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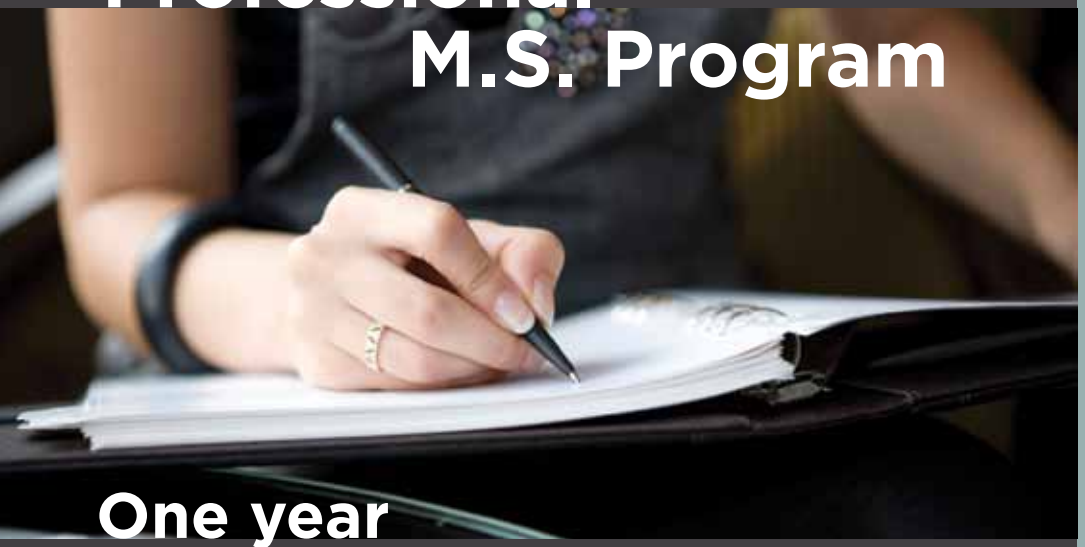

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CEE is published twice a year for alumni and friends of the Department of Civil and Environmental Engineering at the University of Illinois at Urbana-Champaign. Those alumni who donate annually to CEE at Illinois receive every issue.

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Front cover: Closeup of the plants that make up the Yeh Center green roof. For more information, see the last page of this issue.

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Engineering education for a changing world

by Amr S. Elnashai, Professor and Head
William J. and Elaine F. Hall Endowed Professor in Civil and Environmental Engineering

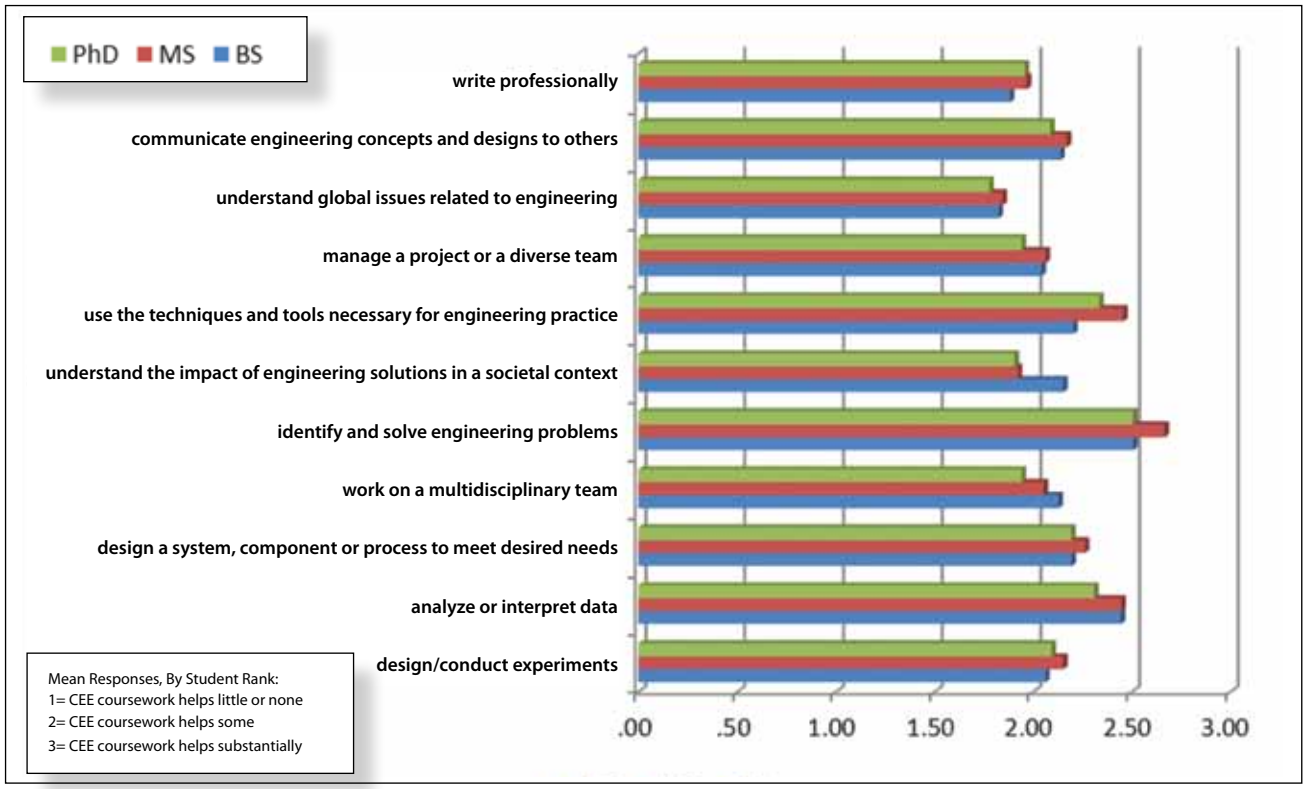
What images, impressions and connotations does the statement "I studied Civil and Environmental Engineering at the University of Illinois at Urbana-Champaign" evoke? How enduring are these images, impressions and connotations, both temporally (past, present and how long into the future) and spatially (in which community around the world)? In this article, I attempt to answer these two questions and propose a process of evolution in the training of Illinois civil and environmental engineers to transcend both time and space. I invite our alumni, friends and supporters to write to me with their own thoughts on this critically-important "branding" issue, the features of which should, and will, shape our immediate, medium and long-term actions.

The first time I heard of Illinois was from my two Imperial College M.S. advisers, Professors John (Ian) Munro and David Lloyd-Smith. I chose to work on my master's thesis with one of the most brilliant thinkers I have ever known, the late Professor Munro, who invited Lloyd-Smith (who was Munro's student) to be a joint adviser. I went to my advisers with a plan to develop an automated method for the calculation of the shakedown limit of steel frames using Munro's Static-Kinematic Duality in Engineering Plasticity by Mathematical Programming. Munro and Lloyd-Smith spoke very highly of the CEE department at Illinois as one of the leading structures and mechanics groups in the world. The unusual name "Urbana-Champaign" stuck with me; this was in March 1979. Munro's and Lloyd-Smith's impressions of Illinois coincided; graduates were very rigorously trained in fundamentals, especially applied mechanics and structural analysis. After more than 29 years, in October 2008, I heard Professor Mete Sozen (currently at Purdue) saying, during his inspiring Nathan Newmark Distinguished Lecture "Illinois Concrete," that the declared purpose of the CEE department at Illinois in its very early days was to graduate "good engineers." Sozen's interpretation of this statement was somewhat similar to Munro's and Lloyd-Smith's regarding rigorous training, but also meant that graduates are able to solve engineering problems. It is indeed true that our students are very rigorously trained and also possess problem-solving skills. They have always been, since the student population of one student in 1870 up to the current population of 1,300. The brand name of CEE at Illinois is well-established in most countries. It stands for rigorous fundamentals and problem-solving skills. So, do we need to change anything? Yes we do. I argue along conceptual, competition and technical diversity lines. Before I do, I want to examine the definition of engineering, to provide context. I also want to present a glimpse of results from a recent survey undertaken by our department of the opinions of our students.

CEE at Illinois is redefining the Illinois educational experience and is working on uniquely branding our students as not only good engineers with rigorous training and problem-solving skills, but also as thinkers, integrators, communicators, cultural and technical translators, and therefore leaders.

One reasonable definition of engineering is, "The application of scientific and mathematical principles to practical ends such as the design, manufacture, and operation of efficient and economical structures, machines, processes, and systems." A corollary of this definition is that good engineers should muster the tools of science and mathematics, and be able to design, manufacture and operate not only components but also processes and systems. The definition above should also be enriched with a global perspective, which is that whereas science and mathematics are global, the practices of design, manufacture and operation are regional. It is therefore necessary for the engineer of today, who lives in an incredibly connected world, to be able to operate internationally and across technical and societal cultures. Our students perhaps recognize the importance of their training in global engineering more than we do. In the departmental survey conducted this year, students identified global awareness as the aspect of their education they miss most, as shown in the graph, followed by understanding the societal context of engineering problems and multi-disciplinary work, especially for graduate students. Not just because our students require us to change our curricula to provide them with what they perceive as missing parts of their education, but also because of all the arguments presented above, we need to prune and regrow. We need to embrace change, and lead the way as our department has always led the way, in broadening and globalizing our curricula and our horizons, to define a new Illinois graduate who is globally aware, technically versatile, societally conscious, in addition to rigorously trained and able to solve problems. Let us now examine the stimuli for change

How much has your CEE coursework helped you to develop the following skills?
(CEE students' responses, surveyed spring 2010)



along (i) conceptual, (ii) competition and (iii) diverse-requirements lines.

Conceptual need for change

The process of renewal is enriching to all natural and human-made systems. Why should university education be any different? In his insightful book Pursuing the Endless Frontier (2005), Chuck Vest writes, "Universities must thoughtfully and continuously review and prune their programs and organizations as well as creating new ones as times and intellectual challenges change." He continues, "Engineering graduates are increasingly ill-adapted to this new environment [global trading/manufacturing, integrating design, development and process functions], because they lack sufficient flexibility, systems perspective, understanding of manufacturing processes, team-work, communications skills and experiences, as well as appreciation of the broader context." Coming from the ex-President of MIT and the current President of the National Academy of Engineering, these statements should inspire us to move decisively to address the above shortcomings of our very rigorously trained engineering graduates. Moreover, the percentage of students worldwide who are studying outside of their countries increased from 1999 to 2009 by a staggering 57 percent. This is a sea-change that has to be taken into account by the modern university. Of course the College of Engineering at Illinois is engaged in superb efforts, mainly iFoundry, to address these issues. However, department-based curricula have to complete the job started by the College in permeating a systems approach and global engineering throughout all aspects of learning and discovery.

Competition for being different

The modern university is a complex business. Its primary mission is education, and its primary product is its graduates. We compete for the top students, and we compete to place our graduates in the top companies and universities. How can our department continue to attract the best students and place them in the best companies and universities? By being unique, and by making them different. The process of comparisons, surveys and rankings blunts the differences between universities over time, and uses earth from the peaks of academic mountains to fill the valleys, hence leveling the land and making the terrain much less interesting. For example, if an academic unit observes that it is the research income that is adversely affecting its ranking, it will focus for the following decade on research funding, while perhaps losing sight of its unique strengths. Over time, we end up with an academic shop window where differentiation is extremely hard. We end up with what Youngme Moon (Harvard Business School) calls Heterogeneous Homogeneity. CEE at Illinois has the intellectual muscle to launch primaries, graduate degrees and research initiatives in energy, climate change, adaptable infrastructure, resources management, extreme environments, and other exciting and challenging applications of civil and

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environmental engineering. Only a handful, or fewer, of CEE departments can, out of a few hundred programs in the U.S. The development of such primaries, graduate degrees and research initiatives requires change, not only in curricula but primarily in our hearts and minds as professors and professionals accustomed to graduating rigorously trained engineers with problem-solving skills.

Change in response to diverse requirements

The world is changing, business is changing, and hence the context of higher education is changing. Whereas we all agree, we may not agree on the features of this change and its implications. One obvious feature of the marketplace is the diversity of client needs. I borrow an example from Youngme Moon's book Different. The time interval between Coca Cola's first and second products, Coke and Diet Coke, was 96 years. Thereafter, there was an avalanche of products: Coke Zero, Cherry Coke, Vanilla Coke, Diet Lime and Diet Splenda Coke, as well as a vitamin-fortified version. There are many similar examples where industry has changed its production development policies to keep up with, and to stimulate, consumer expectations. Likewise, universities have to adapt to the much more diverse and rapidly changing requirements of the consumers of its products. Universities want to hire professors who are adept to interdisciplinary research and education—the Electrical Engineering professor who works with the Agricultural Engineering group and has a zero appointment in Mechanical and Civil. Universities are looking for the professor who can seek funding from NSF, NIH, the World Bank and the Bill and Melinda Gates Foundation. In the words of our Vice Chancellor for Research Ravi Iyer: "employers of all sizes have developed the flexibility to move swiftly, transforming their labor force and ways of working, operating wherever they can find a ready and available talent pool." It is incumbent on us to expand and enrich our curricula, to provide our graduates with a significantly wider range of competences than before.

Resistance to change

I believe that one of the most damaging popular statements in modern times is, "If it ain't broke, don't fix it." This might be the case for a light bulb, but not for a young engineering mind. Used as a hurdle to oppose change, this statement leads to stagnation. There are other damaging concepts and strategies to oppose change. Reading the book by Kotter and Whitehead (Buy-In: Saving Your Good Idea from Getting Shot Down, Harvard Business Press) was an eye-opener in terms of presenting tactics to oppose good ideas and how to respond to them. These tactics are fear-mongering, delay and confusion. Demolition and derailing are much easier than building and maintaining traction. We should engage our colleagues who resist change and ascertain the legitimacy of their concerns. We should never shut them out. We should maintain a dialogue with them and be steadfast in responding factually and decisively to attempts at obstructing necessary change to address new and future necessities. We should hold on to our strategic goals, even if there are disagreements on how to achieve them.

Projecting the above discussions on our department, we should press ahead with liberalizing the undergraduate and graduate curricula, providing more choice, emphasizing systems thinking, internalizing cross-disciplinary, interdisciplinary, multidisciplinary and global engineering approaches, and responding to the needs of an ever-changing market. CEE at Illinois is redefining the Illinois educational experience and is working on uniquely branding our students as not only good engineers with rigorous training and problem-solving skills, but also as thinkers, integrators, communicators, cultural and technical translators, and therefore leaders. If we succeed in this monumental challenge, our graduates will continue to be recognized for years to come, and around the world, as unique, thus fulfilling our ambition of continued temporal and spatial undisputed leadership.

Our Mom Needs Help

By Lawrence P. Jaworski, P.E., (BS 72, MS 73)
President, CEE Alumni Association Board of Directors

Greetings, fellow Illini! It is indeed a privilege to share my first president's message. I follow in the big footsteps of previous presidents—and my friends—Ken Floody, John Carrato, Greg Cargill and many others. I will try to measure up.

I have been told there is an old Chinese curse: "May you live in interesting times." Well, if that's true then we are indeed cursed—or blessed. It is late October as I write this, and there has already been a lot of activity on the part of the CEEAA Board and our department. I attended a reception in Washington, D.C., in early October hosted by the U of I Alumni Association and the U of I Foundation. The new president of the University, Dr. Michael Hogan, spoke at the function. He was introduced by Chris Kennedy, Chair of the University Board of Trustees. (Boy, does he look like his Dad, Bobby!) President Hogan has a delightful, low-key style and a refreshing sense of humor. These will serve him well as he faces the challenges of running a world-class institution in an era of declining financial support for public institutions.

The CEEAA Board had our first meeting of this academic year on campus October 15. It was a classic fall day with warm temperatures and sunny skies. I had the opportunity to meet with the department head, Amr Elnashai, prior to our board meeting. We discussed a wide range of topics, including how the CEEAA Board can continue to support the department, which by the way remains the No. 1 ranked civil and environmental undergraduate engineering department in the country! We discussed the success of the master's degree program instituted just a few years ago. This program has increased enrollment from 154 in 2006 to 275 in the current year. Equally important, the tuition income from this program has increased from $39,650 in 2008 to almost $950,000 this year. This increase is critical given the continuing severe decline in State of Illinois financial assistance. Not only has the level of state assistance drastically decreased, but even the minimal funding promised by the state is being withheld given the poor status of state finances. The number of faculty in the department has increased modestly but is hard-pressed to keep pace with the growing student enrollment; undergraduate enrollment this year is greater than 800, a significant increase from the 523 students enrolled in 2006. The department is adding new academic programs as well; a new primary in sustainable infrastructure and secondary fields of study in global engineering and sustainability are currently under consideration.

Finally, our new Yeh Student Center is taking shape. The board toured the facility recently. Even while still under construction, this is an impressive facility and a very long overdue addition to the CEE campus. We can finally answer the question that has plagued CEE students for decades: "So what is that big empty space next to Newmark?" The building is on schedule, and a dedication ceremony is planned for September 23, 2011.

Several of your board members and other alumni met with students the night before our board meeting. Over pizza and soft drinks, we discussed the "real world." The board members were impressed by the depth of the students' questions about careers in CEE—far beyond, "So how do I get a job?" As a preview of coming attractions, we will hold our Chicago alumni dinner on February 9. Further details will be forthcoming, but why don't you plan to join us? We will present the Distinguished Alumnus/Alumna and Young Alumnus/Alumna Achievement awards.

So what's the message here? The title of this article says it all. Our department needs our help more than ever. An engineering degree at Illinois is now the country's most expensive engineering degree from a state university. This year, U of I increased tuition by 9.5 percent; the cost of attendance (including tuition, fees, room and board, books and miscellaneous expenses) for in-state freshman studying engineering is now more than $31,000 a year. In the past decade, Illinois has raised tuition by the largest dollar amount among American public universities—almost $8,000. Financial aid has not kept pace with tuition and fee increases, and significant new aid is needed for the university to remain competitive in attracting students. Among students who are offered admission to Illinois, cost represents the primary reason for declining the invitation to study here.

On top of that, our department has more than 13,000 alumni, yet only about 6 percent of us contribute financially. Other state schools see as many as 15-20 percent of their grads supporting their schools. We're not talking big bucks here, folks. Even a simple $50 or $100 gift, when multiplied by our alumni base, would make a real difference. So if you haven't contributed to our department, please do so.

Your Mom is asking for help.

Our department has more than 13,000 alumni, yet only about 6 percent of us contribute financially. Other state schools see as many as 15-20 percent of their grads supporting their school.

Real-World Engineering

As CEE at Illinois reviews its curriculum to increase multidisciplinary and global educational experiences for a renewed focus on sustainable engineering, faculty and students are already embracing the model. On these pages: the case for real-world engineering and some shining examples.

By Murugesu Sivapalan
Professor of Geography and Civil and Environmental Engineering

Civil and environmental engineers have long been responsible for the design and construction of structures that benefit society—bridges and highways that assist in the transportation of people and goods; buildings from housing developments to skyscrapers; water supply plans from household systems to large irrigation systems; and flood control mechanisms such as dams and levees. Engineering schools have trained students in the fundamentals of solid and fluid mechanics, and analysis tools built on mathematics, statistics and numerical analysis. Civil and environmental engineers have also been taught to consider in their designs the effects of natural phenomena, such as earthquakes; weather and climate, manifesting in variable wind speeds, precipitation, river flows and ocean waves; and the uncertain carrying capacity of the soils on which these structures are built. This has formed the traditional curriculum of civil engineering departments. Engineering research is aimed at developing a deeper understanding of both the external environment and human-made structures and engineering materials, so as to reduce the safety factors employed in design and thus generate cost savings.

With increasing awareness of the ever expanding human footprint across the globe has come the realization that future design, construction and operation of engineering structures must be based on sustainable development principles. The earliest concept of sustainable development called for economic development to be compatible with the constraints of the natural environment and satisfy the needs of the present generation without jeopardizing the needs of future generations. Engineering education in the past has neglected such design factors, which involve primarily non-technical, qualitative, and human aspects. This is no longer viable for a highly complex and inter-connected world. The education of future engineers must be expanded to include a concern for sustainability with creative and practical problem-solving skills, taking into account the resilience of both human and natural systems to absorb disturbance and still retain their basic function and capacity. This necessitates an education system that emphasizes a multidisciplinary and increasingly global perspective. This view is increasingly articulated by leading employers of engineering graduates and is embraced by today's students.

The new demands on today's civil and environmental engineers can be illustrated through the example of a consulting project by CEE Professor Gary Parker aimed at rehabilitation of a salmon spawning stream downstream from a pair of dams, Trinity and Lewiston, on the Trinity River in Northern California. These dams were constructed in the early 1960s to divert up to 90 percent of the water from the Trinity River Basin to the Sacramento River Basin and the Central Valley for water supply, irrigation and production of electricity, but the project had unintended consequences. The changes in river structure and flood regime caused a sharp decline in the once-productive fishery of Coho and Chinook salmon and rainbow trout. This was due to the dramatic reduction in both water discharge and coarse sediments which caused the river to lose its capacity to move gravel, and with loss of sediment supply it narrowed and suffered vegetation encroachment. Subsequent mandated rehabilitation required, along with high flow releases, regular additions of gravel to improve the quality of spawning and rearing habitat for aquatic and terrestrial species. Spawning riffles and pools had to be artificially reconstructed and held in place with large boulders. However, this was not a sustainable solution because the gravel emplaced for spawning was transported downstream during high flows and had to be replenished periodically. Today, the design, construction and operation of such dams have become much more complex, benefiting from such experiences of the past. Parker's solution will be a more holistic design that takes into account knowledge of riparian ecology, water requirements for salmon spawning, customs and value systems of tribal communities that may live on the affected lands, and rights to the river waters by native peoples and others. These requirements point to the broad training and outlook required for the new generation of civil engineers who will design and operate structures that significantly impact people and the environment.

Engineering education must also adopt a global perspective. Growing human populations and consumption patterns worldwide require new sources of coal, oil, gas and water, resulting in pollution, soil degradation, and land conversion—consequences with a global reach. Issues such as climate change, biodiversity loss, pollution of international waters, deforestation and land degradation, widespread poverty, emergence of persistent organic pollutants, trans-boundary movement of toxic materials, and management of global fishery resources will require global cooperation. Graduating engineers should be equipped with the appropriate skills to cope with the challenges of the next 25-50 years and respond constructively to the challenges of ecology and declining natural capital. The stakeholders, who will need to be involved, include local, regional and

national governments, international institutions, non-governmental organizations, and business and industry.

Design courses should integrate the qualitative aspects of engineering design and provide the basis for matters of human purpose, feelings and ethics to become an important part of the design process. Instead of solving well-defined discipline-specific problems, design courses should encourage student creativity by getting them to explore alternative solutions to open-ended, "real world" problems. They should emphasize a multidisciplinary, team-based approach to design, recognizing the value of collaboration rather than competition to achieve high-quality, well-designed outcomes. On the global front they should take into account trends that have an important bearing on sustainability, such as the increasingly global nature of the economy, rapid expansion of telecommunications, increasing participation of non-governmental organizations, and the widening gap between rich and poor. In particular, they should learn to reconcile short-term growth and long-term survival.

CEE at Illinois is responding positively to this need and has embarked on a new initiative to incorporate sustainability principles into the education of its students. The Committee on Multidisciplinary and Global Education, chaired by Professor Barbara Minsker, has worked hard over the past six months to develop new programs and courses to meet a set of global and multidisciplinary educational objectives. These changes are being made on four fronts: (1) changes to individual courses to present a broader context through exposure to real-world examples and problems, (2) flexibility of course offerings, including electives, so that students are exposed to courses across campus that expose them to sustainability concepts, (3) creation of new primary and secondary programs that address sustainability, integrated infrastructure systems, engineering in a global context, and other multidisciplinary options, and (4) the development of integrated design courses that expose students to a multidisciplinary, team-based approach to sustainable infrastructure design.

Even as the department works on these revisions, CEE at Illinois faculty and students are already embracing the model, as the stories on these pages demonstrate.

Chris Hepburn/istockphoto.com

"It's about passion"

A custom major frees a student to design his education

By Dan Malsom

Even before Kevin Wolz, CEE sophomore, came to Illinois in August 2009, he had been preparing himself for a non-traditional engineering education.

"You think, 'I have this career goal, or I have this passion'… and then you look at the civil engineering program and ask, 'Does this really address my career goal adequately?'" Wolz says.

Wolz worked with advisers from departments across campus with a few ideas in mind and now pursues a custom major in civil engineering and a biology degree. He met with Bruce Litchfield, dean in the college of engineering, soon after his freshman year began.

"He was the guy that basically said, 'Go explore your interests and don't be constrained,'" Wolz says.

Wolz also met with David Lange, CEE associate head for undergraduate affairs at the time. By the end of his freshman spring semester, Wolz had submitted a page-long justification of his proposed custom degree, along with an eight-semester schedule plan. It was approved in May.

"(Wolz) did something that is available to all students," Lange says.

While most students choose to follow a traditional CEE path, Lange says, the flexibility of that multidisciplinary or custom degree option has always been available, and it offers one key benefit.

"You know what it is? It's about passion," he says. "The real advantage of flexibility is that you allow students to get passionate about what they are doing."

The custom plan replaced some civil engineering core classes with classes in urban and regional planning and natural resources. According to Wolz, these classes will better prepare him for a career of "integrating natural systems into built systems" and sustainable city planning, the desired outcome of his custom major.

"The classes I added weren't very radical," Wolz says. "Custom degrees are based on a core of 'What is your purpose here?' and you have to rationalize it."

Wolz has become actively involved with iFoundry, a College of Engineering organization dedicated to evaluating engineering education and enabling students to get engaged in their own education. He spoke at iFoundry's Create Your Own World Workshop, a seminar designed to help students make the most of an engineering education and helped with the Engineer of the Future 3.0 Conference, held in November at the I Hotel in Champaign. The theme of the two-day event was "Unleashing Student Engagement in and for the Transformation of Engineering Education."

Over the past summer, Wolz says, he wanted to leave his comfort zone, so he worked through a list of things he wanted to do, like attending a week-long environmental activism camp in Alabama and growing his own garden. He recorded all of his endeavors on his blog, kwolz.wordpress.com.

This semester, Wolz has a 19-hour course load and admits to having reached the limits of his physical abilities. He is still unsure of his plans after graduation, but graduate school is a possibility.

"Making a difference in the world when I'm all done with this," Wolz says. "That's definitely my purpose, my goal."

"Our students are demanding this."

Real-world design experience in a developing country drives demand for an environmental engineering lab class

At registration time, Benito Mariñas' environmental lab course fills up with lightning speed. Ever since Mariñas redesigned CEE449 Environmental Engineering Laboratory to include a design project related to water treatment in Mexico, complete with an optional trip there, students have flocked to the course. Their enthusiasm is evidence of the strong desire of today's students to work internationally and use their engineering degrees to make a real difference in the world, says Mariñas, the Ivan Racheff Professor of Environmental Engineering.

"It used to be that undergrads just wanted to become practicing engineers, get a good job, and make money," Mariñas says. "Now all of our top students want to be involved in solving the problems of the world."

The course is designed to teach laboratory methods to senior undergraduates, but as Mariñas teaches the class, it does that and more. Mariñas collaborates with the Universidad de Las Américas Puebla (UDLAP), located in Cholula in the State of Puebla, Mexico. The course is co-taught via web with two UDLAP faculty members and includes their CEE undergraduate students. The Mexican university helps identify projects, provides laboratory space, and offers critical site-specific technical, socio-economic and cultural information. Students take on an actual project in an impoverished rural community in Mexico and work to find a sustainable solution for safe drinking water. The first project, in spring of 2008, was conducted in the small, isolated community of Los Llanos in 2008, where students helped design a sustainable water supply for the approximately 100 residents. In spring 2011, the fourth time the class will be taught, students will continue work on a project that began in 2010, the development of sustainable approaches for water resources management in several Mixteca Oaxaqueña communities near Nochixtlan in the State of Oaxaca.

Mariñas

All Illinois team members are invited to participate in one of two trips to Mexico, each one week long and provided at no cost to students, thanks to sponsorship by CEE at Illinois, the College of Engineering's International Programs in Engineering office, and the National Science Foundation-sponsored Center of Advanced Materials for the Purification of Water with Systems (WaterCAMPWS). The trips enable joint design sessions with UDLAP students and field trips to target communities, during which students gather information and water samples.

Finding a solution to a real-world problem requires a multidisciplinary approach, which Mariñas says is made possible by affiliation with the WaterCAMPWS. Consultations with experts from other fields—like Illinois professors Joanna Shisler, a microbiologist, and Michael Plewa, a toxicologist and geneticist—are critical when dealing with the complex issues surrounding water disinfection.

"We think we know everything, but we don't," Mariñas says. "One of the problems in civil and environmental engineering is that anytime you solve a problem, there is a chance that you are creating an unintended consequence."

Another real-world element of the course is the team approach. Students are organized into teams of 10, which are led by advanced Ph.D. students whom Mariñas recruits to participate in the class as team leaders with co-leaders from UDLAP. The various tasks of the design project are assigned to small groups of two or three students. For some students, learning to act as a member of a team, in which outcomes are more important than personal achievement, is a difficult adjustment, Mariñas says, but meeting that challenge is essential both to the success of the project and to the student's professional future.

"In a consulting company, you are going to be part of a team," he says. "If you act only solo, you are not going to be liked by your colleagues, and if your colleagues don't like you, you are not going to succeed."

The course has been greeted with such enthusiasm by CEE students that Mariñas is working to develop collaborative relationships with several universities in East Africa, with the goal of doing future class projects there. He is working on a plan for a new research center, Global Safe Water, which would facilitate the kind of multidisciplinary collaborations that make such projects possible. Bringing students to Africa poses greater challenges than travel to Mexico, but Mariñas sees immeasurable educational value in exposing students to an area that presents one of the world's most pressing water-related engineering challenges.

"The places that really need this, where most people are dying because of lack of access to clean water and lack of access to sanitation, are in sub-Saharan Africa," he says.

Theresa Vonder Haar and Aimee Gall are environmental engineering graduate students who have been involved with CEE449. Both say they chose Illinois for graduate school in large part because of the opportunity to do international research in water disinfection with Mariñas. They are undecided about their exact career plans, except for one detail: the desire to work in developing countries. According to Mariñas, it is a sentiment shared by many of today's environmental engineering students.

"I'm not the one initiating this; our students are demanding this," he says.

At left: CEE449 students Beth Richter (BS 09) (orange shirt) and Michelle Hollander after collecting samples from the Tancochin River, a potential drinking water source for the town of Tamiahua, Mexico. Above, Theresa Vonder Haar passes water samples from the Tancochin River to UDLAP student Bernardo Vazquez and U of I student Michelle Hollander. Below, students Tessa Colbrese (gray shirt) and Michelle Hollander work with Teaching Assistant Ben Finnegan (BS 07, MS 09), background, in the UDLAP Environmental Engineering Laboratories.

"I had to widen my scope"

The Global Leaders in Construction Management program offers multidisciplinary study, international experience, industry contacts

By Brent Young (MS 06)

After three summer internships with a Chicago-based construction company, Louie Sevandal (BS 09, MS 10) fully expected to pursue a career as a commercial building project manager upon graduation. However, when economic conditions limited construction opportunities, Sevandal had to adjust his job search strategy.

"I know they wanted me back, but they were trying to get offers to summer grads first. I was graduating in May," Sevandal says. "So when the career fairs came along, I needed to widen my scope."

As a graduate of the Global Leaders in Construction Management (GLCM) program, Sevandal was able to broaden his job search due to exposure to multidisciplinary study, international experiences, and face-to-face contact with industry leaders. The GLCM program allows students to supplement their civil engineering courses with coursework in a wide range of disciplines, including law, labor and economic relations, finance, and architecture. Mixing with students in other disciplines exposes GLCM graduates to other options for employment, and prepares them to participate effectively in the project teams that drive progress on modern construction projects.

The GLCM program is five years old, with 24 alumni employed in five different countries around the globe. Students enter the program during the fall semester of their senior year, beginning with two trips during the spring semester, including one to an international location. Each student participates in an internship during the summer before beginning graduate study and then conducts an independent study related to construction issues observed while working as an intern. The graduate year includes two more trips and an academic path determined by each student's own specific career goals.

Inspired by a trip to Panama in 2009 and a trip to Europe in 2010, Kevin Foster (BS 09, MS 10) sought out coursework that would prepare him for employment abroad.

"One of the classes I took was international human resources, dealing with international work and expatriate assignments," says Foster, who now works in Houston, Texas, with Exxon Mobil. "I've since taken similar classes here."

Foster worked as a construction management intern for three summers as an undergraduate, and like Sevandal anticipated staying in the construction field. While Foster did have opportunities to work in construction domestically, he accepted a position with Exxon Mobil in anticipation of working abroad early in his career.

"I had always wanted to work internationally, and I talked to several people at Exxon and they were absolutely in love with the job," Foster says.

Global Leaders alumni had accepted employment with Exxon Mobil in the past, so Foster's access to inside impressions of the company was no coincidence, but rather a result of the overlap between seniors and graduate students in the GLCM program.

This continuity has kept the GLCM network strong, not only benefitting each new graduating class, but also building the reputation of the program in industry. Companies, both inside and outside the construction industry, continue to specifically recruit Global Leaders.

Like Sevandal, who landed at The Kenrich Group, a business and litigation consulting firm in Chicago, the class of 2011 will have options beyond the traditional project management track. As the graduates begin their new careers, each will have the opportunity to work in a team environment and further benefits of the multi-disciplinary coursework and the myriad experiences of the GLCM program will be revealed.

"My co-workers have come to me with questions regarding the construction process—how contracts are set up," says Sevandal, capturing the essence of the goals of GLCM. "It is a lot of learning from each other."

Brent Young is the new program director of the Global Leaders in Construction Management (GLCM) program (see page 27).

Photo: Managers from Balfour Beatty gave the Global Leaders a firsthand look at construction of the Aquatics Center for the 2012 Olympics in London.

"To solve real-world problems, we need multidisciplinary information."

A step toward better water management and food security in the Nile River Basin

Above, officials from seven countries in the Nile River Basin gather in Ethiopia in October for a workshop on water management and food security. At right, Associate Professor Ximing Cai.

Ximing Cai has devoted his career to an interdisciplinary approach to water resources management, the idea that knowledge from multiple disciplines is essential in finding effective solutions to real-world problems. This summer the CEE associate professor and Ven Te Chow Faculty Scholar in Water Resources had a unique opportunity to apply that approach to a challenge in one of the world's most critically important river basins, the Nile River Basin.

Invited by the World Bank and the Nile Basin Initiative (NBI), a regional development agency sponsored by the World Bank and the United Nations, Cai planned and led two workshops in Addis Ababa, Ethiopia, in June and October, gathering stakeholders from seven countries to discuss the interconnected problems of water management and food security that plague the sub-Saharan region. The ultimate goal of NBI is to acquire computer modeling tools, software and training materials to support a comprehensive, basin-wide plan for water allocation and agricultural development in the region. They chose Cai to lead the effort to define the problem in technical terms because of his expertise and experience in modeling complex river basin problems with input from multiple disciplines.

"We cannot solve real-world water resources problems with knowledge from any single discipline alone," Cai says. "To solve real-world problems, we need multidisciplinary information from different fields—hydrology, economics, institutional science, etc."

The one-week June workshop had two sessions, one devoted to training participants to use basic water and agricultural models to support their decisions about water use and allocation. The other session focused on consulting with stakeholders about both national and regional problems in water management and food production, demand and trade, Cai says. Attendees included about 40 people from seven countries, including high-level government officials, university professors, and officials from non-governmental and regional agencies. The interdisciplinary, systems approach was new to them, but they were enthusiastic about it, devoting 10-hour days to hands-on participation in the workshop, Cai says. The three-day October workshop discussed the project's technical plan and solicited feedback from stakeholders, which is being used to refine the plan. The result will be a detailed document outlining the problem and defining the modeling tools necessary to address it.

In addition to presentations by Cai and technicians such as software engineers, the workshops presented a rare opportunity for the technical professionals to engage in a dialogue with stakeholders, a critical procedure in developing realistic models, Cai says.

"We want to know what they really need, what they're really interested in, and we also want to show them how and to what extent we can solve the problems," he says. "They need information on how to share the water and how to adopt some technology investment to maximize the benefit for the whole region."

Successful implementation of the plan will lead to better water management and food security in one of the world's most impoverished regions, Cai says. It will also serve as an example of the systems approach to international river basin management. Cai plans to develop case studies for his classes based on the project that relate to interdisciplinary studies and shared vision modeling between modelers and stakeholders, and he also hopes the connections he made will pave the way for students who want to work in Africa.

"This is a very, very unique experience in my research career," Cai says. "The Nile River Basin is one of the most important basins for poverty reduction in the world, so I really hoped I could take this chance to promote the application of [interdisciplinary] research in the real world."

Participants in the workshops included Professor Alex Winter-Nelson and Ph.D. candidate Rafael Garduno-Rivera from the Department of Agricultural and Consumer Economics at U of I, who contributed to the conceptual design of food economic models; and CEE at Illinois Professor Benito Mariñas and Environmental Engineering Professor Kofi Bota from Clark Atlanta University, both of whom attended the October workshop.

"Spectacular sights and civil engineering feats"

An international engineering minor and a semester in Spain fulfill a transportation major's kindergarten dream

By Carrie Desmond

There was something peculiar about my flight to Madrid—I was thinking in French. The only way I can explain it is nerves. I had not studied French for almost two years and was about to go live in Spanish for five months during a study-abroad semester at La Universidad Pontificia Comillas in Madrid, Spain, in spring 2010. I could not get the French out of my head. As unsettling as that was given my 13 years of studying Spanish, I was so excited that I just sat for the bulk of the flight, no entertainment required. When I landed, a dream that began in kindergarten was finally a reality.

My dreams of studying abroad began when I could count my age on just one hand. I went to a language academy for elementary school and started Spanish classes in kindergarten. When I first started, we began with simple things like colors, shapes, and songs, but there was always this promise lurking in the background; in seventh or eighth grade, we would get to go to Barcelona for two weeks with our Spanish class. Sadly, my trip was canceled. However, the way I see it now, it was merely postponed for a bigger and better trip.

My senior year of high school, before accepting my U of I admission offer, I applied for and received a scholarship from IPENG, International Programs in Engineering, which gave me $3500 to study abroad on any IPENG semester or yearlong program.

While in Spain, I took five classes—four for my International Engineering Minor in Spanish Studies, and one for my primary, Transportation Engineering. The International Engineering Minor is a program through IPENG and the College of Engineering. It functions like a language minor with a few key differences. Students are required to spend at least six weeks in the country their minor focuses on, and they have more freedom in choosing classes. This freedom comes from having required categories as opposed to specific required classes.

To complete my minor, I took three language courses at U of I and completed the rest of the requirements in Madrid. My favorite course was Spanish for Exchange Students. This was a fantastic way to meet other international students and improve my Spanish. In addition, I studied 15th-18th-century Spanish politics, the structure of the European Union, and Spanish culture through cinema and visual arts. The great thing about all of these courses is, in addition to counting towards my minor, they also fulfilled my general education requirements and my James Scholar requirements.

My experience also had a strong correlation to engineering and my future. I took an interesting course on transportation economics and operations with Alberto García, formerly a very senior employee for Renfe, the national Spanish rail network. Since my primary is in transportation with an emphasis on rail, I found it both useful and exciting to be exposed to someone so knowledgeable about Spanish and European rail.

Living with a host family was an amazing experience. Mine did not speak any English so living with them improved my already high Spanish level at a startlingly rapid rate. I also got to truly live like a Spaniard with traditional food and a typical schedule, and had someone to ask questions.

I traveled a great deal, both in and outside of Spain. I saw some spectacular sights and civil engineering feats, including a more than 2000-year-old Roman aqueduct in Segovia, Spain, the Eiffel Tower in Paris, La Sagrada Familia and Gaudi architecture in Barcelona, the Grand Canal in Venice, the Duomo in Florence, the Coliseum in Rome, the pyramids in Egypt, and the Parthenon in Athens.

It is still unreal to me to think back on all the breathtaking places I traveled to, foods I tasted, and new cultures I witnessed. I visited 27 cities in seven different countries. The crazier part is that I only spent about $3200 for transportation, lodging, food, entry fees, and entertainment related to traveling.

One of the coolest things I got to do was ride in high-speed trains in Spain and Italy, and passenger rail in Spain, Italy, France, and Egypt. Seeing high-speed rail in action was so inspiring and motivating. This is what I want to do in my career and it made me exponentially more excited to start my higher-level coursework.

Living in a second language and a different culture taught me how to adapt and be flexible—two crucial skills in the world of engineering practice. I am immensely more outgoing and willing to take risks now. Things just don't seem so daunting anymore. I also have expanded my list of places I would like to travel and am much more interested in living in new places both in and outside the U.S.

Studying abroad changed me in ways I could never imagine, taught me skills I will use for the rest of my life, and left me with memories I will never forget.

Top to bottom: a Roman Aqueduct in Segovia, Spain; Desmond posing with the university plaque; Desmond, right, and her U of I roommate Emily Van Dam at the pyramids at Giza in Egypt; the Renfe AVE (high-speed) train that Desmond rode from Córdoba to Sevilla in the south of Spain.

40 Years of Concrete Canoe

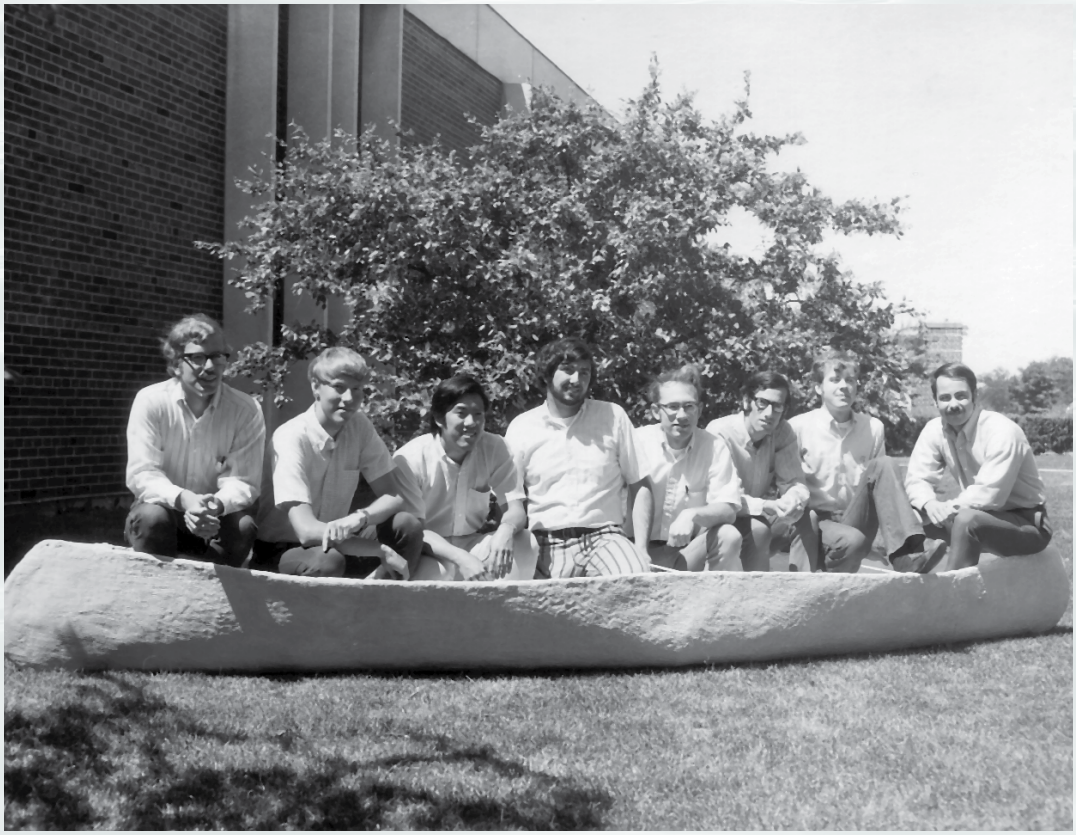
What began 40 years ago as a civil engineering class project at the University of Illinois has now grown into an organized annual tradition for engineering students worldwide. A look at this singular learning experience.

By Armen Amirkhanian

Concrete is used for sidewalks, highways, bridges, and skyscrapers. It is an excellent construction product in terms of durability and strength. So why, every year, do thousands of students across the nation and around the world decide to take such a useful material and construct a seemingly useless structure like a concrete canoe?

Surprisingly, the idea of using concrete to construct watercraft has been around for more than 100 years. During the 19th century, a watercraft was made out of concrete for a zoo display in Amsterdam. During WWII, cargo vessels were constructed out of concrete due to the shortage of steel.

Nearly 25 years after the end of WWII, a professor at the University of Illinois at Urbana-Champaign named Clyde E. Kesler (BS 43, MS 46) had an inspiration. Instead of giving his students in the concrete design class the usual term project of designing high-strength cylinders or reinforced beams, he challenged them to build a canoe out of concrete. One can only imagine his students' reactions. Surely, some thought about dropping the class, hoping for a less demanding professor the next term. But those who stayed were about to make history—and hopefully a good grade in the class.



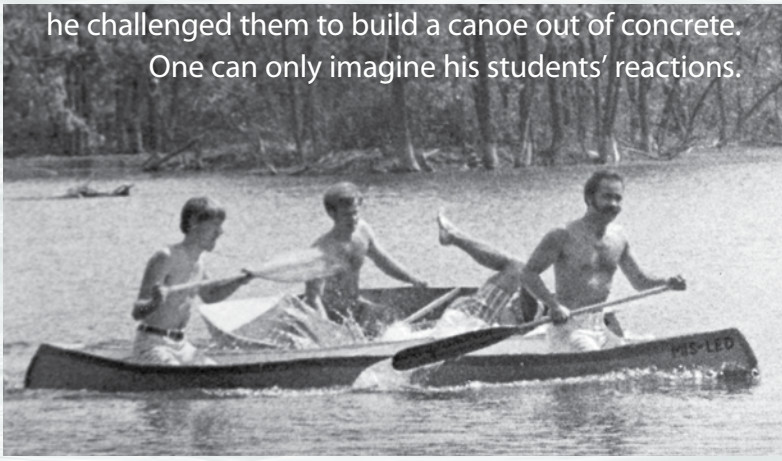
Illinois' First Canoe Team

The first concrete canoe team poses on the lawn at Newmark Civil Engineering Lab. Some names of participants have been found, but individuals cannot be identified. Participants included: Rocco Gibala, Mike Novak, Bill Rettberg, Rick Rettberg, Jim Schmudde, Bill Wuellner.

By the end of 1970, the first modern concrete canoe had been constructed. It vaguely resembled a canoe, weighed 370 pounds, and was appropriately named Mis-Led. Purdue heard about the project and, naturally, challenged Illinois to a race. On May 16, 1971, the first inter-collegiate concrete canoe race in the world took place. That morning, Kesler's eager students arrived at Kickapoo State Park in Oakwood, Ill., and began unloading their 370-pound concrete beast. Purdue arrived shortly after and began unloading their canoe, a 125-pound watercraft that actually looked like a canoe. The Fighting

Illinois leads Purdue in the first-ever inter-collegiate concrete canoe race.

Kesler had an inspiration. Instead of giving his students in the concrete design class the usual term project ... he challenged them to build a canoe out of concrete. One can only imagine his students' reactions.



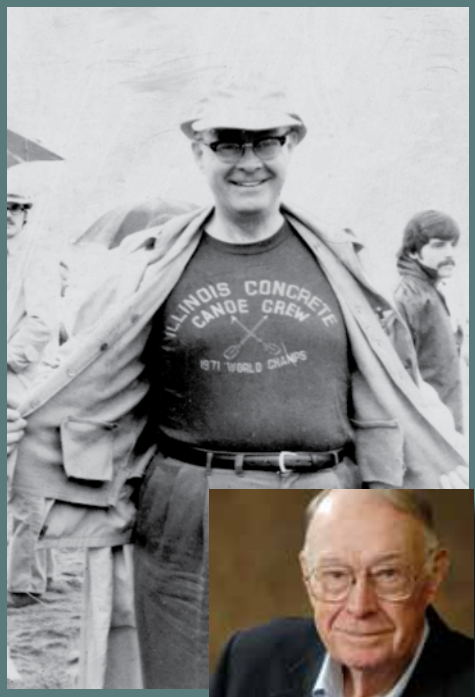
The Purdue team capsizes, sealing their fate in the last race.

Illini knew they would have a tough battle ahead of them. There were only to be five races. Reminiscent of a Hollywood movie, the two teams started the fifth and final race tied 2-2. It would all come down to this last race. The starting horn sounded, and the two teams were off, racing for the World Championship! Purdue gained an early lead; however, this would not last. It wasn't the strength, prowess, and skill of the Illini paddlers that allowed them to overtake Purdue. No, it was the fact that Purdue capsized! Much to the dismay of the Purdue team, the Fighting Illini lumbered across the finish line, claiming the title of World Champion. Both teams were awarded trophies, however Purdue's trophy was a concrete lifesaver, lest they decide to capsize again.

This would be only the start of what would grow into a worldwide competition. The idea caught on, and year after year, more and more teams competed in various races throughout the country. However, all of these competitions were organized independently of one another. The American Concrete Institute, with input from another University of Illinois professor, Francis J. Young, attempted to draw up a set of rules to organize the competitions. Nevertheless, it was not until 1987 that the American Society of Civil Engineers (ASCE) formed a committee to organize the competition nation-

Continued on page 16.

Top: For this first-ever competition, the Illinois team take first place and are named World Champions! Bottom: Purdue accepts the second place award, a concrete lifesaver.



About Clyde Kesler

Known as the Father of the Concrete Canoe, Professor Emeritus Clyde E. Kesler (BS 43, MS 46) started the phenomenon of concrete canoe racing in the 1970s with a class project. An alumnus of CEE at Illinois, Kesler served on the faculty of the departments of both Civil Engineering and Theoretical and Applied Mechanics from the late 1940s until his retirement in 1982. He served as Associate Head of Civil Engineering from 1978-81.

In his early career, Kesler specialized in the properties of plain and reinforced concrete. Later he investigated fiber reinforced concrete to increase its workability and toughness, and maintain quality while reducing cost.

In 1977, Kesler was elected to membership in the National Academy of Engineering. He is a Fellow of the American Society of Civil Engineers and in 1967 was elected president of the American Concrete Institute, the youngest individual to hold that post up to that time.

By virtue of his expertise in concrete, Kesler was widely sought out during his career as a consultant for industry and government. He has lectured and served on committees throughout the world.

He is the author or coauthor of 85 major publications, including one book. He holds a patent in Fiber-Reinforced Cement Composite.

Kesler lives in the Urbana-Champaign area and remains a supporter of the Boneyard Yacht Club.

Photos: Kesler circa 1973, wearing his World Champions t-shirt, and in 2004.

With the 40th anniversary approaching, it is hard to believe that a class project from the University of Illinois has become, and still remains, a worldwide competition.

Professors Dick Shipley (back) and Francis Young (front) paddling in the faculty race in 1975. Like Kesler, Young was heavily involved with the Concrete Canoe team in the early years.

Continued from page 15.

ally, under the direction of Professor R. John Craig from the New Jersey Institute of Technology. In 1988, the first National Concrete Canoe Competition was held in East Lansing, Mich. In 1989, ASCE established a permanent subcommittee to ensure the execution of the annual concrete canoe competition.

Every year since then, thousands of students at hundreds of universities across the nation have challenged themselves to build and race concrete canoes. The nine-month project takes extraordinary engineering ability and dedication to complete. Students who call themselves "concrete canoers" are a special breed. They are ready to devote thousands of hours to complete a project that gives them no class credit, no cash prizes, and no fame. They do it because of the challenge, the camaraderie, and the sheer excitement of watching a canoe, made of concrete, compete against the top teams in the nation.

With the 40th anniversary approaching, it is hard to believe that a class project from the University of Illinois has become, and still remains, a worldwide competition. Certainly, Clyde Kesler and his colleague Francis J. Young had no idea of what would become of the competition. On the 10th anniversary of the competition, Young wrote, "Now in 1981, it is intriguing to look back at Illinois' participation in concrete canoe racing before it becomes merged into legend or lost irretrievably in the gathering dust of forgotten files."

As a concrete canoer for more than 15 years, I am glad to say that Illinois' participation has become merged into legend and has no sign of gathering dust. I believe I echo the words of all concrete canoers when I say that I would not be the engineer I am today without concrete canoe. Thank you, Clyde Kesler, for challenging your students to push the limits of their imagination while having fun in the process. I can only hope that the next 40 years will be as exciting as the past 40 years.

1976
Back row, left to right: Kenn Shoemaker, Scott Smiley, Bruce Good, Don Grosse, Pat Wakens. Front row, left to right: Professor Ed Herricks, Mrs. Shipley, Professor Dick Shipley, Karen Kabbes, Karen Pfunstein, Rick Watson, Ray Kincaid, Terry Schidel (with unidentified child), Scott Lacoursiere.

1980
Back row, left to right: Keith Waltz, Wes Brazas, Greg Ashley, Maureen Kolkka, Tom Kaetzer, Tom Palansky, Sue Coryell. Front row, left to right: Pat Burke, Paul Bourke, Bill McCoppin, Professor Bruce Rittmann, Russ Pollard, Mike Ptak.

2010
Left to right: Dave Nauheimer, Jacob Thede, Pam Gronkowski, Katie Latham, Roman Vovchak, Ericka Rogers, Jeni Fornek, Steven Gresk, Arielle Malinowski, Ben Rasmussen.

BONEYARD YACHT CLUB
Maritime excellence since 1971

Share your stories and photos!

Are you a Concrete Canoe alumnus or alumna? Share your memories by emailing the editor at celeste@illinois or sending a letter to the address on the inside front cover. Your recollections or photos may appear in the next issue.

About the writer

CEE graduate student Armen Amirkhanian has been involved with concrete canoe ever since he could walk; his father was the faculty adviser for the team at Clemson University. Armen is an adviser for the Illinois concrete canoe team, the Boneyard Yacht Club. He received a B.S. in Materials Science Engineering with a minor in Chemistry from Clemson and is currently studying at Illinois under Associate Professor Jeffery Roesler.

For more information

For more information, including archived pictures and documents, go to www.concretecanoepictures.com and visit the History section. For more information about the current progress of the Illinois team, the Boneyard Yacht Club, please e-mail Armen Amirkhanian (amirkha1@illinois.edu) or visit http://netfiles.uiuc.edu/ro/www/BoneyardYachtClub.

Doing it all

Junior Michelle Mehnert, Academic All-Big Ten engineering student, Fighting Illini swimmer and international triathlete, explains her motivation

By Michelle Mehnert

I am a CEE junior majoring in environmental engineering with a secondary in hydrology. I am also in my junior year of eligibility on the varsity swimming and diving team, and a member of the Fighting Illini Triathlon Club. Three years ago, I chose to try to do it all, and I love every minute of it.

During the fall of my senior year in high school, I sat down at the kitchen table with my parents to discuss my college options. What school should I attend? What should my major be? Should I pursue Division I athletics? Do I choose to swim or run cross country? Do I continue triathlons? Can I handle a tough curriculum if I stay with athletics? Big questions.

My answer was to study engineering at the University of Illinois and swim for the Illini. Why engineering? Math and science came easily, so the natural choice was engineering. I was familiar with civil engineering through my parents (who are both CEE alumni), and was enticed by the challenge of graduating from the top CEE program in the country. I chose to swim for the Illini because it would help me achieve a long-term goal.

Competition in athletics feeds an innate desire for physical challenge, while the rigors of my CEE course load push me to reach my potential mentally. I try to view my training as a relaxing time away from schoolwork, and vice versa. During my freshman year, it was very difficult to keep this perspective. I was the only engineer (out of 32 girls) on the swimming and diving team, and it seemed like I was being pulled in all directions. While I do have access to tutors as an athlete, it was (and still is) hard to find study-buddies who can accommodate a 10 p.m. bedtime (we begin practice at 5:45 a.m.) Completing 16 hours of coursework and 20 hours of training was mentally and physically draining. My Intro to Engineering classes conflicted with swim practice, so I had to work out alone for the first six weeks. I stuck out like a sore thumb, but I know that it is a short leap from sticking out to standing out.

I chose to persevere, which brings me to the reason why I would even choose my path. Like many kids, I dream of going to the Olympics and being one of the best triathletes in the world. I know that sounds a lot different coming from a 20-year-old than a dazzled 10-year-old. But for me, this has been the driving force behind my athletic career. I plan to compete long-term, and I plan to support myself while I try. From that longer term perspective, any setback starts to look like a stepping stone which will lead to personal growth. What is an Olympian or any role model really? They should represent a country's best, in body, mind, and spirit. This means doing things that push the limits of our physical and mental capabilities.

Day to day, I can be found darting from the engineering quad to the ARC (formerly IMPE) to get to my classes and practices. I live out of my backpack and can rarely be found in front of a TV. At times, when my schedule begins to wear on me, I recall a quote that my first swimming coach once told me: "To give less than your best is to sacrifice the gift." (Steve Prefontaine) I have accepted my challenges and hope that my small journey inspires other people to push themselves just a little bit further—be it by trying a sport for the first time, or by pushing themselves to take a harder class. Since I have joined the swimming and diving team, we have recruited four other athletes who are freshmen and sophomores in the College of Engineering. I have also gotten some of my engineering friends to try some triathlons.

So if you know any high school or junior high students (or have one of your own) who are struggling to balance all their interests, encourage them to accept challenges. With discipline, time management, and a little bit of innovative thinking, challenges can be met and overcome.

Mehnert is the daughter of CEE alumni Edward Mehnert (PhD 98) and Brenda Mehnert (MS 87).

At times, when my schedule begins to wear on me, I recall a quote that my first swimming coach once told me: "To give less than your best is to sacrifice the gift." (Steve Prefontaine)

Photos, clockwise from previous page: 1. Mehnert poses with the flag in September in Budapest, Hungary, where she competed in the International Triathlon Union Age Group World Championships, placing tenth in the women's ages 20-24 division with a time of 2:06:44. 2. Mehnert poses by the Chain (Széchenyi) Bridge in Budapest. 3. Mehnert and her father, CEE alumnus Edward Mehnert (PhD 98) after she won a triathlon in Ludington, Mich., this summer. 4. With the Fighting Illini Triathlon Club this summer after winning the collegiate division at the Evergreen Triathlon in Bloomington, Ill.



Student Organizations

Some of the many student organizations in the department tell what they're up to and how alumni can get involved. A more extensive list of CEE student organizations and links to their websites appear here: cee.illinois.edu/student_organizations

American Concrete Institute

The student chapter of the American Concrete Institute (ACI) works to encourage student interest and involvement in concrete materials, structures and construction. We host monthly meetings and seminars with speakers from the concrete industry or research fields. Recent speakers included Claus Germann Petersen, President of Germann Instruments, Thomas Van Dam (BS 84, MS 86, PhD 95), Ken Marley (BS 05, MS 07) and Chris Hart (MS 07) of the U of I. Each semester we send students to the ACI International conventions to participate in the student competitions, become involved in committees, and attend technical presentations. Every March we take part in Engineering Open House by helping visitors create a personalized mortar coaster and hosting a high-strength concrete cylinder competition. This past March, ACI won the award for the most interactive display. At least once a semester, students represent our chapter at ACI-Illinois Chapter meetings or conference events. We encourage any alumni involved in either ACI or the concrete construction industry to speak at our meetings or to suggest a field trip idea. Visit http://go.illinois.edu/aci for contact information. —Armen Amirkhanian, President

American Society of Civil Engineers

The student chapter of the American Society of Civil Engineers (ASCE) helps students to immerse themselves in the industry and to create ties with working professionals. Company representatives are invited to present at monthly general meetings about their experiences in the work force. ASCE also works alongside companies to provide field trip opportunities that allow students to visit project sites. Social and outreach events are also a focus of ASCE. Events include Crane Bay Cinema, intramural sports, Relay-for-Life, peer advising, and professor lunches. In addition, students from the chapter attend the ASCE Annual National Conference to network and meet accomplished civil engineers as well as other ASCE student chapter representatives. The student chapter works with the Steel Bridge and Concrete Canoe teams, both of which attend regional and national conferences for competitions. The chapter is always searching for alumni to present at future meetings. We also seek practicing advisers for our chapter, company sponsorships (for ASCE as well as Steel Bridge and Concrete Canoe) and companies interested in hosting field trips. For more information, please email uiasce@gmail.com. Concrete Canoe team website: http://netfiles.uiuc.edu/ro/www/BoneyardYachtClub

AREMA

Illinois' student chapter of the American Railway Engineering and Maintenance-of-Way Association (AREMA) was founded in the fall of 2008 and has since grown to 70 members who are also student members in the parent organization, AREMA. The 2010 AREMA Annual Conference was held in Orlando at the end of August, and 19 chapter members attended, with their travel supported through the AREMA Student Chapter by the Student Organization Resource Fund, Engineering Council, and the George Krambles Foundation. At the conference, students attended technical sessions and exhibits, and participated in a meet-and-greet with potential employers. With additional assistance from the CEE department, the chapter also took a few field trips over the past year. Last Spring, the AREMA Student Chapter traveled to Galesburg, Ill., to tour the GE Locomotive Maintenance Facility. Students also visited Chicago to tour several railroad yard construction projects. Chapter members also created an intermodal shipping game for Engineering Open House and volunteered for a day at the Monticello Railroad Museum. The chapter is seeking guest speakers, hosts for field trips, and donations to help fund travel to the 2011 AREMA Conference in Minneapolis, Minn. For more information, contact Tristan Ricket, aremauiuc@gmail.com.

Deep Foundations Institute

The Geotechnical Engineering area is excited to welcome the Deep Foundations Institute (DFI) student chapter, led by the current president and founder, PhD student Andrew Anderson. The DFI student chapter will serve as a primary means through which student members at Illinois may participate in the advancement of planning, design and construction aspects of deep foundations and deep excavations. Please contact Andrew at acandrsn@illinois.edu to learn more about upcoming events and get involved. In its augural year, the U of I DFI student chapter is supported by Langan Engineering and Environmental Services.

Chi Epsilon

The Alpha Chapter of Chi Epsilon is planning major reforms as we enter the fall 2010 semester. The newly-elected officers, with help from active alumni and members, are working hard to improve the society. Our former President of Chi Epsilon, Ryan Miller, attended the National Conclave at the University of Alabama-Tuscaloosa this past March where topics such as chapter reform and the Chi Epsilon National website were covered. Our current president, Mary Lou Kutska, recently attended an EC President's retreat that discussed current society issues such as continued membership, corporate sponsorship, and attracting members. They interacted with other XE members and other engineering society leaders and brought back new ideas to improve Chi Epsilon.

Chi Epsilon hosts three general meetings per semester, at which members and initiates enjoy Papa Del's pizza while listening to company representatives talk about their projects. At our first general meeting, we enjoyed a presentation from ExxonMobil about deep-water oil drilling. Our Vice President, Quinton Champer, and his task committee are currently reaching out to companies in search of speakers for general meetings and looking into corporate sponsorship opportunities. Grace Pedersen, our Social and Service Chair, has taken an innovative perspective on planning events. This semester Chi Epsilon will be visiting the Illinois American Water Treatment Facility and taking a tour of the construction occurring at Lincoln Hall. Our Editor and EC Representative, Stephen Moy, and our Grad Adviser, Ryan Miller, are in the planning stages of reaching out to Chi Epsilon Alumni to invite them to be guest speakers. Our Director of Information, David Petlicki, is in the process of revamping our website to make it more user friendly and spruce up the dated layout.

Our chapter is always on the lookout for corporate sponsorships, company speakers, mentoring, and employment resources. We are always planning networking events for Chi Epsilon members and initiates to interact with other CEE students, alumni, professors, and engineers in the industry. For more information, contact our president, Mary Lou Kutska, mkutska2@illinois.edu.

Construction Management Association of America

The Construction Management Association of America (CMAA) is a professional organization with the mission of promoting and enhancing the leadership, professionalism and excellence in managing the development and construction of projects and programs. A group of students led by chapter president David Sievers created a new chaper of CMAA here on the Illinois campus. We are the only organization on campus that has a specific focus on CM and Project Management and offer quality exposure and interface to the construction industry. We offer lectures and workshops on the latest news, projects, and technologies being introduced to the industry such as BIM 3D modeling. We hold networking events both with colleagues and practitioners, and plan field trips to local



projects. National Chapter members also have the opportunity to become certified Construction Managers in Training (CMIT) by passing an extensive exam that covers the fundamentals of being a Construction Manager. If any students or alumni are interested in becoming a part of CMAA through membership, sponsorship, seminars, networking, etc., please contact David Sievers at sievers3@illinois.edu.

Geotechnical Engineering Student Organization

The Geotechnical Engineering Student Organization (GESO) will once again offer many events for U of I geotechnical engineering students, faculty, staff, and alumni during the 2010-2011 school year. GESO, a student chapter of the Geo Institute (GI) of the American Society of Civil Engineers (ASCE), will provide students opportunities to attend the Geo-Frontiers 2011 conference. Held in Dallas, Texas, it features conferences, short courses, a career fair and numerous networking opportunities for our attendees. Additionally, GESO will fund a team to participate in the design-build competition of a model paper reinforced retaining wall at this conference. During this year we will also hold lectures by prominent researchers and practitioners on important geotechnical engineering current research and practical information. We also plan to present an exhibit in the 2011 Engineering Open House. Other events include general meetings and various social activities like picnics and field trips. Additionally, graduate discussion forums are being held where graduate students undertaking geotechnical research may present their research to colleagues. As part of our goal to act as a link between the industry and students, we would like to collaborate with different geotechnical engineering consulting and construction companies in arranging lectures and field trips. —Luis F. Pazmino, President

International Association of Hydraulics Research

The International Association of Hydraulics Research (IAHR) is one of the largest organizations for engineers and scientists interested in hydraulics, river mechanics, and related fields. Here in CEE at Illinois, and through the Ven Te Chow Hydrosystems Lab, we house the local student chapter of IAHR. We support not just the academic and professional development of future engineers and scientists but also interpersonal skills, which in today's world is a necessity. The chapter provides a platform for students to network and share experiences by taking part in academic activities, like Engineering Open House and technical seminars, and social activities like student-faculty mixers. We also represent the U of I at the biennial congress of IAHR to learn from IAHR members from other chapters and create a useful network.

We organize two cookouts every year, one in the fall semester and another in the spring semester. The purpose of each cookout is to bring together faculty, staff, and students for interaction in an informal setting. For the first time this year, during our spring cookout we organized a soccer tournament, which increased the interaction among the different research groups in the lab. The October faculty-student Halloween mixer is a highlight of the fall semester, particularly the pumpkin carving. This event promotes community and fosters a family-friendly atmosphere in the lab.

The chapter also organizes academic activities like seminars, where we bring in relevant speakers to talk about hydraulics and environmental related issues. Currently we are in the process of organizing a seminar for spring 2010. The seminar will be given by Professor Diego Rosso from the University of California, Irvine, on "Carbon Footprint Analysis." In addition, we have successful partnerships with other campus student organizations and alumni to host and organize some events of mutual interest. For more information, contact President Tatiana Garcia, garciab1@illinois.edu; treasurer Viviana Morales, morale25@illinois.edu; or email the general address: iahr.uiuc@gmail.com.

Institute of Transportation Engineers

The student chapter of the Institute of Transportation Engineers (ITE) is affiliated with the professional organization ITE, an international network of more than 17,000 professionals spanning more than 100 countries who are committed to the solution of contemporary transportation problems and challenges. The ITE student chapter started this school year with a lunch seminar on the new bike infrastructure in Champaign, the 12th Annual Golf Outing, Student-Practitioners Forum, and ITE Past Presidents Forum in Chicago. The ITE student chapter will continue with further activities such as paintball, movie night, lunch seminars, Engineering Open House, and the Annual Midwestern Traffic Bowl Competition in St. Louis. The purpose of the activities is to engage the students with the network of professionals, gather transportation students and experts, and let them share their experiences while enjoying themselves. For more information, contact Hani Ramezani, hrameza2@illinois.edu, or visit the website, http://ict.illinois.edu/tol/ITE/default.htm.

Structural Engineers Association

The student chapter of the Structural Engineers Association is excited to announce an increase in its activities and student body from the previous semester. We plan to continue growing into the new year with the implementation of student committees and additional professional and social events. Our aim is to provide valuable networking opportunities between students, faculty, and professionals. It is also our hope that members will utilize and take full advantage of the many opportunities that present themselves when becoming a student member with the Illinois chapter, SEAoI. This semester was filled with corporate speaker presentations on topics including sustainable design, structural inspection practices, and the design of the award-winning Aqua building in Chicago. A few new features involved small-group discussions with professionals as well as a tour of the new Geoffrey Yeh Student Center attached to Newmark Laboratory. We plan to further arrange similar types of professional events and expand to include many more, such as job shadow experiences for students interested in finding out exactly what structural engineers do. If your company would like to participate in job shadows, general meetings, or just hang out at our socials, we would love to get you involved. Please contact Michael Zelisko, mzelis2@illinois.edu, if you are interested or have any questions, thoughts, or concerns. Let's work together to build another successful year with the Structural Engineers Association!

Photos, left to right:

Students from the Illinois student chapter of the Construction Management Association of America pose with national chapter President Bruce D'Agostino, center. The students are David Sievers, left, and Dareen Salama.

Chi Epsilon initiates from spring 2010.

Students from the Deep Foundations Institute in front of the Pont du Gard, the tallest Roman aqueduct bridge in world. For information about DFI, the newest CEE student organization, please contact Andrew Anderson, acandrsn@illinois.edu.

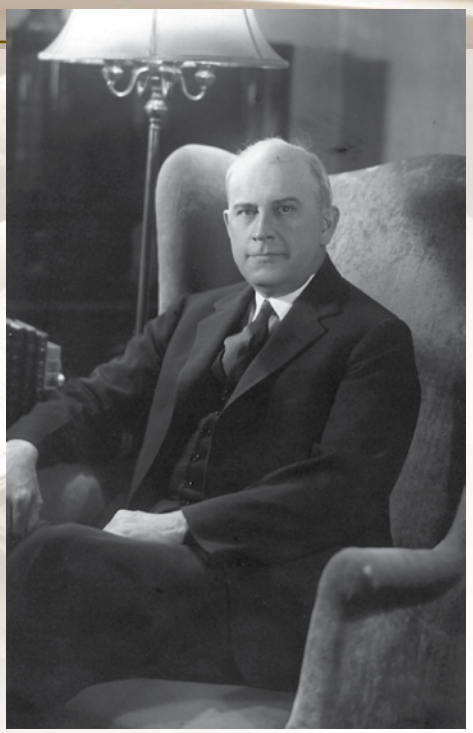
Students from the International Water Resources Association gather outside of the Hydro Lab.

Students from the student chapters of the Structural Engineers Association and the Construction Management Association of America toured the Yeh Student Center construction site.

Students involved with the International Association of Hydraulics Research have a Halloween party and pumpkin-carving contest each year.

Old Masters

Engineering giants of the department's history



Hardy Cross

1885-1959

Educator, analyst, engineer, philosopher

By Professor Emeritus William J. Hall

Hardy Cross was Professor of Structural Engineering in the Department of Civil Engineering at Illinois from 1921-1937. During that time, his technical achievements significantly changed the field of structural analysis and the understanding of structural behavior.

Cross was born February 10, 1885, on the family plantation in Nansemond County, near the Great Dismal Swamp, Virginia. He attended Hampden-Sydney College where he received B.A. and B.S. degrees in 1902 and 1903 respectively, at ages 17 and 18. After teaching for a while at the Norfolk Academy, he entered Massachusetts Institute of Technology and received a B.S. degree in Civil Engineering in two years. Following a short period of additional teaching at the Norfolk Academy and work with the Missouri and Pacific railroads, Cross earned an M.S. degree at Harvard University in 1911. Next was a seven-year stint at Brown University, followed by some professional posts in New York and Boston. In 1921 Cross joined the faculty at the University of Illinois at Urbana-Champaign. He left in 1937 to lead the Department of Civil Engineering at Yale University until his retirement in 1953, when he moved to Virginia Beach, Va.

Most of Cross' technical achievements occurred during his time at Illinois. Many of his efforts were directed toward the development of techniques for refining and simplifying the monumental mathematical work required at that time to analyze elements of statically indeterminate buildings and bridges. Examples include his paper on Column Analogy in 1930, which led to a useful structural analysis tool. Although an earlier version was published by the American Concrete Institute (ACI) in 1929, his more refined 1932 paper in the Transactions of the American Society of Civil Engineering (ASCE), "Analysis of Continuous Frames by Distributing Fixed-End Moments," served to reshape formal structural analysis for the next 30 years until computers started to enter the scene; his paper of eight pages on moment distribution led to 144 pages of discussion (nearly a record). His 1936 paper titled "The Relation of Analysis to Structural Design" continues even today, some 70 years later, to set a standard of practice that has not been superseded since. This paper also focused on the importance of understanding structural behavior as part of analysis and design, and continues to be referenced often. His other 1936 publication (University of Illinois at Urbana-Champaign Engineering College Experiment Station Bulletin No. 286) was titled "Analysis of Flow in Networks of Conduits or Conductors" and serves to illustrate his insight into the importance of network theory; its immediate application was in the hydraulics field. During his 16 years at the Illinois, Cross authored 43 journal articles and Engineering Experiment Station Bulletins, all of great significance to the civil engineering profession. Many led to major changes in professional practice analysis procedures almost immediately, a feat that occurs rarely.

Cross was a consultant on many large engineering projects, and of particular note he was a member of the committee of engineers that prepared the report on the failure of the Tacoma Narrows Bridge. He served on many technical committees of ASCE, ACI and the American Railway Engineering Association.

He received numerous awards, including an Honorary Master of Arts from Yale University, Honorary Doctorate in Engineering from Lehigh University, an Honorary Doctor of Science from Hampden-Sydney, the Norman Medal and Honorary Membership in ASCE, the Wason Medal and Honorary Membership (posthumously) from the American Concrete Institute, the Lamme Medal from the Society for the Promotion of Engineering Education (now ASEE), and the Gold Medal of the Benjamin Franklin Institute of Philadelphia. He was elected a National Honor Member of Chi Epsilon. Just before his death he received the Gold Medal of the Institution of Structural Engineers of Great Britain. At that time, only a total of five Gold Medals had been granted in the first 50 years of the Institute, and Cross was the first American to be so honored.

Cross was a great teacher whose courses attracted the most brilliant students, many of whom chose teaching careers largely because of his example and inspiration. He was exacting in his requirements and would not tolerate loose and unclear thinking. His concern about matters of education led him to publish several papers in this field; one titled "Educational Inflation" was presented at MIT in 1937, and dealt primarily with the civil engineering curriculum.

Cross married Edith Hopwood Fenner in 1921; she passed away in 1956. Hardy Cross died in 1959, and both he and Edith are buried in the Wright Family Plot in Ivy Hill Cemetery, Smithfield, Virginia.

Department News

U.S. News & World Report once again named the civil engineering undergraduate program at Illinois number one in their Best Colleges rankings in the category, Undergraduate Engineering Specialties: Civil. The University of Illinois ranked third in the category, Undergraduate Engineering Specialties: Environmental/Environmental Health. For the past 20 years, the department has hovered at or near the top spot in the civil engineering category. Graduate program rankings are announced in the spring.

Francisco Evangelista Jr. and **Jinfeng Wang**, Ph.D. students working with the Center of Excellence for Airport Technology (CEAT), received research awards from the Federal Aviation Administration (FAA) Graduate Research Award Program on Public-Sector Aviation Issues. The awards are designed to encourage applied research on airport and related aviation system issues and to foster the next generation of aviation community leaders. Evangelista is working to investigate cracking potential in concrete slabs when the pavement is loaded by the entire main landing gear of several new aircraft. His adviser is Associate Professor Jeffery R. Roesler. Wang is working with Professor Edwin Herricks, who heads the CEAT FAA Airport Wildlife Safety Program. Her research focuses on the development of bird strike threat assessment approaches to investigate and predict bird strike threats at airports.

CEE students **Timothy Gregor** and **Michael Zelisko** were awarded $3,000 Associated Steel Erectors scholarships from the American Institute of Steel Construction.

CEE Ph.D. student **Ciaran Harman**, a student of Professor Murugesu Sivapalan, received the 2010 Horton Research Grant from the American Geophysical Union (AGU). The award is made from the AGU Hydrology Section's Robert E. Horton Fund for Hydrologic Research "in support of research projects in hydrology and water resources by Ph.D. candidates in institutions of higher education." Harman was selected for his proposed dissertation research, "Biotic alteration of soil hydrologic properties and feedback with vegetation in water limited ecosystems."

Ph.D. student **Xiaopeng Li**, a student of Assistant Professor Yanfeng Ouyang, was awarded a 2010 Dwight David Eisenhower Graduate Fellowship from the U.S. Department of Transportation.

CEE student **Andy Nelson**, an advisee of Professor Mark Rood, received a Science Mathematics and Research for Transforma-

Continued on page 25

Team develops gas-capture system

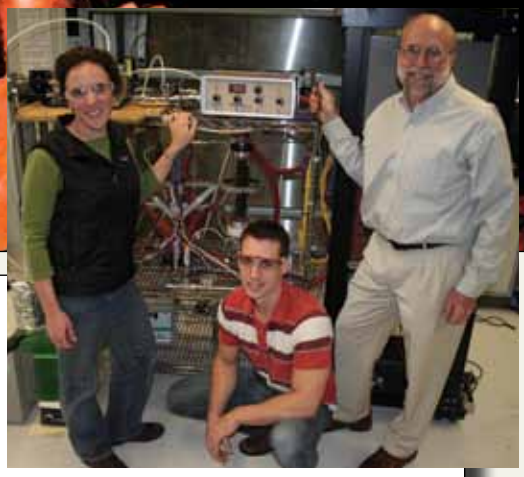
A CEE research team has developed a method to collect and recycle organic gases used in industrial processes that would otherwise be released into the air or burned, causing health and environmental problems.

To remove low concentration gases from their exhaust, some industrial facilities use combustion, but that process produces greenhouse gases, like carbon dioxide, and other air pollutants. Burning also wastes the organic gases, which could otherwise be reused or sold. Capturing these gases and recovering them as liquids to be reused in the production process appears to be an environmental and economically favorable option.

To address this issue, CEE Professor Mark Rood led a team of University of Illinois researchers, including CEE Ph.D. students Kaitlin Mallouk (MS 09) and David Johnsen (MS 09), that developed a technology to capture low concentration isobutane, a common industrial organic gas, from air streams. The system uses activated carbon fiber cloth (ACFC) to selectively remove the isobutane from the air and recovers it as a liquid using electrothermal desorption and post-desorption compression and cooling.

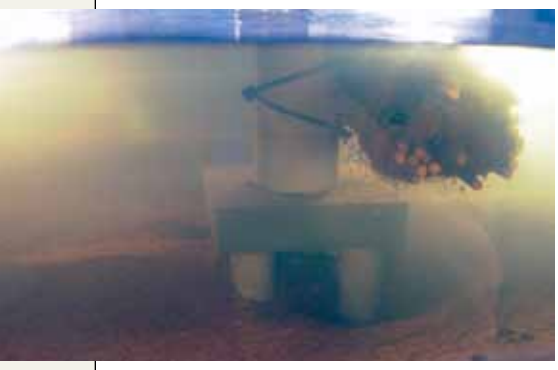
This technology is an extension of one previously developed by Rood's research group that captures organic vapors for recovery as liquids, Vapor Phase Removal and Recovery System.

Full story: cee.illinois.edu/rood_gas_capture.



Mallouk, Johnsen and Rood pose in their lab.

Department News



Hydro team optimizes bridge design

A railroad bridge in the Alaskan wilderness will receive an optimal design thanks to the work of a hydrosystems research team led by Professor Marcelo H. García, Siess Professor of Civil Engineering.

The Alaska Railroad Corporation is planning and designing the Northern Rail Extension Project to extend from a location on the Eielson Branch near North Pole, Alaska, to Delta Junction, Alaska, a distance of approximately 80 miles. Near Salcha, Alaska , the alignment crosses the Tanana River, a large, glacially-fed, braided river capable of transporting large amounts of woody debris, silt, sand and gravel. At the location of the planned railroad crossing, the Tanana River is approximately 0.9 miles (1.44 km) wide.

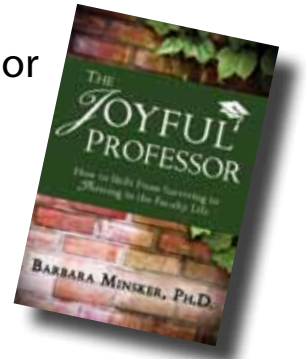
Current design for the bridge support structure calls for 12-foot diameter piers constructed 165 feet apart. While local pier scour is to be expected, the relatively short span between piers has raised concern regarding potential erosion and scour of the foundation due to the pronounced lateral contraction of the flow, or the acceleration of the flow that occurs as the water passes through the narrower space between the piers. Large woody debris, for example 90-foot-long tree logs, could also contribute to bridge scour in the Tanana River.

Through an agreement with Hanson Professional Services Inc., the engineering firm responsible for the bridge design, García's research group has constructed a movable-bed model of the river in the Ven Te Chow Hydrosystems Laboratory and is conducting testing of potential bridge scour. A movable-bed model contains loose sediment that can be eroded and transported by the water flow. The 1:50 Froude scale physical model uses crushed walnut shells to model the river sediment. Wooden dowels have been used to simulate the river's woody debris.

García's group will assess how much erosion might take place during floods at the bridge piers due to local scour, flow contraction and debris accumulation. Hanson water resources engineers, Bill Rice and Tony Comerio, will use this information to finalize the design of the railroad bridge foundation.

Photo: An underwater view of the bridge model shows scour around the piers. The bundle of dowels simulates woody debris in the river.

Minsker publishes Joyful Professor



In her new book, "The Joyful Professor: How to Shift From Surviving to Thriving in the Faculty Life," Barbara Minsker, CEE professor and Associate Provost Fellow, provides simple-to-follow guidelines for setting fellow academics up for success, rather than stress.

Minsker also recently founded a non-profit organization, Joyful U Inc., whose mission is to help people define and achieve their life vision and legacy. Joyful U is offering a bi-annual series of Joyful Professor retreats, three-day, hands-on sessions that combine visioning and planning with time for reflection and relaxation.

For more information, please visit www.joyful-professor.com.

Masud to chair major mechanics conference

Professor Arif Masud will serve as General Chair for the American Society of Mechanical Engineers (ASME) Applied Mechanics and Materials Conference (McMAT-2011), May 31-June 2, 2011, in Chicago. This biennial conference is held under the combined auspices of the Applied Mechanics and Materials Divisions of ASME and covers all aspects of mechanics and materials—theoretical, experimental and computational.

Members of the Applied Mechanics and Materials communities are invited to propose symposia and to participate in the conference.

For more information, visit https://www.asmeconferences.org/McMat2011/index.cfm.

Continued from page 23

tion (SMART) Scholarship. The award is administered by the American Society for Engineering Education and the Naval Postgraduate School and was established by the Department of Defense (DoD) to increase the number of civilian scientists and engineers working in DoD laboratories.

Professor **Murugesu Sivapalan** received the 2010 Hydrologic Sciences Award from the American Geophysical Union (AGU). Sivapalan was cited for having made outstanding contributions to surface hydrology, especially in conceiving rigorous theoretical frameworks for addressing scale issues in hydrologic response, developing conservation laws for watershed-scale processes, and addressing the role of heterogeneity across a range of space and time scales. He has also been a leader in the PUB (Predictions in Ungauged Basins) initiative of the International Association of Hydrological Sciences, which has impacted the state of the art of watershed hydrology and its practice worldwide.

Professor **Murugesu Sivapalan** also received the International Hydrology Prize from the International Association of Hydrological Sciences on July 7 in Paris, France. He was cited, "For outstanding contributions to watershed hydrology and global leadership in advancing predictions in ungauged basins."

Associate Professor **Timothy J. Strathmann** has been named the Snoeyink Faculty Scholar. Strathmann's research focuses on mechanisms controlling the reduction-oxidation (redox) processes that are mediated by metal species. He supports a large group of graduate students, and has extensive external research funding from a variety of agencies including the NSF, the Department of Energy, and the Water Research Foundation.

Associate Professor **Timothy J. Strathmann** also was selected to receive the Campus Award for Excellence in Guiding Undergraduate Research. This award recognizes excellence in involving and guiding undergraduate students in scholarly research.

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NEES site receives awards for video series, photo

The CEE-based NEES equipment site was honored at Quake Summit 2010, held at the University of California at Berkeley October 7, for producing a series of videos explaining the earthquake engineering performed at the site and a photo depicting testing.

Sponsored by the National Science Foundation (NSF), NEES is the George E. Brown Jr. Network for Earthquake Engineering Simulation, a shared network of 14 unique experimental equipment facilities, collaborative tools, a centralized data repository, and earthquake simulation software. Quake Summit 2010 was a joint meeting of NEES and the Pacific Earthquake Engineering Research Center headquartered at UC-Berkeley. Various media awards were presented at the event.

The video project, Test on a 1/20th Scale Bridge Pier Subjected to Shear, won in the category of Educational Videos. Funded by a $60,000 grant from NSF, the project was directed by Associate Professor Dan Kuchma, with video editing performed by Aditya Bhagath, a CEE graduate student in structures. Additional content was developed by Thomas Frankie, a CEE Ph.D. student in structures, with technical assistance from Illinois NEES Operations Manager Greg Pluta. Bhagath and other graduate students fabricated small-scale specimens for use in the video; ran the tests; and captured, produced and managed the media. The team also engaged the help of Nancy Benson, associate professor of journalism in the University of Illinois' College of Media and broadcast journalist, to help create a more engaging, professional product, Pluta says.

The award-winning photo (above), Beam-Column Connection Test, won in the category Best Photo Depicting Research. It was taken in September 2009 by Greg Pluta, Illinois NEES Operations Manager.

The result is 33 completed minutes of video edited into 20 separate segments designed with five target audiences in mind: kindergarten through 12th grade, undergraduate student, graduate student, practitioner, and researcher. A software interface is being developed that will select appropriate videos based on users' level of understanding. Additional education modules to accompany the videos are also being developed.

The award-winning photo (above), Beam-Column Connection Test, won in the category Best Photo Depicting Research. It was taken in September 2009 by Pluta, and depicts work done for a project led by Professor Amr S. Elnashai entitled, "Hybrid Testing of Semi-Rigid Steel Frames."

Department News

Team models facial bones

Professor Glaucio Paulino is working on an interdisciplinary research team using engineering design methods to model custom bone replacement implants for facial reconstruction surgery. The work was published in the July 12 edition of the Proceedings of the National Academy of Sciences.

Paulino

Whether resulting from illness or injury, loss of facial bones poses problems for reconstructive surgeons beyond cosmetic implications: The patient's chewing, swallowing, speaking or even breathing abilities may be impaired.

To fashion bone replacements, surgeons often will harvest bone from elsewhere in the patient's body—the shoulder blade or hip, for example—and manually fashion it into something resembling the missing skull portion. However, since other bones are very different from facial bones in structure, patients may still suffer impaired function or cosmetic distortion.

The research team, which includes researchers from the Ohio State University, applied an engineering design technique called topology optimization, which uses extensive 3D modeling to design structures that need to support specific loads in a confined space, and is often used to engineer high-rise buildings, car parts and other structures.

Full story available online at cee.illinois.edu/facial_reconstruction.

Using topology optimization, researchers design a facial bone replacement for a gunshot victim. They begin with a model of the patient, then concentrate on the injury area. The replacement is designed by a series of algorithms as constraints are added, such as spaces for sinus cavities and blood vessels. The researchers then model the process of inserting the replacement bone into the patient and how the patient would look. Image: Janet Sinn-Hanlon, Beckman Institute

More awards for Guatemalan Water Project

Engineers Without Borders' award-winning Guatemala Water Project garnered two more national awards in October, placing first in a student design competition at the National Academy of Engineers' (NAE) Grand Challenges Summit in Los Angeles, held Oct. 6-8, and coming in second in the Water Environment Federation Student Design Competition Oct. 3 in New Orleans.

CEE Assistant Professor Thanh Helen Nguyen mentors the group, which includes about 20 engineering students, many of them from CEE. They are researching, designing, and implementing an innovative, sustainable point-of-use water filtration system for the town of Socorro, Guatemala. This year, every household in Socorro received a biosand filter, manufactured locally by Socorro residents after training by the Engineers Without Borders (EWB) team. The filters currently remove bacteria from the water, and the team is researching a design that would enable them to remove viruses as well.

The NAE competition required the students to develop a business plan to market their system. The plan involves four construction workers from the Socorro area who will to continue to manufacture and distribute biosand filters to surrounding communities. The team will use the $5,000 prize to do market research and set up the business.

Two designs of biosand filters.

The Water Environment Federation conference, WEFTEC, is the largest water quality event in North America. The EWB team's second place win came with a $1,500 award, which will be used to further the design of iron-amended biosand filters.

Full story available online at cee.illinois.edu/ewb_awards_oct2010.

Continued from page 25

Associate Professor **Khaled El-Rayes** of the Construction Engineering and Management group was named Specialty Editor for the American Society of Civil Engineers *Journal of Construction Engineering and Management*. In this position, he will be responsible for managing the review process for assigned manuscripts.

Associate Professor **Scott M. Olson** has been selected to take part in the National Academy of Engineering's (NAE) second Frontiers of Engineering Education symposium. The three-day event will assemble 53 of the nation's most innovative young engineering educators to share ideas, learn from research and best practice in education, and leave with a charter to bring about improvement in their home institutions. This year's program will focus on ways to ensure that students learn the engineering fundamentals, the expanding knowledge base of new technology, and the skills necessary to be an effective engineer or engineering researcher.

Professor **Mark J. Rood**, the Ivan Racheff Professor of Environmental Engineering, won the 2010 Lyman A. Ripperton Environmental Educator Award from the Air & Waste Management Association. Established in 1980, the award recognizes distinguished achievement by an educator in some field of air pollution control. It is awarded to an individual who, "by precept and example, has inspired students to achieve excellence in all their professional and social endeavors. It recognizes the abilities that only a few in the education profession possess—to be able to teach with rigor, humor, humility, and pride."

Evgueni Filipov and **Sofie Leon**, CEE graduate students in structures, and **Navid Jafari**, a CEE graduate student in geotechnical engineering, have been selected to receive National Science Foundation (NSF) Graduate Research Fellowships. NSF Fellows

Continued on page 28

New faculty: Dan Work

The newest member of the Civil and Environmental Engineering faculty is Assistant Professor Dan Work, who joined the department this winter.

Work earned his bachelor of science degree (2006) from the Ohio State University, a master of science (2007) from University of California, Berkeley, and his Ph.D. (2010) from the University of California, Berkeley, each in civil engineering.

Work will teach courses in transportation engineering and systems engineering. He has research interests in control, estimation, and optimization of cyber physical systems, mobile sensing, and inverse modeling and data assimilation, applied to problems in civil and environmental engineering.

Work received the Dwight David Eisenhower Transportation Fellowship from the U.S. Department of Transportation in 2008 and was named an Eno Fellow from the Eno Transportation Foundation in 2010.

Young is director of Global Leaders program

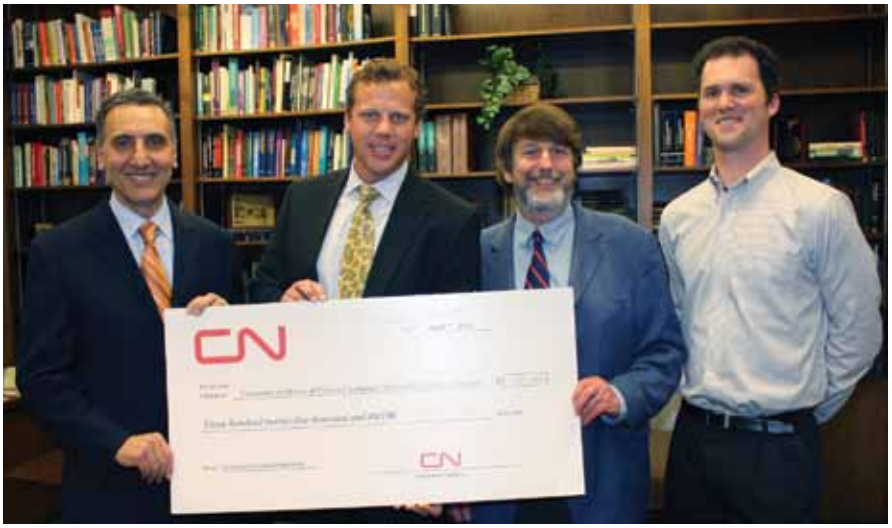
Brent D. Young (MS 06) joined the faculty this year as program director of the Global Leaders in Construction Management (GLCM) program.

Young holds three degrees from the University of Illinois: a bachelor of science degree in Architectural Studies (2004), Master of Architecture degree (2006), and an M.S. in Civil Engineering (2006) with a concentration in construction management.

After graduating from Illinois, he spent a year as a project manager for CORE Construction of Phoenix, Ariz. He then returned to central Illinois to start a residential design and contracting company. Young has experience at each level of the construction industry, from the trades to architectural design to project management of multi-million dollar projects. He participates on mission construction teams in developing countries as well as domestic disaster rebuild projects.

Young teaches courses in construction management with an emphasis on practical industry application.

Department News



The ceremonial check presentation (left to right): Professor and Head Amr S. Elnashai; David Ferryman of CN; Professor Chris Barkan, director of the Railroad Engineering Program; Lecturer J. Riley Edwards.

CN renews support for the rail program

CN has made a new $325,000 donation to the Railroad Engineering Program, a gift which renews the company's generous commitment to railroad engineering education.

"This gift allows us to continue and extend our success in developing courses, conducting research, and teaching students about rail transport and engineering," said Professor Christopher P. L. Barkan, the director of the Railroad Engineering Program. "The gift also provides key funding for our railroad engineering lecturer position which has greatly expanded our unique ability to prepare our students for careers in the railroad industry."

CN has now donated more than $1 million since 2002 in support of the Railroad Engineering Program, the largest in North America and headquartered within CEE at Illinois.

"We are proud that our support of the Railroad Engineering Program helps today's students become tomorrow's railroaders," said Jim Vena, CN Senior Vice President, Southern Region. "The University of Illinois provides its engineering students with a strong knowledge of railroading evident in the talented graduates and interns we have hired from this program in recent years."

In 2002, CN's initial gift of $400,000 was matched by the University and endowed an ongoing fellowship supporting graduate students' research and education in rail engineering. In 2006, a $300,000 gift helped establish the lecturer position.

Railroad engineering Lecturer J. Riley Edwards (MS 06), a member of the faculty since 2007, is the current holder of the CN-sponsored lectureship.

Complete story available online at cee.illinois.edu/cn_gift.

Continued from page 27

receive three years of graduate support, including a $30,000 annual stipend, a $10,500 cost-of-education allowance, access to the TeraGrid Supercomputers, and a $1,000 one-time international travel allowance. Fellowship recipients are anticipated to become experts who can contribute significantly to research, teaching, and innovations in science and engineering. Filipov is currently working with Professors James M. LaFave, Larry A. Fahnestock, Jerome F. Hajjar, and Douglas A. Foutch on a structural engineering project sponsored by the Illinois Center for Transportation. Leon works in the area of computational mechanics under her adviser, Professor Glaucio H. Paulino. Jafari, whose adviser is Professor Timothy D. Stark, is studying landfill slope stability in the presence of elevated temperatures.

The following CEE professors were ranked as excellent by their students for spring 2010:

Bassem Andrawes
Bill Buttlar
Ximing Cai
Armando Duarte
Riley Edwards
Khaled El-Rayes
Larry Fahnestock
Marcelo Garcia
Youssef Hashash
Dan Kuchma
Praveen Kumar
Jim LaFave
Liang Liu
Jim Long
Benito Mariñas
Gary Parker
John Popovics
Junho Song
Bill Spencer
Charlie Werth

The following individuals received the 2010 Engineering Council Award for Excellence in Advising. Award winners are recognized as one of the top 10 percent of engineering advisers on campus:

Professor Imad Al-Qadi
Assistant Professor Larry Fahnestock
Professor Youssef Hashash
Professor David Lange
Professor Susan Larson
Professor Liang Liu
Undergraduate Program Coordinator Becky Stillwell

In Memoriam

1940s

Nelson G. Gordy (BS 49) died June 30. He was 87. He was a sergeant in the U.S. Army during WWII. His career included working for several engineering firms, one of which helped to build a landing site for Apollo 11 on the moon. He worked as a safety standards engineer for the National Highway Traffic Safety Administration in Washington, D.C.

James B. Meek (BS 43) died Aug. 10 in Bloomington, Ill. He was 89. Meek attended the U of I on an athletic scholarship and worked on the yearbook, the Illio. In WWII, Meek served as a captain in the U.S. Army Corps of Engineers in Okinawa and Guam. After returning home, he joined the construction firm of Felmley-Dickerson Co., where he worked until 2005. He became president in 1969, a position he held until 1990. At the time of his death, he was still Chairman of the Board of Directors. Meek's many activities included being a Scoutmaster, committee member for Boy Scout Troop 3, and a 32nd degree Mason. He was instrumental in building the WWII Memorial in Bloomington.

Jack Pershing (BS 41) died Aug. 16. He was 91. With the late Milt Warshaw, Pershing founded Columbia Engineering Co. in 1946. The company employed scores of engineers over the next 38 years and did the structural design of hundreds of buildings and bridges.

1950s

Nathan G. Brenner (BS 51) died Aug. 10. He was 81.

Clarence J. Fleming (BS 52) died May 26. He was 80. Fleming was a member of Attack Squadron VA-12 while serving in the U.S. Navy. After his naval service, he graduated from George Washington University Law School and went on to practice patent law in Chicago.

James R. Fuller (MS 51, PhD 55) died July 7. He was 86. His career included 40 years as a structural engineer for Boeing Company. He received the prestigious Silver Snoopy Award from NASA for his individual contributions to the Space Shuttle program.

Daniel A. Kurowski (BS 57) died Feb. 12. He was 74. He served as an officer in the U.S. Air Force as a pilot and base engineer at Ellsworth AFB, Rapid City, South Dakota, attaining the rank of captain. His career included working for Alfred Benesch & Co. in Chicago, Construction Aggregates Corp., Applied Engineering and Spooner & Sons. He founded the Kurowski Engineering Co. He was the first in his family to attend college, and he was a proud Illini who worked his way through school. During his career, he worked on many large commercial projects in the Chicago area, including the renovation of Marina Towers Complex on N. Michigan Ave. and the rebuilding of the Arlington Heights Racetrack after it was destroyed by fire.

James M. Massard (MS 52, PhD 55) died Sept. 13 in Corydon, Ind. He was 82. His career included working at Lockheed Missiles & Space Co. in Sunnyvale, Calif., as a research scientist. A specialist in structures and vibrations engineering, he remained at Lockheed for more than 30 years, working on aerospace and marine programs until his retirement.

1960s

Richard Bolton (BS 60) died April 30.

Sandra Collins Levey (BS 67) died June 9. She was 65. As a civil engineering student at Illinois in the 1960s, she was a Knight of St. Patrick. Her career included working for 25 years as a dam engineer. Levey served as a city councilwoman in Soap Lake, Wash., and was a Girl Scout leader.

Frank J. Nesseler (BS 66) died Sept. 17. He was 69. He founded American Eagle Masonry in Miami and later owned American Eagle Transportation, a successful concrete block hauling business.

S. Wayne Terry (MS 65) died July 15 in Los Alamitos, Calif. He was 71. Terry retired in 1997 after a 31-year career with Chevron.

1980s

John Roger Powell III (BS 85) died Nov. 18. He was 50. Powell was an executive project manager for Gilbane Construction Co. in North Carolina.

Louis A. Bacon

Louis A. Bacon (BS 43) died Oct. 3 in Stone Mountain, Ga. He was 89.

Bacon's career as a structural engineer included working for the Chicago firm of Shaw, Metz and Dolio for 20 years, advancing to Chief Structural Engineer and Associate Partner. During that time, he served as the structural engineer for a number of high-rise apartment buildings along Lake Michigan. He also designed several large industrial plants and the first atomic research facility at Argonne National Laboratory. He also worked with Chicago-based P&W Engineers as Vice President of Structural Engineering and later President. He joined Heery International in Atlanta in 1975 as Vice President and Director of Engineering. He retired in 1989.

During World War II, Bacon served in the U.S. Navy and worked for Douglas Aircraft.

Bacon was active in professional organizations and was a long-time supporter of the University of Illinois at Urbana-Champaign and of the Civil and Environmental Engineering Alumni Association (CEEAA). He served as president of the CEEAA from 1980-82. Bacon was named a Chapter Honor Member of the Chi Epsilon Alpha Chapter in 1979 and won the Distinguished Alumnus Award from the CEEAA in 1985.

He and his wife, Clara, who survives, were members of the President's Council.

Lou and Clara Bacon during a 2009 visit to Newmark Lab. They posed before a bronze plaque given by the class of 1943 to honor their professors.

Alumni News

1950s

Joseph Guyton (BS 55, MS 57) retired this year after 50 years of professional consulting services. Guyton conducted major transportation planning and traffic engineering projects in 27 U.S. states and abroad. He was very active in the Transportation Research Board and the Institute of Transportation Engineers with committee work, presentations and technical papers. His major projects included three "cross-country" transportation corridor studies, one from coast to coast and two from Mexico to Canada. During his time at Illinois, Guyton was co-winner of the first C. C. Wiley Travel Award in 1955.

1960s

Michael B. Buckley (MS 68) has joined the St. Louis office of Hanson Professional Services Inc.

Russ Martin (BS 61), owner of Martin Engineering Co., was inducted into the Carbondale High School Hall of Achievement. Martin earned three letters in baseball while at Illinois, and was a second-team All-Big Ten selection in baseball as a first baseman in 1958.

Carl J. Turkstra (MS 60) of Turkstra Lumber Ltd. in Ontario, Canada, has been inducted into the Hamilton-Halton Home Builders' Association Hall of Fame. Turkstra's career included a number of year as a research professor in the departments of civil and environmental engineering at the University of London, Montreal's McGill University, the University of Mexico and New York University. In 1990 he joined the company founded by his father, Peter.

1970s

John P. Coombe, P.E., S.E., (MS 78), executive vice president of Hanson Professional Services Inc., received the national 2008 Community Service Award from the American Council of Engineering Companies. Coombe's activities have included serving on the City of Springfield's Capital Improvement Advisory Committee and as co-chairperson of last year's United Way of Central Illinois campaign, which raised $3.2 million.

Gale L. Jamison, P.E., (BS 70, MS 78), Assistant City Engineer for the City of Urbana, has been named the Illinois Government Engineer of the Year by the Illinois Society of Professional Engineers.

Young Engineer of the Year

Fernando Moreu, recipient of the 2010 Young Engineer of the Year from the American Society of Civil Engineers Central Illinois Section, celebrates with Illini friends Keith Schinkoeth (BS 02, MS 03) and Gen Long (BS 02, MS 03).

Jon Khachaturian (BS 78), president of Versabar Inc., was selected by the Student Alumni Ambassadors of the U of I Alumni Association as a 2010 Illini Comeback honoree. Honorees are invited back to campus during Homecoming to participate in traditional activities such as the parade and pep rally, and to speak to students about their careers.

Allen J. Staron, P.E., (BS 74), Senior Vice President at Clark Dietz Inc., was elected to the American Society of Civil Engineers (ASCE) Board of Governors, Region 3. Governors are responsible for developing and implementing the ASCE Strategic Plan, providing leadership and management for technical, professional and educational activities, and providing input to the Board of Direction on policy initiatives.

Chandra L. Wallar (BS 79) has been named CEO of the County of Santa Barbara, Calif. Wallar formerly served as an administrative officer/manager for San Diego County.

1980s

Thomas E. Bartolomucci, P.E., S.E., (BS 82, MS 83) has been named project delivery services manager for Hanson Professional Services Inc.

Thomas DeJarld, P.E., S.E., M.ASCE, (BS 82) was named 2010 Civil Engineer of the Year by the American Society of Civil Engineers Central Illinois Section. DeJarld is a senior structural engineer at Hanson Professional Services Inc. in Peoria, Ill. DeJarld was recognized for his contributions to engineering projects nationwide, involvement in professional development associations, and volunteerism in the community.

Sonia Maassel Jacobsen, P.E., (MS 80), a hydraulic engineer with USDA-NRCS in St. Paul, Minn., is being honored as a Fellow of the American Society of Agricultural and Biological Engineers in recognition of her expertise and outstanding contributions in the emerging field of wetland hydrology and water resources engineering.

Lawrence Novak (BS 85, MS86) received the 2010 Citizen Engineer of the Year Award by the Illinois Section of the American Society of Civil Engineers. Novak, director of engineered buildings at the Portland Cement Association (PCA), has presented to numerous community and educational groups. In January, he participated in the first Science, Technology, Engineering and Mathematics (STEM) leadership forum for Illinois high school teachers, designed to help teachers enrich student education in math, science, engineering and sustain-

ability. In addition, for several years he has led the seminar "Buildings to Shake, Rattle, and Roll" at the DuPage Area Engineers Week Expo. PCA also partnered with the Museum of Science and Industry to educate students and teachers about sustainable design in engineering and architecture, inspiring the next generation of young minds. The IL-ASCE Board of Directors commended Novak for "contributions . . . made to the general public and the engineering profession."

Ronald P. Palmieri (BS 83, MA 85) has joined GEI Consultants Inc., a geotechnical, water resources, environmental, and ecological science and engineering firm, as Midwest Regional Manager.

1990s

Steve Drahota, P.E., (MS 94) has been appointed Transportation Business Development Manager for HDR in Oregon and Southwest Washington. He will be based in the firm's Portland office. Drahota has been with HDR for nearly six years and has recently served as the Deputy Program Manager of Design on the $1.3 billion OTIA III State Bridge Delivery Program with the Oregon Bridge Delivery Partners.

Barney G. Fullington (BS 94) has joined Barge Waggoner Sumner & Cannon Inc. as Director of Water Services, responsible for overall direction of water, wastewater, and water resources services across the company.

Christopher M. Thomas (BS '96, MS '97) is now the Vice President and Managing Director, U.S. Government Affairs for CH2M Hill. Thomas is responsible for all state and local political outreach throughout the United States, and has a team of Government Affairs professionals in various geographic areas throughout the U.S.

2000s

Edward W. (Bill) East, P.E., (MS 91, PhD 05) was elected a Fellow by the American Society of Civil Engineers (ASCE). East

is a research civil engineer at the Construction Engineering Research Laboratory in Champaign and a registered professional engineer in the State of Virginia. Fellows occupy the society's second-highest membership grade, exceeded only by Distinguished Members. Fellow status must be attained through members' vote and is based on professional achievements in civil engineering. According to ASCE, Fellows are practitioners, educators, mentors, and most of all, leaders. Their accomplishments have left a mark on their communities, society, and future engineering professionals.

Fernando Moreu (MS 05), a Design Engineer with ESCA Consultants Inc. and current Ph.D. student in the department, was named the 2010 Young Engineer of the Year by the American Society of Civil Engineers (ASCE) Central Illinois Section. The award recognizes demonstrated leadership potential in civil engineering, evidence of high character and professional integrity, civic and humanitarian activities, and contributions to ASCE.

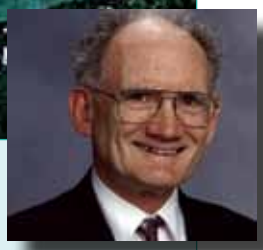
Moreu also received the 2010 O.H. Ammann Research Fellowship in Structural Engineering from the Structural Engineering Institute of ASCE. The fellowship is awarded annually for the purpose of encouraging the creation of new knowledge in the field of structural design and construction. It was given to Moreu for his research, "Use of Wireless Sensors for Railroad Bridge Replacement Prioritization." The overall objective of Moreu's research is to develop a pilot measurement method to place accelerometers and record accelerations in railroad bridges, and to use these readings to quantify structural robustness of railroad bridge elements. The findings of this study will be used to implement a methodology for component or even whole bridge replacement prioritization.

Narutoshi Nakata (PhD 07), Assistant Professor of Civil Engineering at The Johns Hopkins University has received the faculty Early Career Development (CAREER) award from the National Science Foundation. Nakata's proposed work, "Advanced Acceleration Control Methods and Substructure Techniques for Shake Table Tests," will be funded from 2010-2015.

Robert G. Pekelnicky (BS 00, MS 01), Associate Principal at Degenkolb Engineers in San Francisco, Calif., represented the American Society of Civil Engineers in the 2010 Emerging Leaders Alliance capstone program in Amsterdam Nov. 30-Dec. 2. He was one of 100 delegates from a broad cross-section of the international engineering and scientific community, chosen by their various professional associations. Topics covered included change management, risk assessment, critical thinking, multigenerational communications, conflict resolution, ethics and social responsibility.

Pekelnicky also was named to Building Design and Construction's 2010 40 Under 40 list. The list honors young architects, engineers, contractors, designers and developers.

Wright receives ASCE President's Medal



Richard N. Wright (PhD 62) has received the 2010 President's Medal from the American Society of Civil Engineers (ASCE). The award recognizes the accomplishments and contributions of eminent engineers to the profession, the Society or the public.

Wright is former Director of the Building and Fire Research Laboratory at the National Institute of Standards and Technology in Gaithersburg, Maryland. He holds bachelor's and master's degrees in civil engineering (1953, 1955) from Syracuse University and a Ph.D. in civil engineering (1962) from the University of Illinois at Urbana-Champaign.

As a member of the civil engineering faculty at Illinois from 1957 to 1974, Wright developed and taught advanced undergraduate and graduate courses in the analysis and design of structures, and contributed to modifications of the curriculum to take advantage of the opportunities provided by electronic computation. He conducted and supervised field, laboratory and analytical research on the response of structures to dynamic loads, the behavior and design of highway bridges, computer aided design, and techniques for the formulation, expression and application of standards.

In 1974, he joined the National Bureau of Standards (now the National Institute of Standards and Technology) as director of the Center for Building Technology. He retired in 1999 as director of its Building and Fire Research Laboratory.

Among his numerous awards and recognitions include election to the National Academy of Engineering in 2003. In 2006, he received the University of Illinois College of Engineering Alumni Award for Distinguished Service. In 1989, he received the department's Distinguished Civil Engineering Alumnus Award.

What do you have to say?

CEE at Illinois is building an alumni speaker list. If you are interested in returning to campus to speak to student groups about your experiences since graduating, offer career advice, or give a presentation about an interesting project you're tackling, please contact Breanne Ertmer (ertmer@illinois.edu) for more details.

Photos: Alex Bragorgos

Sponsored Research

Research is an important part of the mission of the Department of Civil and Environmental Engineering. The many and varied projects of our faculty contribute to knowledge, enhance the education of our students, and improve the practice of civil and environmental engineering. On this page we acknowledge companies and organizations that are currently providing research funding in the department. Listed are the sponsoring agencies, the faculty members who are conducting the research, and project names.

Principal Investigator	Funding Agency	Title
Daniel P. Abrams	US National Science Foundation (NSF)	Hybrid Masonry Seismic Structural Systems
Imad Al-Qadi	IL Dept of Transportation	Best Practices for Implementation of Tack Coat TRP Recommendations
Imad Al-Qadi	IL Dept of Transportation	ICT Management and Administration Direct Support
Imad Al-Qadi	IL Dept of Transportation	Evaluating the Effects of Various Asphalt Binder Additives Modifiers of Moisture Sensitivity in HMA
Imad Al-Qadi	IL Dept of Transportation	Warm Mix Asphalt Study Special Project
Imad Al-Qadi	IL Dept of Transportation	IDOT ICT Administration
Imad Al-Qadi	IL Dept of Transportation	Profile Equipment Verification 2009 Special Project
Imad Al-Qadi	IL Dept of Transportation	Thin Quiet Long Lasting Hi Friction Surface Layer
Imad Al-Qadi	IL Dept of Transportation	Special Projects Engineering
Imad Al-Qadi	IL Dept of Transportation	IT Support
Imad Al-Qadi	IL Dept of Transportation	Editorial Support
Imad Al-Qadi	IL Dept of Transportation	Conference Training & Support
Imad Al-Qadi	IL Dept of Transportation	Illinois Center for Transportation
Imad Al-Qadi	IL State Toll Highway	Support for Pavement Research at UIUC Proposal to the Illinois State Toll Highway Authority 2010
Imad Al-Qadi	University of Wisconsin - Madison	Test methods and specification criteria for mineral filler used in HMA
Imad Al-Qadi	VA Transportation Research Council	Validation of Hot poured Crack Sealant Performance based Guidelines Pooled Fund Study TPF 5 225
Bassem Andrawes	IL Dept of Transportation	Strengthening of Bridge Wood Pilings Retrofits for Moment Resistance
Bassem Andrawes	IL Dept of Transportation	Prestressed SCC Bridge Box & I-Girders
Bassem Andrawes	National Academy of Sciences	Response Modification Factors Of Typical Pakistani Reinforced Concrete And Masonry Building For The Pakistan Seismic Code Development
Rahim F. Benekohal	IL Dept of Transportation	Field Evaluation of Smart Sensor Vehicle Detectors at Intersections and RR Crossings
Rahim F. Benekohal	IL Dept of Transportation	LED Roadway Lighting Evaluation and Field Testing
Rahim F. Benekohal	IL Dept of Transportation	Solar Powered Flashing Beacons
Rahim F. Benekohal	IL Dept of Transportation	Wireless Detection Systems Evaluation
Rahim F. Benekohal	IL Dept of Transportation	Queue & Users Cost in Highway Work Zones
Rahim F. Benekohal	IL Dept of Transportation	2006-06604 DOT PU 4108-21574
Tami C. Bond	Argonne National Lab	A Linking Technological Change And Socioeconomic Models
Tami C. Bond	NASA Shared Services Center	Bridging The Last Few Kilometers: Accounting for Subgrid Mixing and Spatial Gradients in Global Aersol Models
Tami C. Bond	US Department of Energy	Optical Properties Of Moderately Absorbing Organic And Mixed Organic Particles At Very High Humidity
Tami C. Bond	US Environmental Protection Agency	Global to urban models for minimizing air quality and climate impacts of freight choice
Tami C. Bond	NSF	A chemical history of anthropogenic input to the atmosphere throughout the industrial era
William G. Buttlar	IL Dept of Transportation	Designing Producting and Constructing Fine Graded Hot Mix Asphalt on IL Roadways
William G. Buttlar	IL Dept of Transportation	Distance Technology Transfer Course Content Development
William G. Buttlar	National Academy of Sciences	An Acoustic Emissions Based Test to Determine Asphalt Binder and Mixture Embrittlement Temperature

Principal Investigator	Funding Agency	Title
William G. Buttlar	Road Science LLC	Crack Resistance and Bonding Optimization Methods for Thin and Ultra- thin Bonded Wearing Courses
William G. Buttlar	Total Raffinage Marketing	Crack Propagation in Asphalt Pavement and Low Temperature Resistance
William G. Buttlar	University of Minnesota	Investigation of Low Temperature Cracking in Asphalt Pavements National Pooled Fund Phase II
William G. Buttlar	IL Dept of Transportation	GOALI: A Hybrid Failure Approach Using Digital Image Correlation for Functionally Graded Thin-Bonded Overlays
Ximing Cai	Intl Food Policy Research Institute	Basin Focus Project - The Yellow River Basin
Ximing Cai	NASA Shared Services Center	Developing Seasonal Predictive Capability For Drought Mitigation Decision Support System
Ximing Cai	Texas A&M University	Agricultural Water Security and Instream Flows for Endangered Salmonids in Coastal Californias Watrsheds
Ximing Cai	Trustees of Purdue University	Analysis, Global Impacts of 2nd Gen Biofuels in the Context of Other Energy Technolgies and Alternative Econ and Climate Change Policy Options
Ximing Cai	NSF	Interdependence Resilience and Sustainability of Infrastructures for Biofuel Development
Ximing Cai	NSF	Planning for Drought Preparedness in the Watershed Context: A Risk-Bsed Decision Analysis
Ximing Cai	NSF	CAREER: Quantifying Environmental Ecological Relationships for Watershed Sustainability Analysis
Samuel H. Carpenter	ERES Consultants	Testing of GTR Mixtures for the Illinois Toll Road Authority-ARA
Samuel H. Carpenter	IL Dept of Transportation	High RAP Content & Pavement Performance
Robert H. Dodds Jr.	Oak Ridge National Lab	An Engineering Approach To Adjust Cleavage Fracture Toughness Values For Standardized To Determination
Robert H. Dodds Jr.	NSF	Dr. Glaucio Paulino's Intergovernmental Personnel Act
Armando Duarte	Air Force Office of Scientific Research	Generalized Finite Element Method for Multiscale Simulations
Armando Duarte	NSF	GOALI: Validated Multiscale Simulations of Ceramic Matrix Composites for Power Generation
John Riley Edwards	Amsted Rail Inc	Analysis of Concrete Crosstie Fastening Systems
John Riley Edwards	Michigan Technological Univ	Tuning Transatlantic Cooperation In Rail Higher Education
Amr S. Elnashai	CERL Champaign	Catastrophic Event Planning Scenarios New Madrid Seismic Zone Earthquakes
Amr S. Elnashai	University of Nevada - Reno	Seismic Simulation and Design of Bridge Columns Under Combined Action
Amr S. Elnashai	NSF	7th International Conference on Urban Earthquake Engineering and the 5th International Conference on Earthquake Engineering
Khaled A. El-Rayes	IL Dept of Transportation	Green Friendly Best Management Practices BMP for Interstate Rest Areas
Khaled A. El-Rayes	IL Dept of Transportation	Minimizing Traffic Related WZ Crashes in IL
Khaled A. El-Rayes	Qatar University	Distributed Multi-objective Optimization for the Construction of Transportation Systems in the State of Qatar
Khaled A. El-Rayes	NSF	Optimizing Airport Construction Site Layouts to Maximize Aviation Safety and Security
Larry Fahnestock	American Institute of Steel Construction	Seismic Steel Design in the East: Balancing Strength Ductility and Reserve Capacity
Larry Fahnestock	University of Washington	Smart and Resilient Steel Walls for Reducing Earthquake Impacts
Larry Fahnestock	NSF	Collaborative Research: Structural Integrity of Steel Gravity Framing Systems
Larry Fahnestock	NSF	Innovative Self-Centering Braces for Advanced Seismic Performance
Marcelo H. Garcia	Exxon-Mobil Corporation	Flow velocity and sediment concentration profiles in turbidity currents flowing over different bedfrms
Marcelo H. Garcia	Hanson Engineers Inc	Tanana River Railroad Bridge Movable Bed Model Testing of Bridge Scour Due to Local Erosion Flow Contraction and Debris Accumulation
Marcelo H. Garcia	Metropolitan Water Reclamation	Modeling Geysering and Hydraulic Transients on North Branch Tunnel of Mainstream TARP System
Marcelo H. Garcia	Metropolitan Water Reclamation	TARP Modeling - Phase III of the Calumet TARP System
Marcelo H. Garcia	Metropolitan Water Reclamation	Modeling of Settling Tanks Aeration Tanks and Appurtenant Flow Distribution Structures
Marcelo H. Garcia	Metropolitan Water Reclamation	TARP Modeling - Phase II of the Calumet TARP System
Marcelo H. Garcia	Metropolitan Water Reclamation	Chicago Waterway System Environmental Modeling Phase I
Marcelo H. Garcia	MKEC Engineering Consultants Inc	Canoe Chute and Fish Passage Model Testing
Marcelo H. Garcia	US Dept of Interior	INT 04ERAG0004
Marcelo H. Garcia	US Dept of Interior	Collocation Lease for Office Space in North Campus Parking Deck
Marcelo H. Garcia	USDA Agricultural Research Service	Enhancement Of The Channel Evolution Model Concepts For Predicting Lateral Channel Migration
Youssef M. A. Hashash	IL Dept of Transportation	Evaluation of Horizontal Directional Drilling Special Project

Principal Investigator	Funding Agency	Title
Youssef M. A. Hashash	NSF	Development of a Framework for Probabilistic Seismic Hazard Maps for Pakistan
Youssef M. A. Hashash	US Geological Survey	Site Amplification Factors For Deep Deposits and Their Application in Seismic Hazard Analysis for Cntral US
Youssef M. A. Hashash	NSF	Towards an Integrated Computational-Experimental Laboratory Testing Framework for Soil Behavior Characterization and Modeling
Daniel A. Kuchma	University of Washington	Seismic Behavior Analysis and Dsgn of Complex Wall Sys
Daniel A. Kuchma	University of Washington	Hybrid Precast Wall Systems for Seismic Regions
Daniel A. Kuchma	NSF	ExVis Tool and Case Study Implementation for the Visualization Fusion and Analysis of Experimental Test Data on Concrete Structural Walls
Praveen Kumar	NSF	Interactions Between Water Energy Carbon Dynamics as Predictors of Canopy to Ecosystem Scale Vegetation Pattern and Function
James M. Lafave	Abdelqader Najmi	Behavior of Concrete-Filled Steel Tubes with Internal Links CFT
James M. Lafave	Georgia Institute of Technology	Seismic Risk Mitigation for Port Systems
James M. Lafave	University of Chicago	Limestone Tie Anchor Testing for University of Chicago Logan Arts Center
James M. Lafave	University of Michigan	NSF Innovative Applications of Damage Tolerant Fiber-Reinforced Cementitious Materials
David A. Lange	FAA William J Hughes Technical Center	Center of Excellence for Airport Technology
Liang Y. Liu	IL Dept of Transportation	Texas AASTHO Retroreflective Sign Sheeting Specifications Special Project
Wen-Tso Liu	PepsiCo International	Anaerobic Membrane Bioreactors Using Advanced Membrane for Treating Industrial and Domestic Wastewater
Wen-Tso Liu	The AWWA Research Foundation	Developing a Genetic based Approach that Complements Enzyme based Coliform Methods
Wen-Tso Liu	The AWWA Research Foundation	Microbial Ecology of Drinking Water Distribution System Joint Research Project with Singapore Pulic Utilities Board
James H. Long	IL Dept of Transportation	Improved Design for the Driven Piles Based on a Pile Load Test Program in Illinois
James H. Long	Wisconsin Dept of Transportation	Comparison of LRFD and LFD Cast in Place Pile Design and Construction Methods
Benito Jose Marinas	Syndicate des Eaux d'ile de France	Inactivation of Adenovirus Coxsackievirus and Norovirus with Polychromatic Medium Pressure Ultravilet Light
Benito Jose Marinas	US Environmental Protection Agency	Sustainable Agriculture for Water Catchment Protection in Ntisaw Cameron
Benito Jose Marinas	NSF	Transport of Solutes & Macromolecules through Reverse Osmosis & Nanofiltration Memb.
Arif Masud	General Electric Company	Preliminary Engineering Analysis and Risk Assessment of GE Vendors Concrete Wind Tower Design
Arif Masud	NSF	A Computational/Experimental Multiscale Approach to the Analysis of Structures Containing Mechanical Joints
Barbara S. Minsker	Archer Daniels Midland Company	ADM SRA 2009-07424 Project Catfish
Barbara S. Minsker	Deere & Company	Demonstrating the Feasibility of Agronomic Decision Support Using a Field Readiness Virtual Sensor
Paramita Mondal	IL Dept of Transportation	Bridge Decks Mitigation of Cracking and Increased Durability
Paramita Mondal	US Army Corps of Engineers	Development of Suitable Method to Incorporate Carbon Nanotubes in Cementitious Composite
Paramita Mondal	NSF	EAGER: Exploratory Study on Biomineralization in Cementitious Materials for Self-healing of Cracks
Thanh Huong Nguyen	US Environmental Protection Agency	Virus Removal in Slow Sand Filters for Rural Mayan
Thanh Huong Nguyen	NSF	Symposium: Interfacial Chemistry: Fate Transport and Adsorption of Nanoparticles Biocolloids and Trace Organics in Aquatic Systems
Thanh Huong Nguyen	NSF	CAREER: Pathogen Control for a Sustainable Reuse of Wastewater: Role of Surface Interactions on Natural Removal of Cryptosporidium Parvum
Thanh Huong Nguyen	USDA Coop State Rsrch Educ & Ext Serv	Investigating The Spread Of Antimicrobial Resistance Near Animal Facilities Mechanisms Of Extracellular DNA Transport And Transfer
Scott Olson	IL Dept of Transportation	Monitor Extreme Integral Abutment Bridges in IL
Scott Olson	NSF	RAPID: Geotechnical-driven Damage Patterns and Liquefaction in the January 2010 Haiti Earthquake
Scott Olson	NSF	CAREER: Impact of Liquefaction-Induced Water Layers on Forward and Inverse Geoengineering Analyses
Scott Olson	NSF	Soil Improvement Strategies to Mitigate Impact of Seismic Ground Failures via Novel Integration of Experiment and Simulation
Yanfeng Ouyang	Federal Highway Administration	National Safety 2009 Safety Performance Function Summit
Yanfeng Ouyang	IL Dept of Transportation	Illinois Highway Safety Manual Workshop
Yanfeng Ouyang	IL Dept of Transportation	National Safety Performance Function Summit
Yanfeng Ouyang	IL Dept of Transportation	Highway Program Planning Using Benefit Cost
Yanfeng Ouyang	NSF	CAREER: Information Mechanisms and Robust Stabilization of Nonlinear, Stochastic Transportation Networks
Gary Parker	Natl Ctr for Earth-Surface Dynamics	National Center for Earth-Surface Dynamics
Gary Parker	Office of Naval Research	Morphologic Quantification of River Traversability
Glaucio Paulino	NSF	Functionally Graded Concrete for the Civil Infrastructure - A Multifunctional Material System Approach
John S. Popovics	IL Dept of Transportation	Evaluation of Concrete Cylinder Match Curing and Evaluation of 4 X 8 Cylinders

Principal Investigator	Funding Agency	Title
John S. Popovics	IL Dept of Transportation	Concrete Temperature Specification
John S. Popovics	National Academy of Sciences	Investigation of a Full Lane Acoustic Scanning Method for Bridge Deck NDE
John S. Popovics	NSF	Development of sensing method for complete in situ assessment of steel corrosion in concrete
John S. Popovics	NSF	Collaborative Research: Fusion of Electromagnetic and Mechanical Wave Data for Concrete Structure Diagnostics
J. Wayland Eheart	Food & Agriculture Research Act	IDA C-FAR Programs Illinois Council on Food & Agricultural Research Program
Jeffery R. Roesler	Air Force	Theoretical Solution for Temperature Profile in Multi-Layered Pavement Systems Subjected to Transiet Thermal Loads
Jeffery R. Roesler	IL Dept of Transportation	Mechanistic Empirical Design Implementation & Monitoring for Rigid Pavements
Jeffery R. Roesler	Iowa State University	Improving the Foundation Layers for Concrete Pavement
Mark J. Rood	CERL Champaign	Measurement of Particulate Matter Emissions in Full Scale Open Burning and Open Detonation Plumes
Mark J. Rood	Office of Naval Research	Vapor Recovery by Electrothermal Swing Adsorption
Mark J. Rood	NSF	Understanding and Enhancing Post-Combustion Multi-Pollutant Control with Carbon-Based Materials
Arthur Schmidt	IL Assoc, Floodplain/Stormwater Mgt	Green Roof Monitoring 2009
Murugesu Sivapalan	NSF	Collaborative Research: Biotic Alteration of Soil Hydrologic Properties and Feedback with Vegetation Dynamics in Water Limited Ecosystems
Murugesu Sivapalan	NSF	Hydrologic Implications of Landscape Structure and Climate - Towards a Unifying Framework of Watershed Similarity
Junho Song	NSF	Risk-informed Management and Post-disaster Operations of Lifeline Networks by Rapid Condition-based System Reliability Analysis
Junho Song	NSF	An Integrated Platform for Validated Prediction of Collapse of Stsructures
Bill F. Spencer Jr.	CERL Champaign	Advanced Bridge Capacity and Structural Integrity Assessment
Bill F. Spencer Jr.	Mandaree Enterprise Corporation	Advanced Bridge Capacity and Structural Integrity Assessment
Bill F. Spencer Jr.	Trustees of Purdue University	Performance-Based Design and Real-Time Large-Scale Testing to Enable Implementation of Advanced Damping Systems
Bill F. Spencer Jr.	Trustees of Purdue University	SBC Purdue NEES - 4101-31874 NEES Operations FY 2010 - FY 2014
Bill F. Spencer Jr.	University of Connecticut	Development of a Real-Time Multi-Site Hybrid Testing Tool for NEES
Bill F. Spencer Jr.	NSF	Building and Infrastructure Resilience: Strategic Planning for Speedy and Organized Emergency Response Recovery and Rebuilding
Bill F. Spencer Jr.	NSF	EAGER: Bio-Inspired Smart Sensor Networks for Adaptive Emergency Response
Bill F. Spencer Jr.	NSF	Bio-Informed Framework Enabling Multimetric Infrastructure Monitoring
Bill F. Spencer Jr.	NSF	International Workshop on Advanced Smart Materials and Smart Structures Technology (2009)
Bill F. Spencer Jr.	NSF	Smart Structures Technology Summer School
Bill F. Spencer Jr.	NSF	Framework for Development of Hybrid Simulation in an Earthquake Impact Assessment Context
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Stephen E. & Mary C. Gritten
Dennis R. Lagerquist
James R. Levey
Theodore W. Nelson Jr.
Toan T. Nguyen
Kenneth G. Nolte
Maynard A. & Mona C. Plamondon

Ruth and Stan Monnier with their son, Alan.

Sisters honor grandparents with scholarship fund

Two sisters have established a scholarship fund in the names of their grandmother and grandfather, in honor of the value the grandparents placed on higher education and their love for the University of Illinois. The C.S. and Ruth Monnier Scholarship Fund will provide two scholarships each year, one to a junior and one to a senior in civil engineering.

Nicole M. Monnier, Associate Teaching Professor of Russian and Director of Undergraduate Studies in Russian at the University of Missouri at Columbia, and her sister, Michelle Szydlo, a nurse administrator for a home health care organization in Torrington, Conn., established the fund in honor of their grandparents, Charles (BS 38) and Ruth Monnier.

Charles Stanley Monnier, known as Stan, began the engineering program in September 1926 but had to leave a year shy of earning his degree because of the Depression. He found work on a road crew, where he gained practical experience in drafting, surveying and mapping, designing, inspecting, supervision of labor, reports and general office work. But when Stanley was passed over for promotion because of his unfinished degree, his wife declared that it was time to return to Urbana.

Over the protests of their parents, the two quit their steady jobs, a Depression-era rarity, and used all of their savings so that Stan could complete his final year of study, with Ruth working as a receptionist at the U of I men's gym. As difficult as the year was financially, Stan and Ruth looked back at the last year at Illinois as one of their fondest experiences.

It was Ruth's idea to establish an award in Stan's name to aid engineering students struggling with the mounting costs of higher education in the second half of their undergraduate careers. Unable to attend college herself, Ruth had an unwavering faith in higher education and encouraged it for her son and granddaughters, Nicole and Michelle. For this reason, her granddaughters have included her name in the fund.

Russell Ramon Rudolph
John L. Saner
Donald R. Sherman
Larry M. Sur
Richard A. Wiseman

1965
James M. Fisher
William N. Lane
Dennis R. Pipala
Raman K. Raman
Clarence R. Warning
Richard B. Watson

1966
Danny N. Burgess
Marvin E. Criswell
Allan W. Crowther
Jerry R. Divine
Emmanuel Drakos
Michael R. McLamore

1967
Gregory C. Martin
Harry J. Woods Jr.
Roger W. Wright

1968
Clyde L. Anderson
John P. Elberti
Tony Girolami
Thomas F. Hintz
H. Peter Kaleta
Winston E. Kile
Fred D. MacMurdo
Donald F. Meinheit
Robert W. Nowak

1969
Jeffrey E. Anderson
Thomas A. Boroni
Harold T. Brown
Gary N. Cantrell
Earl E. Dague
Daniel W. Halpin
Jerome E. Heinz
Michael M. Kimura
Arthur J. Loebach Jr.
Gary R. Marine
Eric C. Pahlke
Michael W. Shelton

1970
William D. Berg
Gary S. Brierley
Larry A. Cooper
Robert L. Fark
Roger R. Fitting
Douglas A. Foutch
Robert B. Hunnes
Joseph M. Kaiser
William E. McCleish
Thomas W. Puddicombe
Earl J. Schroeder
James E. Schwing
Anand K. Singh
Jerome F. Thibeaux

1971
Patrick P. Brennan
Gregory D. Cargill
Peter A. Lenzini
Stephen W. Moulton
Dennis D. Niehoff
William A. Rettberg
Lee J. Scherkenbach
Francisco Silva-Tulla
L. Duane Yockey
Richard J. Zdanowicz

1972
Robert J. Andres
Thomas J. Cech
Michael Steven Franklin
John P. Fyie
Philip A. Gazda
James A. Hanlon
Kevin J. Kell
Kenneth L. Kulick
John W. Laws
Gary Marietta
George P. Meister
Daryl D. Moeller
Richard C. Reed
Joseph A. Reichle
William W. Wuellner Jr.

1973
Eugene D. Brenning
Thomas A. Broz
Martin G. Buehler
Mark E. Killion
Mark A. Koelling
Jeffry E. Lamb
Clinton C. Mudgett
Brian J. Piper
Terry J. Rosapep
Richard S. Weiss
James K. Wight
Theodore R. Williams

1974
G. Tim Bachman
George A. Braam
Robert T. Brummond
Luke Cheng
Jose R. Danon
Kent R. Gonser
Daniel A. Guill
Richard Alan Guinn
Patrick W. Healy
Robert W. Horvath
Byung R. Kim
Stephen A. Leiber
David V. May
Gary A. Rogers
Allen J. Staron
Patrick F. Wilbur

1975
David V. Bubenick
Jack S. Dybalski
Robert Rhodes Goodrich
James P. Hall
Michael T. Matzke

1976
Paul H. Boening
James T. Braselton
Lawrence K. Cunningham
Armen Der Kiureghian
Dennis W. Dreher
Paul M. Godlewski
Donald A. Jakesch
Daniel W. Katsion
Patrick Kielty
Edward B. LaBelle
Mark E. Meranda
David E. Rensing
Gregory L. Syfert
William E. Thacker
Lawrence E. Thomas
Edward J. Tunelius

1977
Andrew M. Burow
David L. Dunn
Gary W. Ehlert
Douglas W. Fiene
Michael T. McCullough
Daniel K. Moss
Charles E. Peabody
Richard G. Stratton Jr.
Takehira Takayanagi
Charles A. Zalesiak

1978
Roger W. Baugher
Darrell J. Berry
Lou Dixon
Richard C. Frankenfield
Christopher P. Jepsen
Mary L. Miller
James T. Olsta
Neil A. Parikh
Steve R. Raupp
Paul W. Terwelp
John R. Wolosick

1979
Thomas K. Connery
Robert B. Doxsee
Thomas E. Havenar
John D. Osgood
Linda G. Schub
Paul M. Street

1980
Keith W. Benting
James M. Casey
Michael S. Cheney
James K. Clinard
Michael D. Grimm
James F. Hall
Joseph D. Havel
John R. Jenkins
Jay E. Jessen
Raymond J. Keeler
Tracy K. Lundin
Carl M. Nagata
Daniel J. Rubel
Timothy J. Sheehan
Ya-Hu Shen
Steven J. Sieracki
David Ta-Wei Soong
Julie M. Spacht
Robert H. Sues
Michael P. Sullivan Jr.
Timothy P. Tappendorf
Michael J. Tarnawa
Frank R. Wengler
Francis P. Wiegand Jr.

1981
Fariborz Barzegar-Jamshidi
Richard M. Bennett
Ronald J. Boehm
Mark D. Bowman
David Daniel Davis
William L. Dritz
Neil H. Harris
John C. Hill
James P. Holloway
Gregory G. Pankow
Thomas F. Plinke
Dawn M. Szatkowski

1982
Todd J. Christopherson
Mark Steven Engelen
Paul A. Fruin
Sandor R. Greenbaum
Gregory S. Miller
James M. Nau
Donald J. Nelson
Thomas S. Palansky
Ronald J. Roman
David W. Snyder
Kevin M. Wilson
Mark S. Wylie

1983
Robert E. Bassler III
Glen R. Bowman
David L. Greifzu
Charles E. Gullakson
John M. Heinz
Siuwang Stephen Huang
Richard D. Payne
Brian E. Peck
Daniel C. Powers
Brian D. Smith
Larry C. Wesselink
Sharon L. Wood

1984
Barry E. Klepp
Colleen Elizabeth Quinn
Theodore K. Rothschild
David W. Rydeen
Amy M. Schutzbach
Steven Charles Sweeney

1985
Brian T. Aoki
Brian M. Bottomley
Michael J. Cronin
David W. DeFoliart
Thomas L. Esch
Anthony J. Pasquinelli
Wayne J. Seiler
Peter J. Stork
Michael M. Wu

1986
Thomas D. Knox
James M. LaFave
Kristina A. Lang
Andrew J. Querio
Edmund H. Tupay Jr.
Thomas J. Ziomek

1987
Hiroshi Hayashi
Timothy G. LaGrow
Brenda Bouche Mehnert
Gary U. Rundblad
Steven A. Wirtel

1988
Kevin J. Ahern
Stacey E. McNamara
David T. Nauman
Bronny Samardzija
Lisa J. Taccola
Joseph W. Vespa
Mary Peterson Yost

1989
John W. Hackett
John E. Naughton III
Clint A. Wilson
Charles D. Zapinski

1990
Matt R. Fauss
Steven P. Fessenbecker
Allen B. Gelderloos
Michael J. Jelen
Paul R. Johnson
William M. Rexroad II
Philip J. Ruff
Asma M. Ulislam

1991
Edward W. East
Curt M. Evoy
Ronald Michael Hubrich
Kai-Tak Liu
Sophie B. Sacca

1992
Daniel F. Burke
Jason E. Hedien
Sava S. Nedic
Robert K. Rockwood

1993
Kenneth Ahn
Hector Estrada
Melissa Mylin Frederiksen
David T. Lewandowski
Peter J. Prommer
Mark F. Rhodes
Michael J. Vande Wiele
John M. Willis

1994
Bahadir C. Eksioglu
Gregory B. Heckel
Jason J. Krohn
Bryan J. McDermott
Scott M. Olson
Derek C. Parish
Anthony Sak

1995
Neal L. Banerjee
Annika M. Bankston
Kevin R. Collins
James D. Mitchell
Manar O. Nashif
Richard T. Nickel
Earl C. Peterson
Christopher T. Sosnowski
Kevin W. Sutherland
Theodore F. Szyszka Jr.

1996
Nathan Evan Carrell
John A. Fry
Brian S. Heil
Fredric E. Kaehler
John A. Kerrigan
Robert Najera
Nathan F. Schwartz
Christopher M. Thomas

1997
Marc A. Eccher
Zachary D. Kates
Todd C. Missel
Jeffrey B. Naumann
Keri A. Nebes
Matthew J. Niermann
Matthew John Pregmon
Alyssa M. Smith
Ryan M. Thady
Tracy L. Willer

1998
Monte J. Ellis
Scott Thomas Forrest
John R. Hayes Jr.
Wanchalearm Kornkasem
Andrew J. Martin
Paul R. Ruscko
Jeffrey J. Wall and Krista Kolaz Wall

1999
Glenn E. Hammond
Jeffrey R. Hill
Matthew A. Larson
Joshua E. Saak

2000
William H. Dunlop
Wayne M. Helge
Edward H. Stankiewicz

2001
Michelle Karow Fischer
Eric O. Johnson
Kyle A. Kershaw
Nicole K. Lehmann
Jennifer L. Louden
Matthew Robert Pyles
Thomas E. Riordan
Mark S. Salvatore
Ryan J. Westrom

2002
Jason C. Fuehne
Alexander S. Garbe
Jensen P. John
Carlos F. Rodriguez-Jimen
Tatsuo Shimomura
Carrie E. Wagener

2003
Kyle R. Duitsman
Jun Ji
Preeti Parthasarathy
Mohd R. Saat
Becky Ann Webb
Zhanping You

2004
David M. Boddy
Andrew J. Keaschall
Krishna C. Patnam
Amanda J. Penick

2005
Douglas J. Erickson
Schaun L. Valdovinos

2006
Yuna Kim
James F. Meister
Brady K. Shelbourn

2007
Marco Octavio Cano Velazco
Kara Kemper Fitzjarrald
Michael David Gustavson
John Michael Hynes
Narutoshi Nakata
Shaoyun Sun
Janice Marie Wenzel

2008
Blake Michael Andrews
James L. Christensen
Thomas Michael Frankie
Andrew James Frierdich
Brett Christophe Zitny

2010
Claire E. Joseph

Under construction

CEE Alumnus Jon Khachaturian (BS 78) viewed the construction progress of the new Yeh Student Center in September. From left: College of Engineering Construction Projects Coordinator Greg Larson; Professor Bob Dodds; Professor and Head Amr Elnashai; Khachaturian; and Khachaturian's nephew David Thrift, a freshman in the College of Agricultural, Consumer and Environmental Sciences.

Khachaturian and his wife, Bobbi, have made a generous gift to name the auditorium in the student center. Khachaturian Hall will recognize the family's longstanding ties to the department and the contributions of Khachaturian's father, Professor Emeritus Narbey Khachaturian, who passed away in May 2009.

Below, some photos of the new addition as it has evolved.

April 15, 2010

April 27, 2010

July 22, 2010

September 17, 2010

October 27, 2010

December 2, 2010

Up on the roof

In October, a green roof was installed on the M.T. Geoffrey Yeh Student Center, currently under construction. The 4,100-square-foot space is planted with seven different varieties of plants—succulent ground covers chosen for their drought resistance and aesthetics, according to Julie Ardner from vendor Live Roof of Spring Lake, Mich. The plants require one inch of rainfall or irrigation per month. They are potted in four inches of inorganic aggregate "soil" designed to bind nutrients, protect against acid rain, suppress disease, and last indefinitely. The roof is not designed to be walked upon, except for occasional maintenance. Green roofs provide energy savings and reduce the carbon footprint of the building by replacing natural habitat lost by the construction of the building.

The Old Masters article appears on page 22.

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Urbana, Illinois 61801

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