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THE BRIDGE

Alumni Edition

*Civil and
Environmental
Engineering
UMASS - AMHERST
November 2007*

CEE News

Campus Awarded Nearly \$600K to Aid Transfer Students Studying Engineering (From *In The Loop*, September 4, 2007)

Nearly \$600,000 in funding is coming to campus from the National Science Foundation (NSF), aimed mainly at supporting financially challenged students from area academic institutions who transfer to the College of Engineering. Led by Sarina Ergas of the Department of Civil and Environmental Engineering, the project aims to boost the opportunities for talented, but financially strapped transfer students while they are earning baccalaureate degrees in the six engineering majors offered by the College of Engineering. Titled "Expanding the Engineering Pipeline by Recruiting, Mentoring, and Graduating Transfer Students," the grant was awarded through the NSF's Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM) program.

"I am really delighted that the faculty here have won this major support from the National Science Foundation," says Michael F. Malone, the Ronnie and Eugene Isenberg Distinguished Professor and dean of the College of Engineering. "This will go a long way toward improving access, diversity and retention, especially for students from our excellent community college partners in Greenfield, Holyoke and Springfield."

The college will use the five-year grant for a faculty-driven program that combines recruitment, financial support, mentoring, voluntary activities and academic or personal counseling. Beginning in the second year of the grant, the college will support 22 transfer students each year with \$6,000 S-STEM scholarships. The college will use the first year of the grant for planning and recruitment. S-STEM scholars will be eligible for continued support until degree completion, assuming they make good academic progress. The college expects to graduate 33 individuals by the end of the grant period.

Students are eligible who are pursuing one of the following engineering majors: chemical, civil, computer systems, electrical, industrial, and

Quote

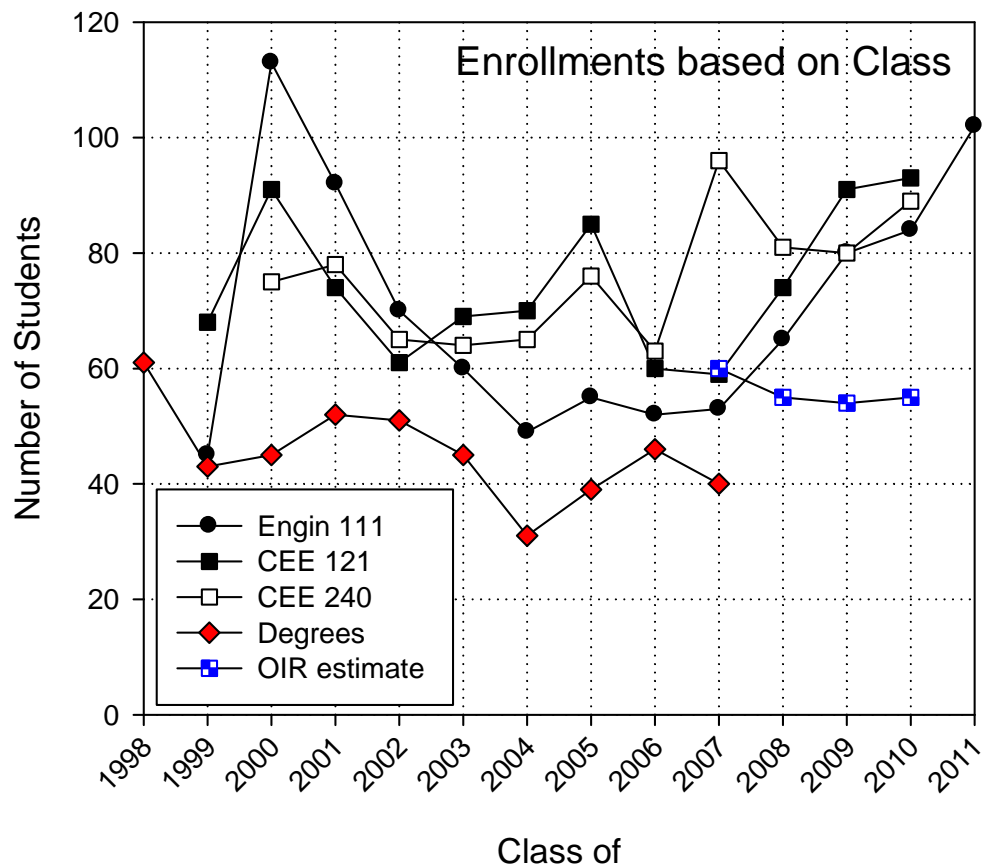
"Engineering is the professional and systematic application of science to the efficient utilization of natural resources to produce wealth."

T. J. Hoover and J. C. L. Fish, 1941

mechanical engineering. The college will recruit candidates for the program from Springfield Community College, Holyoke Community College, Greenfield Community College and other Massachusetts community colleges and four-year institutions without engineering programs. Students who are selected as S-STEM Scholars can also participate in optional initiatives that include a summer Research Experience for Undergraduates Program, a residence hall floor, and a weekly seminar for transfer students to facilitate their successful transition. In addition, S-STEM Scholars will receive the services of a college-based Career Services office and two long-standing diversity support programs: the Multicultural Engineering and the Women in Engineering programs.

MESSAGE FROM DR. DAVID RECKHOW INTERIM DEPARTMENT HEAD

Everyone likes to hear good news, so I'm especially happy to report some of the latest statistics that show the Department to be on a strong upswing. Student enrollment has climbed sharply in the past few years. This should translate to record numbers of degrees for the classes of 2009-2011. The figure below shows some estimates of class sizes based on enrollment in a few key courses: Introduction to Civil Engineering (Engin 111), Civil Engineering Measurements (CEE 121) and Statics (CEE 240). The current semester's enrollment in Engin 111 suggests that we have over 100 members in the class of 2011. While some are likely to be lost to attrition, we will certainly pick up some as transfer students. The OIR estimate comes to us from the University's Office of Institutional Research, and there are reasons to believe it is less accurate than the other measures¹.



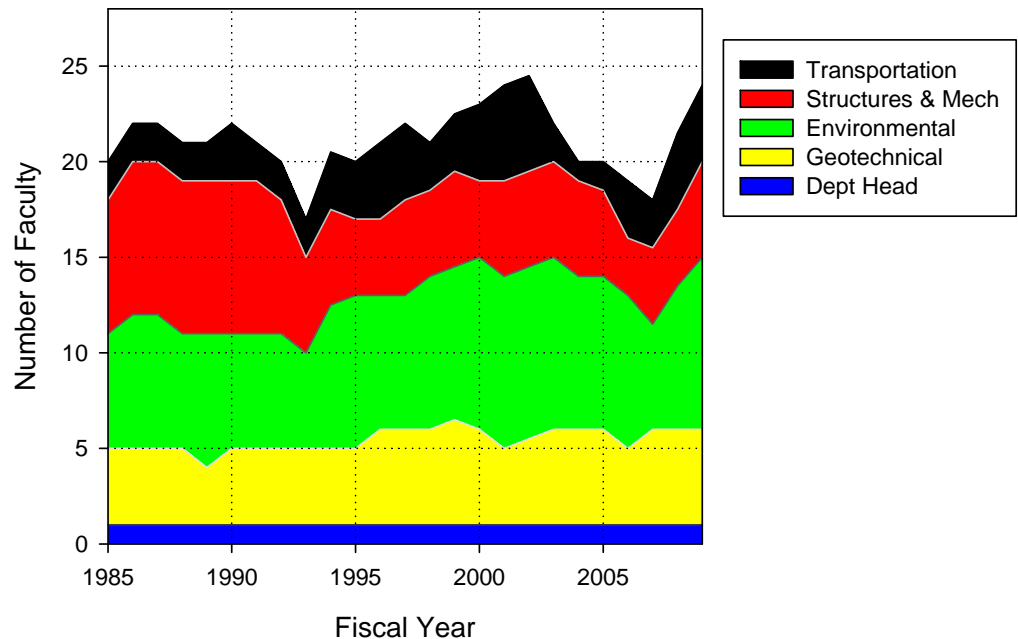
¹An algorithm from the PeopleSoft program which is based on credit hours and not actual course enrollments

Contact Us

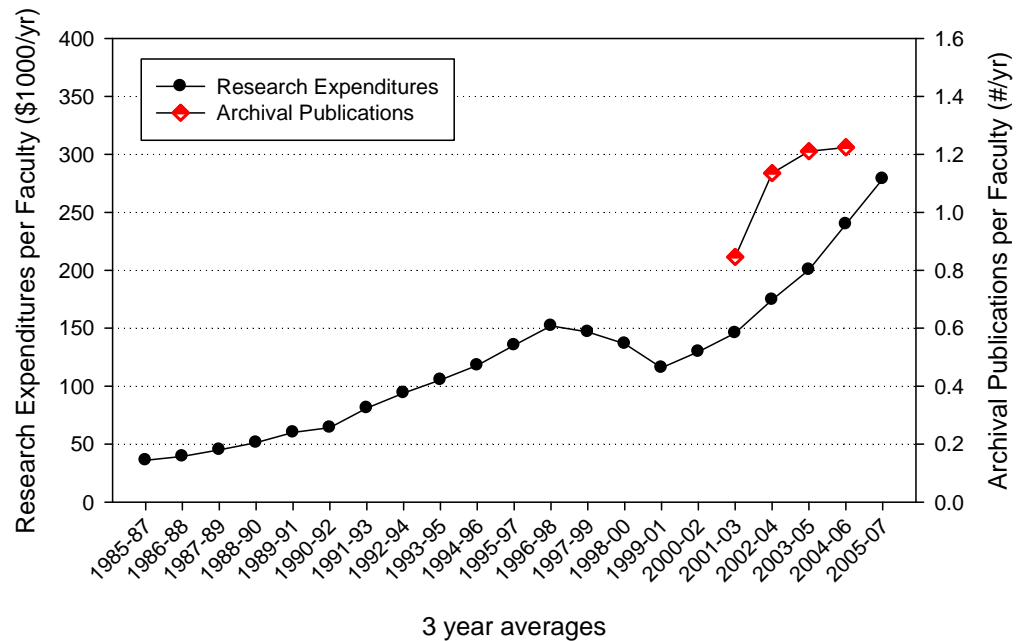
nofio@ecs.umass.edu

The Civil and Environmental Engineering Department is experiencing an especially dynamic period of faculty turnover and growth. In the past few years, we have seen the departure of several senior members of the faculty (Chajes, Stockton, Edzwald, Long). We have also been searching for new faculty, and I'm happy to report that four were hired during the spring of 2007. In addition, 3 new faculty searches were launched during the fall of 2007. If we're successful with these newest searches, they will bring the faculty numbers up to 24 for the fall 2008, equal to our all-time high from AY 2001-02. At that point we would have 7 new faculty (with 0-1 years UMass Amherst experience), representing 30% of the total.

But numbers are only a part of the picture. Without high quality faculty and staff, we would be just another moderately-sized CEE program. This is why I'm so excited about having hired from the cream of the crop for 2007. With Professors Song Gao, Chul Park and Erik Rosenfeldt, we are building for the future and bringing in scholars who can make substantial contributions almost immediately. You'll hear more about these three extraordinarily people later in this newsletter.



Despite substantial faculty turnover, the CEE Department has continued its upward climb as measured by the scholarship metrics: research expenditures, and archival publications. The figure below shows these changes on a per-faculty basis. The first thing one notices is the nearly exponential growth in research expenditures. The most current data (for 05-07) are 7.7 times the level from 20 years ago and 2.1 times the level from 10 years ago. By comparison, the consumer price index rose by a factor of just 1.8 and 1.3, over those same time spans. The Higher Education Price Index (Commonfund Institute) probably a more accurate yardstick of inflationary pressures on research universities, rose to 2.2 and 1.5 times the two earlier values. Clearly the Department is increasing its research activity no matter how you slice it! With the research activity comes archival publications, better visibility, and greater opportunities for our students. While we have only a few years of data on publication output, it seems to suggest a strong upward trend.



3 year averages

Quality from the student perspective is similarly high. The latest figures from OIR's graduating student survey (summary dated 3 December 2007; incorporating returns from 2005-2007) places CEE at the top of the College of Engineering, and among the most highly appreciated departments on the campus. The survey collected information on 8 aspects of "satisfaction with the major" and one question on overall satisfaction. Of the 50 departments at UMass Amherst, CEE ranked 5th overall based on all 8 questions. The other three Engineering departments were 17th, 27th and 36th. The highlights for CEE were:

- Faculty accessibility 5th out of 50
- Access to classes 2nd out of 50
- Career preparation and guidance 2nd out of 50
- Overall experience with major 5th out of 50
- Overall UMass experience: 1st out of 50

And this just begins to tell the story. CEE has always been alive with student-led activities. ASCE, ITE, Chi Epsilon, and AGC have long been an integral part of CEE student life. Now, EWB (engineers without borders) has joined the more established student organizations, bringing with it a fervor that is almost breath-taking. With projects in Kenya, Brazil and others closer to home, they are putting their engineering knowledge to use, while learning about the various social, economic, political and cultural imperatives that make the difference between a good design and a successful project.

So how does it happen that CEE has quietly reached the level of excellence that it now enjoys? The answer is, of course, our great faculty, staff and students. Ok; then why is our success such a well-kept secret? This one is harder to answer. I think it's partly because our faculty are not as accustomed to engaging in self-promotion as many are elsewhere. We need to become more comfortable with telling the world about our work; the innovative class projects, new research findings, vital public service, national awards to faculty and students, near-perfect placement record, regular student research presentations, and the list goes on. So let me encourage all of us to spread the word about what is happening now at UMass Amherst in CEE.

CEE PROJECTS AND RESEARCH

UMass Project Eyes Bringing Trolley Back

(From The Recorder, Thursday, September 13, 2007)

SHELBURNE FALLS – The vision of extending existing trolley car operations through Shelburne Falls is taking its next step, with an engineering study of the proposed right of way. Fourteen Senior University of Massachusetts engineering students will conduct a comprehensive final project by evaluating the right of way for the Shelburne Falls Trolley Museum from the present museum to the Iron Bridge in Shelburne Falls. The return of the trolley car operations to downtown will be a historic moment, after ceasing almost exactly 80 years ago, when the last trolley operated over these sections to Colrain.

The engineering study will commence this month by four teams. The Shelburne Falls Trolley Museum hopes to expand the current abbreviated trolley ride with the planned expansion into Shelburne Falls. The museum already operates weekends and holidays on approximately one eighth of a mile of existing railroad tracks once owned by the Boston and Maine railroad in Shelburne Falls. The engineering survey starts the first steps of re-building the original right of way of the Shelburne Falls and Colrain Street Railway, which was abandoned in 1927 and paved the way for the Bridge of Flowers attraction when the tracks were lifted.

The University of Massachusetts engineering students plan to accomplish the following:

- Analysis of the retaining wall on Depot Street to ensure it can withstand light rail trolley operations. Depot Street was once the right of way of the original trolley line.
- Survey of the yard and Depot Street, tying in to existing surveys of the adjacent land and streets.
- Engineering plans for a new route of railroad looping around the museum's visitor's center and continuing down the former Depot Street right of way to Shelburne Falls.
- Structural design for the proposed new car barn



Engineering Students Designing Homey Alternatives to FEMA Trailers (Excerpt from In The Loop, October 19, 2007)

Emergency housing structures that could serve as temporary homes for people displaced by hurricanes, tornadoes, and other natural disasters are being designed by students as part of the "Senior Civil Engineering Construction Methods" course. The goal of the project is to design structures that could serve as homey replacements for the utilitarian and nondescript FEMA trailers. Nineteen students from the Department of Civil and Environmental Engineering make up the four teams participating in the project. "The challenge for the students is to have it feel like a home," says Alan Lutenegger, the Civil and Environmental Engineering professor who conceived the project for his course. "It might



almost have the feel of a small cabin," he says. The project has received some outside interest from the building industry and could ultimately yield a marketable prototype. Lutenegger was inspired to create humanitarian habitats after watching a TV show on disaster relief that pictured refugees being housed for long periods of time in trailer parks.

The four teams are each working on a different type of construction: traditional "stick built" wood frame, timber frame, engineered lumber, and metal frame. Every design must include bedroom, bathroom, kitchen and living-room space, and each team must create its design with an emphasis on economy, sustainability and speed of assembly (students are allowed a maximum of five days, hopefully much shorter, for the construction on site). The student designs for these emergency houses may allow them to be prefabricated in two halves in a factory or other enclosed facility and then shipped to disaster sites by tractor-trailer and bolted together onto a prefab "instant foundation" composed of metal screw piles that simply screw into the ground at the site. The use of the screw-pile foundation will allow a safe foundation to be constructed in one day and will also allow the foundation to be unscrewed and taken to the next site where the houses are needed.

A committee of judges from academia and industry will review the designs and choose the best of the four designs during a competition at the end of the current semester. Meanwhile, each student team will have to create a floor plan, a materials list, a detailed summary of material costs, an estimate of labor costs, a list of equipment for the site work and an estimate of construction costs. In many respects, these structures will likely be safer than a traditional wood frame house. And the assignment is not just an academic exercise. The whole idea is to apply these designs to the real world, says Lutenegger. "I'm working with a builder right now who seems to be very excited about the project, especially the timber framing aspect of it," he says. "That company has expressed a willingness to perhaps assist us in building a prototype. If we have something that is very viable, economical, works well and is reusable, I'd like to take it to the next step and see if we can actually build one of the foundations and houses here on campus. Believe me, there will be a need for these emergency houses during the next major disaster, which won't be long."

Transportation Paper In Press: "Link Traffic Flow Optimization" (Submitted by Kimberly Rudy)

Kimberly Rudy, Undergraduate Research Assistant, Haizhong Wang, Graduate Research Assistant and Dr. Ni worked on the "Link Traffic Flow Optimization" paper which has been accepted by the 87th Transportation Search Board's (TRB) Annual Meeting to be held in Washington DC in January 2008. Below is the paper summary. Congratulations Kimberly, Haizhong and Dr. Ni!

Congestion is a problem that is ubiquitous in systems, decreasing output and efficiency. While the components of systems or networks vary, efficient production is desirable. Often, congestion is due to competition for limited resources or capacities. Whether you are considering data packets through an internet path or vehicles along a section of roadway, their basic link performance is restrained by a limited capacity. Various link traffic flow models have been used in computer networks with limited bandwidth, energy conservation in wireless devices and in noise prediction in the field

of acoustics. Once link performance is optimized, it may be possible to expand the optimization to a series of links or an entire network to reduce congestion. Given the Federal Highway Administration's (FHWA) estimate that vehicle miles of travel increased 89 percent while lane-miles of highways increased only 5 percent between 1980 and 2003 [1], congestion in transportation has become an important issue affecting most drivers, both directly and indirectly through opportunity costs and rising food prices.

This research intends to provide a link traffic flow optimization model that may be applicable to transportation as well as computer and industrial networks. Some assumptions made are the stochastic nature of traffic flow, Markovian traffic states and a non-linear decreasing service rate. Based on the expected traffic state from discrete Markov chain theory, an objective function for the optimal throughput was created with a new blocking probability distribution from stochastic traffic M/G/c/c state-dependent queuing theory [2-5]. The objective function with the blocking probability penalizes unstable flows. The optimal solution is a proposed flow at which the link throughput would be maximized based upon the present conditions. The blocking probability has been successful in random systems whose travel speed decreases non-linearly as a function of the traffic density in the system, which is the case for vehicular and pedestrian traffic flows.

Using the proposed blocking probability distribution, this paper presented a new mathematical model for the optimal throughput of a one-directional link. The mathematical model was compared with a simulation model with limited success. However, the mathematical model very closely follows the trend of the empirical data. In this sense, the mathematical model may be a more realistic prediction method. Under a Vehicle Infrastructure Integration (VII) scenario, this model may serve as the basis of link flow control in an effort to achieve the maximum link throughput in the long run.

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Geotechnical Graduate Student Research Symposium



On Friday, October 26, 2007 the UMass Amherst Geotechnical Engineering Group hosted the Northeast Geotechnical Graduate Student Research Symposium. The Symposium was Chaired by UMass Amherst Ph.D. student Hoang Nguyen and the Proceedings were co-edited by Hoang and UMass Amherst Ph.D. student Adriane Boscardin. The Symposium included participants from MIT, Tufts, Northeastern, URI, UMass Lowell, RPI, Clarkson, UVM, and UMass Amherst.

Twenty-four presentations were given by students from these universities. Geosyntec Consultants sponsored an abstract competition with cash awards. UMass Amherst graduate students won three of the prizes including: 2nd Place to Jeffrey Lloyd for his presentation on "Evaluation of an Automated Early Warning System for Unstable Soil Slopes," and co-3rd place to Cody Jones for "High Quality Deep Water Geotechnical Sampling and Shear Wave Velocity," and Best Overall Presentation to Matt Ciuffetti

for "Full-Scale Pilot Study to Reduce Lateral Stresses in Retaining Structures Using GeoFoam."

Pictured are participants at Northeast Geotechnical Graduate Student Research Symposium hosted by UMass Amherst. Pictured at lower left: UMass Amherst PhD student Hoang Nguyen, the Symposium Chair.

Geotechnical Student Research Project

UMass Amherst Geotechnical Engineering MS student Adriane Boscardin spent January to September 2007 conducting research at the Norwegian Geotechnical Institute (NGI) in Oslo, Norway. While there Adriane worked on studying the remoulded un-drained shear behavior of soft offshore sediments. Understanding the behavior of these materials are important to design and installation of offshore infrastructure and for prediction of the occurrence and fate of submarine landslides, which can damage offshore infrastructure and trigger catastrophic tsunamis. While at NGI, Adriane also went on an offshore site investigation to the Norwegian Continental Shelf and participated in the conduct of in situ tests and collection of soil samples from the seabed. Adriane completed her MS degree in May 2007 and is now a Ph.D. student in the Geotechnical Engineering Program conducting research on the National Science Foundation project on offshore geohazards.

UMass Amherst MS Student Adriane Boscardin conducting research in the Norwegian Geotechnical Institute (Oslo, Norway) laboratory using equipment (on the left) developed as part of her MS research at UMass Amherst. Pictured (from the left) with Tom Lunne (Technical Advisor, NGI), Farrokh Nadim (Director, International Centre for Geohazards) and Knut Anderson (Technical Director, NGI).



Landslide Risk Assessment and Mitigation

UMass Amherst Geotechnical Engineering Ph.D. student Hoang Nguyen was selected from an international competition to attend the "Landslide Risk Assessment and Mitigation" (LARAM) school in September 2007 at the Università di Salerno, Italy. The two week school brought together faculty, practitioners and graduate students from around the world to learn about and discuss technical issues associated with prediction, assessment and mitigation of landslides. <http://www.laram.unisa.it>



Pictured is Hoang Nguyen (in white shirt with stripes) leading a group discussion on site characterization and soil modeling.

Conferences, Presentations and Publications

At the 2007 AWWA Water Quality Technology Conference which was held November 2007 CEE members had the opportunity to present a variety of papers.

- **Dr. Tobiason** presented "Control of Periodically Elevated Raw Water Manganese with Oxide-Coated Media" and "Innovative Membrane Treatment of Waste Filter Backwash"
- **Dr. Reckhow** presented "Understanding Natural Organic Matter: The Producer of Disinfection By-products"
- **Dr. Rosenfeldt** presented "Modeling UV/H₂O₂ Advanced Oxidation Processes in Water: The New ROH, UV Concept" and "Application of a Flow Cytometry Method to Quantify Bacterial Re-growth and Assailable Organic Carbon In Distribution Systems"
- **Kenneth Mercer**, Ph.D. student presented "Coagulation of Simulated High-Pressure Membrane Concentrates for Removal of Trace Pollutants".

Dr. Reckhow, is the lead author, of the "Characterization of Total Organic Halogen Produced During Disinfection Processes". This publication is distributed by the AWWA Research Foundation and EPA.

STUDENT NEWS

Kate Mills, CEE student, is the featured player for the 2007-2008 Women's basketball schedule! Congratulations Kate!



ALUMNI NEWS

Tighe & Bond is a "BusinessWest Super 60"

Business West Magazine's annual Super 60 is a list of businesses which recognizes top-performing companies as compiled by the Affiliated Chambers of Commerce of Greater Springfield. There are two categories: Total Revenue and Revenue Growth. **Tighe & Bond, Inc.** is listed on the "Super 60 Total Revenue" list. Congratulations to Tighe & Bond!

The complete Super 60 list can be seen in Business West, October 15, 2007 issue.

Alumni Awards

The faculty and staff wish to congratulate all of our Alumni Award winners.

The **Senior Alumni Award** was presented to CEE Advisory Board member, **Richard Bedard**. Mr. Bedard is a Senior Vice President at CH2M HILL. Mr. Bedard earned his BSCE in 1973 at UMass Amherst.

The **Junior Alumni Award** was presented to **Tina Udden**. Ms Udden earned her BSCE in 1998 and MS 2000, both from UMass Amherst.

We wish both the award winners the best of luck and continued success in the profession.

FACULTY NEWS

New Faculty

Dr. Song Gao holds a B.S. in Civil Engineering from Tsinghua University (China), and M.S. and Ph.D. degrees in Transportation from MIT. Since 2005, she has been a Transportation Engineer for Caliper Corporation in Newton, MA. Professor Gao's research knowledge in stochastic modeling of transportation systems and network optimization, coupled with her practical experience with travel demand forecasting and traffic



assignment models allows her to fill a critical need within the Transportation group at UMass Amherst. Her dissertation research was on optimal adaptive routing and traffic assignment in stochastic time-dependent networks. Among her future research topics, the integration of GPS data and variable message signs into adaptive route choice models is especially exciting.

Dr. Chul Park received a B.S. in Environmental Engineering from Yeungnam University (Korea) in 2000 and a M.S. degree in Environmental Engineering from Virginia Tech in 2002. In early August he successfully defended his Ph.D. dissertation at Virginia Tech. His M.S. research was an investigation of the impact of wastewater cations on activated sludge performance and anaerobic and aerobic digestion. His



dissertation research continued in this line of research and also investigated the impact of wastewater cations on exocellular proteins in activated sludge flocs. He has developed several methods to characterize proteins in activated sludge including the use of sodium dodecylsulfate polyacrylamide gel electrophoresis (SDS-PAGE). Professor Park comes with teaching experience from Virginia Tech. He will be teaching CEE 370 this fall.

Dr. Erik Rosenfeldt earned a B.S. in Chemical Engineering (minor in Environmental Engineering) at Washington University and then worked as a consulting engineer for two years before enrolling at Duke University where he earned his M.S. in Environmental Engineering in 2003. He completed his PhD at Duke this spring with a dissertation entitled "UV and UV/H₂O₂ Advanced Oxidation – A theoretical, practical and comparative



examination of UV processes used to treat emerging contaminants in drinking water". In recognition of Mr. Rosenfeldt's academic excellence he was awarded two prestigious fellowships for doctoral research. Professor Rosenfeldt has also had considerable teaching experience, including his service as an Adjunct instructor at North Carolina State University where he taught a graduate course on the environmental behavior of organic contaminants this past spring. Professor Rosenfeldt will be teaching CEE 672 this fall.

Dr. Rees Named Interim Director of Water Resources Research Center (Excerpt from *In The Loop*, October 5, 2007)



Dr. Paula L. Sturdevant Rees, Assistant Professor of Civil and Environmental Engineering, has been appointed interim director of the Massachusetts Water Resources Research Center and will oversee the center on a part-time basis. Dr. Rees will also help lead The Environmental Institute's interdisciplinary Water Working Group in engaging in water related research and educational activities. Dr. Rees has been teaching on campus since 1999. She received a Ph.D. (1997) and M.A. (1994) in environmental engineering and water resources from Princeton University and a B.S. in civil and environmental engineering from the University of Iowa in 1992.

The Water Resources Research Center supports research, education, and outreach on water resources issues of state, regional, and national importance as part of the national system of institutes authorized under the Water Resources Research Act of 1964. The center supports faculty research and training of graduate students and is a national leader in the use of volunteers for high quality water quality monitoring of surface waters. The center is a unit of The Environmental Institute. As interim director, Rees plans to build upon the ongoing work of the center to integrate researchers and students across both the Amherst and other UMass campuses. "Water is a key unifying element across diverse research focus areas. The center is thus in a unique position to provide a focal point for jumpstarting interdisciplinary efforts," she says.

Such efforts will build upon historical strengths at the Amherst campus while expanding into new areas. In particular, Rees hopes to promote interdisciplinary graduate education through research study groups and, eventually, to coordinate an interdisciplinary water education or certificate program. In addition, she hopes to expand outreach activities of the center. Such efforts would involve work with K-12 students, regional volunteer groups, and local federal offices such as the Fish and Wildlife Service and Department of Agriculture. The center has several ongoing projects working across campuses and departments to develop effective Information Technology tools for dissemination of knowledge.

Dr. John Collura Receives Joseph M. Sussman Leadership Award (Article provided courtesy of ITS Massachusetts – May 18, 2007)

At its 12th annual meeting and conference on May 1st, 2007, ITS Massachusetts presented the Joseph M. Sussman Leadership Award to Professor John Collura, Director of the University of Massachusetts Transportation Center in Amherst, Massachusetts. The Joseph M. Sussman Leadership Award is presented annually by the Intelligent Transportation Society of Massachusetts (ITS Massachusetts) to an outstanding individual who has demonstrated uncommon professional contributions in the field of intelligent transportation in the Commonwealth. The award is named in honor of Dr. Joseph M. Sussman, who is the JR East Professor in the Department of Civil and Environmental Engineering and Engineering Systems at the Massachusetts Institute of Technology (MIT), a founding member of both ITS America and ITS Massachusetts, and a mentor for emerging transportation professionals for over 38 years.

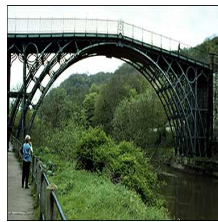
This year's recipient of the award, Professor John Collura, has been involved in transportation education and research for over 25 years and is a noted champion of Intelligent Transportation Systems (ITS). He has held numerous leadership roles in ITS Massachusetts, ITS America, and ITS Virginia, including his current service as a member of the ITS Massachusetts Board of Directors. Dr. Collura recently served as Chair of the National Research and Education Forum at ITS America and in 1993 represented ITS America as a Faculty Fellow in Europe with the Autostrade, Italy largest toll road agency. Dr. Collura's current research focuses on electronic payment systems, transit signal priority, and vehicle infrastructure integration. He has taught courses in ITS, transportation engineering, transportation systems analysis, and public transportation planning and operations. Dr. Collura is also the author of several book chapters as well as many articles and technical reports. In presenting the award, John Colangelo, Chair of the ITS Massachusetts Board of Directors, declared, "I cannot imagine a more deserving candidate than John Collura."

Dr. Sarina Ergas, Receives Research Leadership in Action Program Funds

Dr. Sarina Ergas, CEE Associate Professor, is a recipient of \$5,000 from the Research Leadership in Action Program. This is an internal grant competition showcasing faculty leadership and promoting connections between university faculty, industry and other external partners. Sarina will host the 2008 International Water Association's North American Membrane Research Conference. The conference, scheduled for Aug. 10-13, 2008 will present advances in treating drinking water and wastewater with membrane technologies as well as new membrane materials and processes.

Locate and Name This Bridge!

This bridge was the first in the world to be made entirely of cast iron. The bridge's arch spans 100 feet and has five arch ribs, each cast in two halves. All the major parts were put together in three months without a single accident or the least obstruction to the boats in the river. When it was finally complete, artists, writers, and engineers came from all over the world to marvel at the unique design.



Email your answer by January 11, 2008 for a chance to win a University of Massachusetts Amherst travel mug. There will be one current student and one alumni winner drawn!

Civil and Environmental Engineering Department

Interim Department Head

Dr. David Reckhow

Graduate Program Directors

Dr. John Tobiason

Dr. Carl Ho

Area Coordinators

Environmental: Dr. John Tobiason

Geotechnical: Dr. Don DeGroot

Transportation: Dr. John Collura

Structures: Dr. Scott Civjan

Faculty

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Dr. Sanjay Arwade, Structures

Dr. Sergio Breña, Structures

Dr. C.S. Chang, Geotechnical

Dr. Scott Civjan, Structures

Dr. John Collura, Transportation

Dr. Don DeGroot, Geotechnical

Dr. Sarina Ergas, Environmental

Dr. Song Gao, Transportation

Dr. William Highter, Geotechnical

Dr. Carlton Ho, Geotechnical

Dr. Michael Knodler, Transportation

Dr. Thomas Lardner, Structures

Dr. Alan Lutenegger, Geotechnical

Dr. Daiheng Ni, Transportation

Dr. David Ostendorf, Environmental

Dr. Chul Park, Environmental

Dr. David Reckhow, Environmental

Dr. Paula Rees, Environmental

Dr. Erik Rosenfeldt, Environmental

Dr. John Tobiason, Environmental

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