time. Data is collected at the highest sample rate in the industry—up to 250 samples per second—which is then downloaded to a PC via a Bluetooth connection.

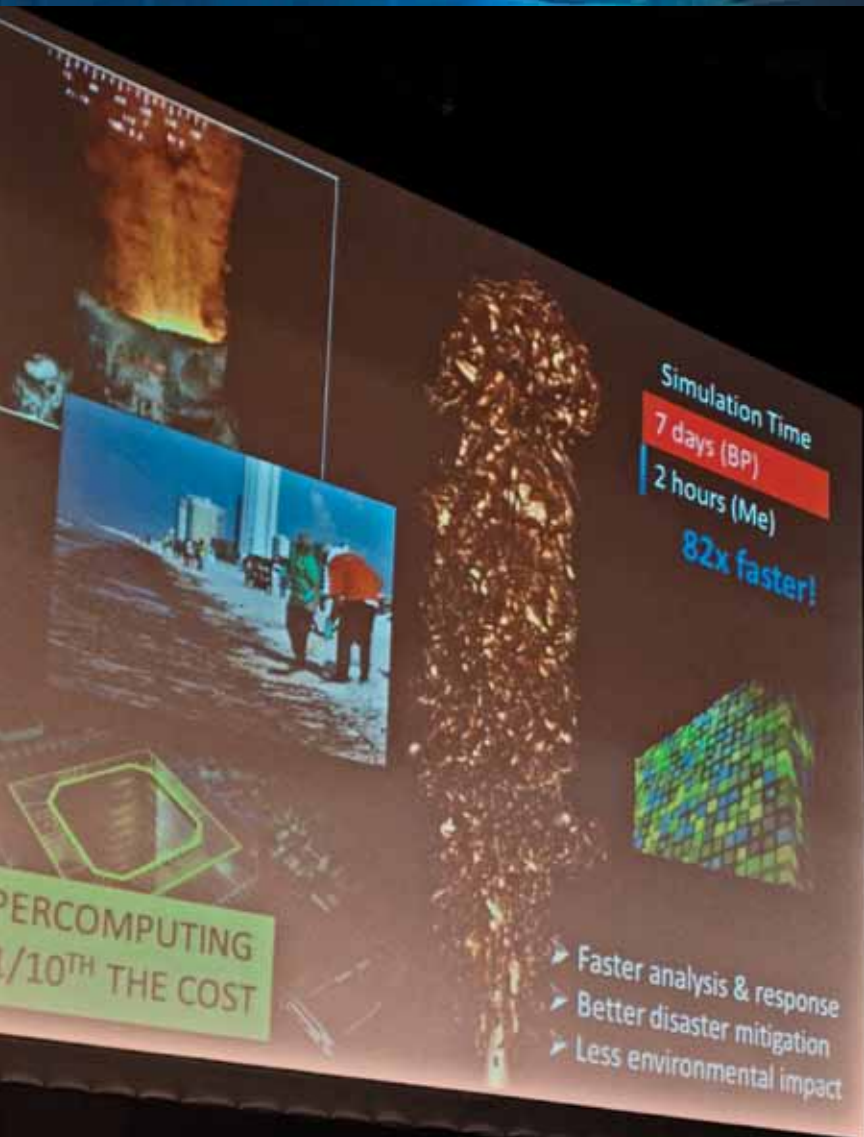
"In 2001 and 2002, there was nothing like it on the market. From my experience riding and my engineering background, I saw a need for the device like this, to give feedback and measure personal performance," said Costa, who began designing the G-Cog in 2002. It took six years to perfect, he said, finally hitting the market in 2008.

Costa was born and grew up in Fall River, Mass. He discovered BMX racing through magazines at age 14, and raced competitively throughout high school. During his senior year at Diman Regional Vocational Technical High School in Fall River in 1993-94, Costa said he "finally began to get serious" about academics to achieve his goal of getting accepted to UMass Dartmouth. He put racing on the back burner while he was a mechanical engineering student at UMass Dartmouth; and during his years here he also worked for Titleist, the golf ball and accessory manufacturer in Fairhaven. The combination of working at Titleist and studying mechanical engineering at UMass Dartmouth sparked a passion in Costa, as he realized the engineering behind sporting goods.

Costa earned his Masters' Degree from MIT and then worked as a Senior Mechanical Engineer for Draper Laboratory, a defense contractor in Cambridge. He also resumed competitive racing at age 24 while at MIT. "Those first four or five years, I was in contention for national titles. In 2003, I was third in my age group in the country. After that point, I started to focus on my job," said Costa, who still competes in races all over the U.S. some 17 weekends a year.

So what's Costa engineering right now? That's top secret. "I can't say. We never give out that information," he said. To learn more about Rennen Design and company innovation, visit www.rennendesigngroup.com.





We're trying to reduce environmental impact of these disasters; we want faster solutions to environmental disasters. We want to see what's going on. With my solution, instead of taking weeks, we can see it overnight.

—Stephen Codyer



Associate Provost for Graduate Studies and Research Development, Alex Fowler presents winner Stephen Codyer with his \$1,000 check for first place.

Three-Minute Thesis Winner—on the importance of reaction time

When the BP oil spill gushed unrelentingly into the Gulf of Mexico for three months in 2010, people around the world wondered: “How could this have been prevented?”

Engineering graduate student Stephen Codyer wondered: “How could I have prevented it?”

Codyer’s notion—and his subsequent research on the topic—earned the 23-year-old first place in UMass Dartmouth’s “Three Minute Thesis” contest in May. Codyer, who earned his Masters’ Degree in Mechanical Engineering in August, took top honors—and the \$1,000 in prize money—with his research on the BP oil spill: “What if they had my Accelerated Computer Simulations?”

Twenty graduate students from all disciplines competed in the University’s 2nd Annual Three-Minute Thesis Competition on May 25 in front of a Campus Center audience of 200 and a panel of seven judges. The thrust of the contest is to prompt Masters and Doctoral students to attempt a concise, interesting and understandable summation of their theses; it’s based on the notion that research findings might as well not exist if they cannot be shared with the world outside the walls of academia.

Last May, UMass Dartmouth hosted the first Three Minute Thesis competition after Dr. Erin Bromage brought the idea with him from his native Australia. The original Three Minute Thesis competition was developed in 2008 by The University of Queensland. The rules are simple: one PowerPoint slide per person; no music, no dancing, no props, and three minutes tops—running over means instant disqualification. A diverse panel of judges rated the contestants on their ability to deliver their message to intelligent people from any background, and to explain their work and get others interested in learning more about the contestants’ field of study. To add to the tension, the students had only 72 hours to prepare between the time they were notified they were in the game and the start of the event.

“What drove me to enter was the chance to win \$1,000,” admitted Codyer with a laugh. “But second, it was the opportunity to present my thesis to a large crowd. Presenting in front of crowds is what all

engineers have to do eventually—whether it’s to a panel of senior executives or the public. This was an excellent place to gain presentation experience. I was nervous. I had three minutes to condense two years of work.”

Born in Framingham in 1988, Codyer grew up in Grafton. After graduating high school in 2007, he attended UMass Dartmouth, earning his Bachelor’s Degree in Engineering in 2011 and his Masters, with a focus on Computational Fluid Dynamics, in August. An avid video gamer, Codyer has designed and built his own computers. Codyer will start work in September at the Naval Undersea Warfare Center, part of the Department of Defense, in Newport, RI as a Surface Ship and Aviation Systems Test, Evaluation and Analysis Engineer.

“Over time, I’ve developed a strong knowledge about the components of a computer, in particular the graphics card,” said Codyer, who won the competition with his compelling theory that researchers in the Gulf oil spill crisis could have forged a solution 82 times faster using his graphics card methodology. Codyer’s thesis would allow for rapid-fire response times to disasters, “particularly in cases such as the BP oil spill where it took three months to develop a solution,” he said.

His thesis centers on graphics card technology—a graphics card is what most computers use to control images on the monitor and to run “computationally expensive tasks in parallel for interfacial flow solvers,” Codyer explained. Those interfacial flow solvers simulate a fluid field, such as an ocean, where a distinct interface exists between two separate fluids, such as oil and water.

“Currently, solving for the pressure field can take weeks,” Codyer said. Thus he developed a Graphics Processing Unit-based solver to accelerate solving for the pressure field. The end result? Simulations that used to run for a week would now take just two hours. “The shear potential... is a priceless asset to the scientific community. We’re trying to reduce environmental impact of these disasters; we want faster solutions to environmental disasters. We want to see what’s going on. With my solution, instead of taking weeks, we can see it overnight.”





Zebrafish offer insight into cellular development

On one wall of Dr. Tracie Ferreira's lab in the Science and Engineering Building hangs a large poster detailing the development of the zebrafish. With the poster as illustrative back-up, the bioengineering professor explains why researchers such as herself favor this small fish: it's transparent, lays its eggs outside the body, and "goes through development much as humans do." As a scientist, you always try to use a model animal that has similarities with humans."

So for Dr. Ferreira, the zebrafish is that ideal animal as she studies the cell signals that drive development of craniofacial elements and tissue regeneration. During much of the school year, and daily in the summer, Ferreira is in her lab, performing various tests on the zebrafish and monitoring the results. It is research aimed at increasing knowledge about human embryo development as well as replacement and regeneration of body parts.

Ferreira, who has a bachelor's degree from Wheaton College in Norton and a doctorate in microbiology from Georgetown University, had been on the biology faculty since 2005. Last fall, she became an assistant professor of bioengineering when the College of Engineering launched that department.

Why a bioengineering program? Because the University recognizes that science and engineering have expanded into new areas—biomedicine, biotechnology, bioresearch, bioengineering. As more students plan graduate study or careers in these fields, the College of



Engineering can now offer them a multi-disciplinary education, one that incorporates research experiences.

Ferreira was drawn to the bioengineering program because it combines biology's "discovery" nature with the problem-solving characteristic of engineering. "As a biologist, you explore why something happens. The engineer is able to be creative in finding solutions to problems. I'm taking what I know and working with peers, saying 'How do we solve this?'"

Developmental biology and tissue engineering are Ferreira's major research interests, and she has worked with zebrafish for a number of years. She collects the eggs that the females lay, injects varied substances into them, and observes the different results. Thus a body of information builds. As Ferreira explains, "Key to understanding the growth and development of the human body is the use of other vertebrates to dissect the regulatory networks, then applying this information to human development."

The zebrafish's regenerative capabilities are significant. Lost teeth replace themselves; if the zebrafish's tail fin is severed, it grows back. The why and how of this is intriguing for Ferreira, whose focus is craniofacial development. "Understanding the characteristics that allow zebrafish to regenerate...will help us define events that may lead to potential therapies in humans who have lost the ability to regenerate most tissues."

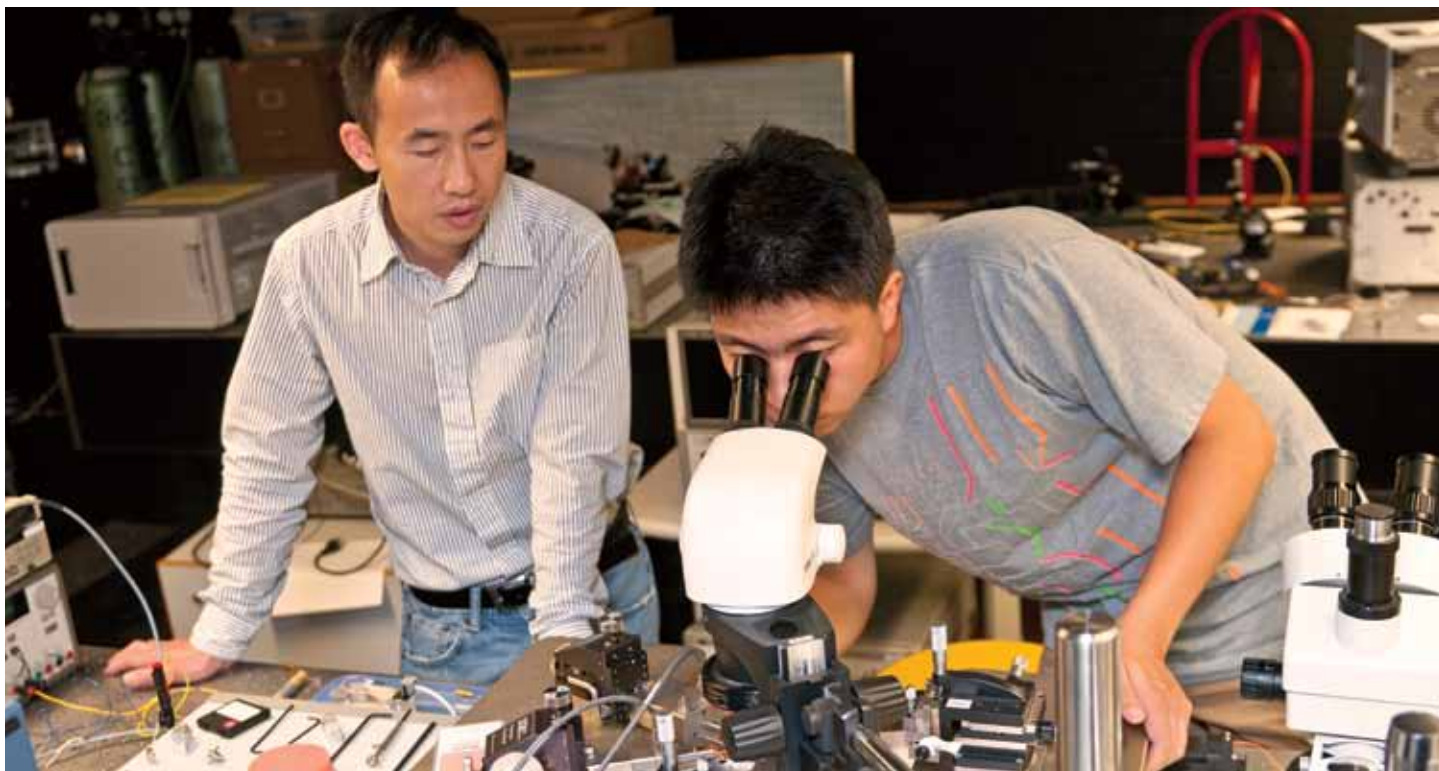
Ferreira's work is funded through National Institutes of Health grants, one of which provides research opportunities normally unavailable to undergraduates. That is a critical aspect of learning, Ferreira maintains. "Teaching students how to do research is one reason I have always done research. You do not learn something as well if you don't actually do it. It is so important to have hands-on learning."

"And when our students look for jobs or graduate programs, I can write that they worked on NIH-grant projects. I can tell someone interested in them, 'You will not need to hold their hands. They'll need maybe a month to learn about your lab, then you can walk away and they will be fine.'"

Ferreira says her Wheaton undergraduate experience had a major influence on her career. "My ultimate goal was to be a teacher and my role model was my microbiology professor," Dr. Barbara Brennessel. "She was always very poised, very grounded. I think it was her competence and her confidence that impressed me, and I wanted to be like that."

Ferreira, the sole female on the bioengineering faculty, is active with the Society of Women Engineers chapter. If her gender has any significance, it is "in the role model aspect. I do talk with female students about the choices they will face. I don't sense bias against me as a woman, but I don't look for it. I believe that, regardless of your sex, if you prove yourself, you don't have to worry about your gender."

Mentoring, she says, "does not stop when students graduate. I have students who graduated five years ago come back to talk with me about their careers. It's about helping them to their destinations."



\$1 million for 'light' research

Professor Yifei Li is focused on something that makes modern life possible, from cell phones to the internet: light. As he sees it, light is our future and will dominate how we transmit the enormous amounts of data used every second of every day in the information economy.

And now, Dr. Li's research in the field of photonics is looking so promising the Department of the Air Force is investing in his work to the tune of \$999,630 over the next five years.

"I'm grateful to the Department of the Air Force for giving me the opportunity to pursue basic scientific research work in this critical field," said Li. "This funding gives me and my team the chance to explore some novel ideas and move the field forward."

Li is trying to create a photonic integrated circuit, or IC—which could lead to changing everything we use from cellular radios to phased array radars that can track an airplane as well as highlight a word on a whiteboard.

From the creation of photonics in the 1960s until now, light has been used to beam information between two points: there is a modulator to send the signal, and there is detector to receive it.

What Li is doing is combining both points, and eliminating the need to beam information between them. In his lab, Li uses tiny squares of semiconductor photonic chips to create a new kind of versatile product.

Conventional analog electronics on silicon has severe limitations in dynamic range. The new photonic approach being investigated by Li promises to overcome this limitation.

The work is so complex and demanding it's hard to find assistants.

"I need them for at least three years," says Li. "The first year is just to train them." The field is so small and so expert that Li is carrying goodness: "If you want to specialize in radio frequency photonics," he says, "don't go to MIT. Come to UMass Dartmouth."

Li, who is collaborating with colleagues across the country at the University of California Santa Barbara, University of Texas at Dallas,

*If you want to specialize
in radio frequency photonics,
don't go to MIT.
Come to UMass Dartmouth.*

—Yifei Li

and Southern Methodist University, makes his own microchips.

He received his BE degree in Optoelectronics Engineering from Huazhong University of Science and Technology in Wuhan China in 1996 and his MS and PhD degrees in Electrical Engineering from Drexel University in 2001 and 2003. Li has four US patents in the area of RF/Photonics and is the 1st prize winner of European Microwave Association Young Scientist Prize and the 2008 DARPA MTO Young Faculty Award.



Mentoring gives faculty and students a “leg up”

Graduate students at any university, learn both how to teach and how to do research. But, says Dr. John R. Buck, they probably won't learn how to mentor students. Yet, as a professor,

they'll be expected to do just that, and, in his words, “a mentor is so critical to the success of a graduate student.”

He and others at UMass Dartmouth have developed a mentoring program for science and engineering faculty, helping them become first-class mentors for their graduate students. In turn, having had an ideal role model, those students can become skilled mentors when they are professors.

“In graduate school, no one really teaches you how to supervise your teaching and research assistants,” recalls Buck, an Electrical and Computer Engineering professor since 1996, who is directing the mentor project as it heads into its second year.

Offered through the Office of Faculty Development, the program brings together junior (untenured) faculty twice a month to consider various, common issues in dealing with graduate students. Generally, 12 to

15 faculty, often joined by more senior professors, regularly meet for the sessions Buck has designed and coordinates.

“The curriculum is actually pretty specific, with a lot of learning based on real-world examples. Discussions evolve as we talk, and become more informal as faculty talk about their own experiences and challenges,” ranging from candid student-teacher communication to improved writing skills. “Being an advisor is a lot like being a parent—you have to find the right balance between being a supervisor and giving independence,” Buck explains. Like the parent, “there are all sorts of transitions to make.”

The mentoring program grew out of discussions among Buck; College of Engineering Dean Robert Peck; Dr. Catherine Gardner, director of the Faculty Development Office; and Dr. Alex Fowler, associate provost for graduate studies and mechanical

FACULTY SPOTLIGHT

in-no-va-tion

1: the introduction of something new

2: a new idea, method, or device : novelty

Faculty devote themselves to innovation and mentoring in their teaching and research on the UMass Dartmouth campus.

Vinod Vokkarane (CIS)

Dr. Vinod Vokkarane was named ‘Scholar of the Year’ for the 2011-2012 academic year by faculty peer review. He joined the computer and information science department in 2004 and has built an internationally recognized research program while mentoring exceptional students in the field of computer networks and security. Dr. Vokkarane is the co-author of a book, *Optical Burst Switched Networks*, Springer, 2005. He is a Senior Member of IEEE and its Communication Society. His primary areas of research include design and analysis of architectures and protocols for optical and wireless networks.

Raymond Laoulache (MNE)

Dr. Raymond Laoulache was named ‘Teacher of the Year’ in the 2011-2012 academic year. Professor Laoulache was selected by faculty peers to be the recipient of this prestigious Leo M. Sullivan Teacher of the Year award. Dr. Laoulache joined the mechanical engineering department in 1988 and has been a leader in classroom excellence and engineering education through the IMPULSE program.

Amit Tandon (Physics)

Professor Amit Tandon in the physics department led the team that was awarded one of the State's first Green High Performance Computing Center grants in 2012. The project entitled “MOPE: Multi-scale Ocean modeling in support of the Pioneer Array” is a collaboration

between investigators at MIT and UMass Dartmouth. The project will create models that offer insights into the turbulent mixing that regulates nutrient cycle and ocean ecosystem dynamics off the New England coast. The project occurs in conjunction with the forthcoming deployment of a state-of-the-art underwater observation platform as part of the NSF-sponsored Ocean Observatories initiative.

Walaa Mogawer (Civil)

Dr. Walaa Mogawer has over 20 years of research and practical experience in the design of different types of asphalt and pavement choices. He joined the civil engineering department in 1989. Recently, Dr. Mogawer has directed a laboratory at the Advanced Technology and Manufacturing Center (ATMC)

and field evaluation of the first Warm Mix Asphalt (WMA) project that was placed in Massachusetts. He is working with the six New England States to develop a guideline regarding the use of thin lift overlay mixes with Polymer Modified Asphalt in New England and he regularly assists in state-wide efforts. In the past several years he has served as a consultant to the Federal Highway Administration and has authored and co-authored several papers that have been published in the *Transportation Research Record*, *ASCE Journal of Materials in Civil Engineering*, and *Journal of the Association of Asphalt Paving Technologists*. Dr. Mogawer is a member of Transportation Research Board Committee AFK50, Association of Asphalt Paving Technologists, and American Society of Civil Engineers.

engineering professor. All had routinely heard from colleagues about challenges working with their grad students and teaching assistants and the need for ongoing, structured guidance.

"A lot of people seemed to be having the same issues," says Buck about his involvement with the program. "A need was there and I wanted to fill it," especially given his own, positive experience as a grad student.

Buck received both his master's and doctoral degrees in the MIT/Woods Hole Oceanographic Institution joint program in ocean and electrical engineering, with Dr. James Preisig as his advisor. They developed a close, lasting relationship, something Buck believes should be the norm for graduate students.

In the College of Engineering, Buck is highly regarded as both a teacher and a scholar. He has been a Fulbright Scholar,

author of several textbooks, and recipient of research grants from the National Science Foundation and Office of Naval Research. He has received a number of teaching honors, among them the Leo Sullivan Teacher of the Year Award from the university's Faculty Federation. And his own mentoring of engineering students—as well as faculty—gives him both credibility and insight into typical problems.

For example, students' writing struggles are among the major issues that faculty in the mentor program wanted to discuss. Buck was able to pass on pointers he has learned, i.e., he advises students to write their research papers' results section first and postpone the introduction.

Communication has been another dominant issue for professors, who worry about "getting through," particularly with foreign-born students reluctant to ask

questions or press for information. In response, Buck recommends that faculty hold twice-weekly short meetings, rather than one lengthy session, with a student. Professors can also test students' comprehension by having them explain the "why" as well as the "how" of a project.

Professors who supervise graduate students "take their role of mentor seriously." "The untenured faculty face many demands on their time as they write grants and papers, teach, and supervise graduate students."

Yet, Buck notes, they were eager to add their workload and participate in the mentoring program: "They've been very positive about it. That these very busy people continued to show up consistently for these voluntary mentoring sessions is evidence that they found the sessions valuable. If we are going to be the university we say we want to be, we have to do this."

men-tor 1: to serve as a mentor for : tutor, coach, counsel, lead, guide, pilot, shepherd, show
2: to teach or give advice or guidance to (someone, such as a less experienced person)

Ken Langley (BioEng)

Chancellor Professor Kenneth Langley, a native of Fall River and an alumnus of SMTI, has retired after 44 years teaching textiles, manufacturing management, materials and statistics. Professor Langley is a world renowned animal fiber identification expert for cashmere, yak, mohair and camel hair. For this expertise he has been called upon by the Federal Trade Commission and the U.S. Customs Bureau. He is a Fellow of the Textile Institute, a Chartered Textile Technologist and life member of the International Textile Education Consortium. Professor Langley's service to the university is tremendous, notably as a Department Chair, College Academic Council Chair, and the President of the Faculty Senate. Most recently

he has led the transition of materials and textiles to a new undergraduate major/department in bioengineering which creates more educational and career opportunities for students. We congratulate Professor Emeritus Langley; he will always be part of the fabric of the University of Massachusetts Dartmouth.

Liudong Xing (ECE)

Dr. Liudong Xing, an Electrical and Computer Engineering faculty member, together with her collaborators Dr. Vinod Vokkarane (co-PI from CIS department) and Dr. Yan Sun (PI from the University of Rhode Island) received a \$425,000 grant from the National Science Foundation to study the reliability of wireless sensor networks. The goal of the 3-year project is to close the gap between traditional

network reliability analysis theories and realistic sensor network system environments using new reliability theories, models, methodologies, and software tools. Dr. Xing's critical research in the design and operation of reliable sensor networks will make critical improvements to the network reliability industry.

Collaboration rewarded

Inter-disciplinary teaching and research opportunities are encouraged and rewarded within the College of Engineering. Check out this recent example of a collaboration between the Engineering College and the School of Marine Science and Technology.

Dr. Mehdi Raessi (mechanical), Mazdak Tootkaboni (civil), and Geoff Cowles (of SMAST) just received a National

Science Foundation award of \$368,221 in July 2012 to develop an advanced computational tool for analysis and optimization of ocean wave energy converters (WECs). Extraction from ocean waves represents an enormous source of renewable energy and promises to contribute towards the energy independence of the United States and less reliance on fossil fuels. A typical linear model will have a limited scope in the development process of WECs. Thus, there is an urgent need to bridge the gap between WEC development and computational modeling techniques. UMass Dartmouth researchers will introduce a comprehensive framework for design and optimization under real-world conditions.

Together we are educating the next generation of engineers

Summer is just as busy on campus as the academic year. The College of Engineering CIS Department hosted another great summer of Computer Science camps for middle school and high school youth. Partial funding is provided through the Community Foundation of Southeastern Massachusetts.

Freshman Summer Institute took place August 6-10 engaging a new cohort of students committed to the field. Team projects, faculty mentoring and featured industry speakers gave in-coming scholars the strong basis they will need for a successful year ahead.



"My daughter, Sarah (above left) and a friend were hooked on day one with the challenges of making a video game and programming the robot. At the final presentations we could see that a diverse group of staff and kids came together, made friends and created such impressive computer science projects in one week."

—Tom Jarbeau
Director and General Manager
Lockheed Martin Sippican



William J. Taylor, a '67 Bradford Durfee graduate, recently contributed to the Louis and Margaret Simeone Memorial Scholarship in honor of Professor Simeone, a long-time faculty member. Taylor gave a gift to honor the man who taught him so much and to help create a future for the next generation of engineers.

Taylor recalls, "There were a number of people at the university who changed my life, both faculty and students. When I thought back on my experiences in Professor Simeone's classes, they appeared to have had a greater impact than nearly all others in terms of my ability to prepare myself to be academically successful."

Taylor built a foundation on these lessons learned as a student and continues to take those skills into the workplace as an engineer at Lockheed Martin today.

"Through the years, I have often been asked about my leadership style. I always give the same answer: On day one, I get everyone in a room, put my arms around them, and love them until the job is done. Guess where I learned that?"

Together, we can leave a legacy for the next generation. Your gift can ensure middle school youth join us in the summer and someday enroll as college freshman. If you would like to contribute to the College of Engineering, please visit www.umassd.edu/donate or contact Lara Stone, Senior Philanthropic Officer for the College of Engineering lstone@umassd.edu or 508.999.8372

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