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Visit our CEE Website
for more information, including online exclusives such as videos and research content from the growing CEE community.
Dear CEE Alumni and Friends,

As I embarked on my year as interim chair last year, I wondered what might be accomplished in such a time of transition. With transition comes the opportunity to reflect, refresh and retool. For us, this has resulted in a host of new people, programs and research and outreach initiatives as highlighted in this newsletter.

First some news about the ongoing chair search: although the search is still active, we encountered some delays. As a result, I have agreed to remain as interim chair through the Fall term. Other recruitment activities have reached a successful conclusion, and I am pleased to announce that four new faculty will join us this year. Brian Ellis (U-M Society of Fellows Postdoctoral Scholar, Assistant Professor), who arrived in July, plans to investigate water quality impairment and policy issues associated with energy extraction processes such as hydrofracking. Herek Clack (Associate Research Professor), who begins in September, brings expertise in air quality control with a research focus on control of harmful emissions from fuel combustion.

In January, mid-academic year, Branko Kerkez (Assistant Professor) and Krista Wigginton (Assistant Professor) will arrive. With a vision to create an "internet of water," a smart water grid system for effective and efficient water management at the local and regional scale, Branko will add strength to the new sustainable infrastructure systems engineering group. Krista, with an expertise in virus disinfection and methods for detection of pathogens, will pursue new ways to sense and treat emerging air- and waterborne threats. These hires position us well to address the "Strategic Directions for our Future" we recently adopted.

Several new educational programs will begin this Fall. A new Environmental Engineering degree was formally approved this year by the Board of Regents and the Presidents’ Council of the State Universities of Michigan. The US Bureau of Labor Statistics has predicted that environmental engineering will have the second highest degree of growth potential over the next 10 years among engineering disciplines, and offering this degree will expand the career opportunities for our CEE undergraduates. Similarly, with sustainable development now woven into the fabric of the ASCE code of ethics, and in recognition of the need for all engineers to incorporate sustainable engineering into their practice, a new nine-credit "Program in Sustainable Engineering" for undergraduates also will start this Fall.

For graduate students, we've launched a number of new programs. The new Tishman Construction Management Master's Degree Program, with its associated fellowship and scholars' initiatives made possible by Mr. John Tishman’s generous gift, begins this year. Likewise, from our new Infrastructure Systems group, a MSE concentration in Infrastructure Systems Engineering will be offered for the first time. And, as part of a dual degree program with the School of Natural Resources and Environment, a new Specialization in Sustainable Energy Systems also now is available to our graduate students.

Among a variety of new outreach initiatives involving faculty, staff and students this year, several are highlighted in the following pages: NeW in CEE (Network for Women in Civil and Environmental Engineering), a new U-M chapter of Bridges to Prosperity and the Excellence in Higher Education for Liberian Development (EHELD) to help rebuild Liberian universities’ engineering curricula. As we strive to make a difference, these activities bring to the forefront ways in which CEE at U-M can help to improve diversity and equity for people around the world.

In closing, on behalf of the Department, I thank you for your continuing support. It has been an honor and privilege serving the Department as interim chair. I welcome your input—please stay in touch!

Regards,

Kim F. Hayes, Ph.D.
CEE Professor and Interim Chair
cee-chair@umich.edu (734) 764-8495

CHAIR’S MESSAGE
FACULTY NEWS

NEW FACULTY

KRISTA WIGGINTON
DETECTING AND TREATING DRINKING WATER CONTAMINANTS

THE CIVIL AND Environmental Engineering department welcomes Krista Wigginton to the faculty. She begins her appointment as assistant professor in January 2013.

Much of Wigginton's research has focused on the fate of chemical and microbial pollutants in drinking water and wastewater treatment.

"With the worldwide population increase and decreasing water supplies, the threat of contaminants from human waste, such as pathogens and pharmaceuticals, entering drinking water sources is dramatically increased," explained Wigginton.

To address the risk, Wigginton’s research takes a three-pronged approach. First, she works to improve analytical methods in order to detect chemical and microbial contaminants at the low concentrations that can cause harm to humans and the environment. Her research also explores how these chemical and microbiological pollutants break down—both in the natural environment as well as during engineered treatment processes. Third, her work focuses on ways to improve existing treatment processes and on developing new technologies to address the trace organic contaminants and emerging pathogens in our wastewater and drinking water.

Wigginton earned her bachelor’s degree in professional chemistry from University of Idaho and her master’s degree and PhD in environmental engineering from Virginia Tech. She held a National Science Foundation International Postdoctoral Fellowship in Lausanne, Switzerland, for two years, where she worked to understand how viruses in drinking water and wastewater are disinfected during treatment. Currently she serves as assistant professor in the civil and environmental engineering department at the University of Maryland.

Wigginton is excited to join the University of Michigan CEE faculty and plans to initiate collaborations across the Department as well as university-wide. She expects to teach undergraduate courses related to environmental chemistry, public health and drinking water treatment. At the graduate level, she plans to develop courses related to her research.

"I'm looking forward to developing a new pathogen laboratory and a research team to get started on some exciting new projects," she said. Those initial projects will involve developing field-based detection models for discriminating among virus strains; examining biomolecule pollutant degradation in wastewater treatment and sunlit waters; and optimizing advanced oxidation processes in drinking water.

Several factors motivated Wigginton to come to Ann Arbor. "Not only do the Department and University have numerous unique resources, such as the environmental engineering group’s shared analytical laboratory, the U-M Medical School and impressive university user facilities; but U-M CEE is a leader in environmental engineering. The opportunity to collaborate with the faculty here was a huge draw for me, as was the opportunity to recruit top graduate students."
IN JANUARY OF 2013, the Civil and Environmental Engineering department will welcome Branko Kerkez to the faculty as assistant professor. Kerkez works on problems related to the emerging complexity of civilian systems. His research focuses more specifically on the deployment of large-scale wireless sensor networks for hydrologic monitoring and integrating resulting data into systems-based models. Over the past four years, he has been collaborating on the deployment of one of the world’s largest environmental sensor networks in the mountains of California.

“California is struggling to meet the water needs of its growing population,” he explained. The state’s water supply relies heavily on snowpack in the Sierra Nevada, but currently there are no existing tools, techniques or models to conduct reliable, real-time water forecasts in the western part of the country.

Kerkez’s research has yielded positive results, including data at previously unseen temporal and spatial resolutions. Now he is collaborating on expanding the work to the American River basin, an area of more than 5,000 square miles. He hopes ultimately to build the “Internet of Water,” an intelligent cyber-physical system that connects water bodies with physical infrastructure and data-driven models atop a novel communications backbone.

Using a system-level approach, Kerkez is working to conceptualize the man-made and natural components of water networks while tying them together through advances in sensing, communication, machine learning and control theory. In addition to significant cost savings, intelligent water grids have vast implications, including accurate predictions of water availability and control of its release; irrigation systems that adjust to weather patterns and drought conditions; and ongoing sensing to mitigate malicious attacks on water infrastructure.

Kerkez earned his bachelor’s degree in civil engineering from the University of Florida. He earned dual master’s degrees in civil and environmental engineering and electrical engineering and computer science from the University of California, Berkeley. He has developed a number of successful iPhone apps that offer real-time air quality readings and co-founded TransitR, an application development company that provides real-time public transit information to mobile phone users.

Kerkez’s work is highly interdisciplinary, and he plans to apply that approach both to his research and teaching at U-M. He looks forward to collaborating with fellow faculty and students within the CEE department and to helping develop the new Infrastructures Systems curriculum (see related story on page 29). “I’m excited about the opportunity to instill a new generation of students with the multidisciplinary tools necessary to become conversant with our technologically driven society,” he said.
THE CIVIL AND Environmental Engineering department is pleased to welcome Herek Clack to the faculty. Clack joined the department in early September 2012 as associate research professor and lecturer. He previously was a tenured associate professor of mechanical and aerospace engineering at Illinois Institute of Technology in Chicago.

Clack earned his bachelor’s degree in aerospace engineering from Massachusetts Institute of Technology and master’s and doctoral degrees in mechanical engineering from University of California, Berkeley. His research interests have centered on the control of toxic pollutants from combustion, specifically on the emission of mercury from the combustion of coal for electric power generation. Aside from natural events such as volcanic eruptions, coal-fired power plants currently are the number one source of mercury emission into the atmosphere. To control emissions, a powdered activated carbon, or sorbent, is injected into the flue gas, but some sorbents escape into the environment and can have potentially climate-changing effects. Clack’s research assesses the degree to which this occurs and aims to devise ways to decouple the two effects. In the fall he will teach an undergraduate course in thermodynamics, Energy and Environment (CEE 230), and is helping to develop a new undergraduate laboratory course for the new undergraduate degree in environmental engineering.

"Joining the CEE department provides a tremendous opportunity for broad collaborations and for me to work with students who have similar public health motivations," said Clack.

THE CIVIL AND Environmental Engineering department welcomes alumnus Brian Ellis to the faculty. Ellis earned bachelor’s degrees in Environmental Geosciences and Economics from U-M and a master’s and PhD from Princeton University. He returned to U-M in July 2012 to continue post-doctoral research and, in September, was appointed assistant professor and a Michigan Society of Fellows Postdoctoral Scholar.

Ellis’ research focus is water-rock interactions, and his work centers on developing engineering solutions that enable society to continue to use fossil fuels in a safe and sustainable way. At U-M he plans to study the environmental risks of hydraulic fracturing of shale gas formations, commonly referred to as “fracking.” He is most interested in understanding the complex geochemical reactions that take place in the subsurface during the development of these new energy strategies.

The recipient of a National Science Foundation Science, Engineering and Education for Sustainability (SEES) fellowship, Ellis is also examining policy implications related to energy and the environment. He plans to take a holistic approach to evaluating risks, rewards and potential remediation strategies associated with the development of shale gas reservoirs. "We need to better understand what happens after we inject large volumes of fluid underground and use this knowledge to help develop best practices for the safe utilization of our energy resources," he said.
WHEN IT COMES to job site safety, construction industry statistics do not shine. The number of fatalities is almost three times higher, on average, than for all other industries, and researchers over the years have found that 80% to 90% of fatalities result from unsafe worker behavior. CEE Professor SangHyun Lee is working to improve those statistics—and save lives.

"Since most construction accidents are related to human behavior, if we can better understand what individuals are doing when they work, we have a real opportunity to improve safety issues in construction," Lee said.

Previous research has shown that observing, analyzing and modifying unsafe work behaviors can in fact prevent accidents and reduce injury rates, but doing that successfully poses several challenges. "We still face two big gaps in behavior-based safety approaches," explained Lee: "The industry has been struggling to find effective methods to monitor behavior, and we still lack an automated way to identify unsafe actions."

Conventional monitoring methods have included surveying workers, conducting interviews and field observation. For a number of reasons, however, including subjectivity, bias and reluctance of workers to report on their own and colleagues' potentially dangerous behaviors, these methods haven't proven adequately accurate or reliable.

Lee is taking a novel tack: automated behavior monitoring using a computer-vision approach and ordinary network surveillance cameras already in common use on construction sites. To protect worker privacy, Lee has been developing algorithms to extract motion data related to the workers' skeletons. He also uses the motion data sets to develop models able to capture high-dimensional and non-linear motions in order to identify unsafe behaviors. These include reaching too far to the side while climbing up a ladder, not maintaining at least three points of contact with a ladder, or skipping rungs while climbing or descending. The models even can predict "missing" motions that are occluded by objects, a
common problem in construction site video monitoring.

The techniques Lee is utilizing have the ability both to analyze motion and take the context—such as location and related objects—into account, all without disturbing or interrupting workers.

“Once we have the data from the skeletons, we can also conduct ergonomic and biomechanical analyses, such as which motions are repetitive [and likely to cause injury over time] or how much force is exerted on each part of the body while lifting heavy objects,” explained Lee.

An automated report of unsafe movements can be generated from Lee’s system, and supervisors can share the information gleaned with workers at a chosen interval—perhaps in real-time, daily or weekly—so they can modify behaviors.

It’s a daunting project, Lee admits. “It has great potential, but at the same time, it presents challenges. Unlike a manufacturing plant, a construction site is not a controlled environment—lighting varies outdoors; the site may not be well-organized; and it can change from day to day.”

Still, preliminary results have validated Lee’s methods. He currently is working with Turner Construction Company on field testing. The initial site work will focus mainly on identifying and preventing falls from ladders, one of the leading causes of construction fatalities. If successful, he will deploy the system to other sites and to identify other types of injuries.

Ultimately, Lee’s objective is to improve workers’ safety and longevity in the workplace. “Construction is different from other industries in that 40% to 60% of costs typically are related to labor. Construction is difficult to fully automate; we need people. My goal with this research is to understand how human beings behave on-site so I can help them work longer in the industry and stay safe and healthy.”

Two doctoral students, SangUk Han and JoonOh Seo, are working with Lee on construction site behavior monitoring. The National Science Foundation and The Center for Construction Research and Training are supporting Lee’s research.
FACULTY NEWS

FACULTY HONORS

ALINE COTEL
2012 University Undergraduate Teaching Award

AVERY DEMOND
Raymond J. and Monica E. Schultz Outreach and Diversity Award

SHERIF EL-TAWIL
2012 Moisseiff Award by the American Society of Civil Engineers for the paper entitled “Progressive Collapse Resistance of Steel-Concrete Composite Floors.” Co-authored by his former postdoc, Yasser Alashker, now associate professor and head of the CEE department at King Khalid University in Saudi Arabia, and Dr. Fahim Sadek, Structures Group Leader at NIST.

2012 ASCE State-of-the-Art Engineering Award for the paper entitled “Seismic Design of Hybrid Coupled Wall Systems: State of the Art.” Co-authored by Kent A. Harries, PhD, PE, M.ASCE; Patrick J. Fortney, PhD, M.ASCE; Bahram M. Shahrooz, PhD, M.ASCE; and Yahya Kurama, PhD, M.ASCE. Published in the July 2010 issue of Journal of Structural Engineering.

WILL HANSEN
Delmar L. Bloom Distinguished Service Award

ANN JEFFERS
One of the 10 “New Faces of Civil Engineering in 2012” selected by ASCE. As stated in the February issue of ASCE News, those selected are “honored for their early success as engineers and for their willingness to use their expertise for the betterment of their profession and their communities.”

VINEET KAMAT
Named a member of the Board of Governors of the ASCE Construction Institute

Recipient of the 2012 Daniel W. Halpin Award for Scholarship in Construction for “demonstrating outstanding scholarship in construction engineering through pioneering research and education in construction visualization.”

SANGHYUN LEE
Stephen G. Revay Award for the paper entitled “Understanding Construction Workforce Absenteeism in Industrial Construction.” Co-authored by Mahdi Salehi Sichani (a former master’s student) and Professor Aminah Robinson Fayek at the University of Alberta. Published in the Canadian Journal of Civil Engineering, Volume 38, No. 8, pp. 849-858.

Best paper award at the 2013 ASCE International Conference on Computing in Civil Engineering for the paper entitled “A Machine-Learning Classification Approach to Automatic Detection of Workers’ Actions for Behavior-based Safety Analysis.”

NANCY LOVE
Gordon Maskew Fair Distinguished Engineering Educator Award, Water Environment Federation

JERRY LYNCH
ASCE Engineering Mechanics Institute (EMI) Leonardo da Vinci award. He was chosen “for his outstanding and novel contributions to civil engineering in the multidisciplinary research field of wireless embedded sensing systems and associated data analysis software needed to implement Structural Health Monitoring methodologies.”

JASON MCCORMICK
2012 Excellence in CEE Award

RADOSLAW MICHALOWSKI
Keynote lecture entitled “Plastic Anisotropy of Fiber-Reinforced Composites with Frictional Matrix” at the International Symposium on Plasticity 2012, held in San Juan, Puerto Rico

ANTOINE NAAMAN
2011 Distinguished Educator Award from the Precast/Prestressed Concrete Institute

Keynote lecture entitled “Evolution in Ferrocement and Thin Reinforced Cementitious Composites” at The New Boundaries of Structural Concrete conference in Ancona, Italy

Keynote lecture entitled “Half a Century of Progress Leading to Ultra-High Performance Fiber Reinforced Concrete” at the 2nd RILEM International Conference on Strain Hardening Cementitious Composites in Rio de Janeiro, Brazil

TERESE OLSON
College of Engineering Service Excellence Award

VALERIY IVANOY
NSF Career Award (Hydrological Sciences Program)
FOR NEARLY 40 YEARS, CEE Professor James K. Wight has been an active member of the American Concrete Institute (ACI). In 2012-2013, Wight will serve as president of ACI, acting as chairman of the Executive Committee and the Board of Direction.

Wight specializes in structural engineering and is recognized around the world for his work in earthquake-resistant design of concrete structures. He was named a fellow of the ACI in 1984, has served on numerous influential committees and previously served six years as chair of the ACI Structural Concrete Building Code committee.

As President, Wight will guide the financial and long-term planning decisions for ACI and travel extensively on behalf of the Institute. During trips to Europe and the Far East, he will meet with concrete organizations similar to ACI to share technical knowledge on the best use of concrete in buildings and various civil infrastructure components. Wight hopes to use his background as an educator to develop and broadly disseminate ACI educational products and opportunities to members. He also will write a column for the Institute’s monthly magazine, Concrete International.

"I am pleased that the people I have worked with have confidence in my ability to successfully represent this international organization, which has a brand that is recognized worldwide," said Wight. He is the first U-M professor to hold this prestigious ACI office.
Although Liberia emerged from two decades of war in 2003 and held peaceful, democratic elections in 2005 and most recently in 2011, the country still faces a number of daunting challenges. Poverty levels remain high despite a rising gross domestic product, and a critical need exists for improved education in order to support and sustain economic development efforts.

CEE ASSOCIATE PROFESSOR Aline Cotél is working to help the country, founded by freed black slaves from the United States, meet those needs. She’s part of an innovative and collaborative effort: Excellence in Higher Education for Liberian Development, or EHELD. With funding from the U.S. Agency for International Development, Cotél and colleagues are helping develop new engineering and agricultural curricula and increasing access to higher education for girls, war veterans and other underserved students.

The EHELD consortium consists of representatives from U-M, Rutgers University, North Carolina State University and Kwame Nkrumah University of Science and Technology in Ghana. Led by Research Triangle Institute, the team plans to develop a Center of Excellence in Engineering at the University of Liberia near Monrovia and a Center of Excellence in Agriculture at Cuttington University.

Cotel first traveled to Liberia in...
April 2011, where she and other members of the group met with President Ellen Johnson Sirleaf, visited the two universities and saw the situation at hand: outdated curricula, buildings in need of rehabilitation and few functioning laboratories. Tuition costs, although inexpensive by U.S. standards, are out of reach for many students; those who enroll often can’t afford to complete their studies, or they lack the requisite knowledge to succeed in their courses. As in many countries, female students in science and engineering enroll and graduate at a fraction of the rate of males.

As a result, the Women in Science and Engineering program at U-M is also involved in order to help develop summer programs geared toward recruiting girls. This summer, EHELD organized math and science camp-style sessions for high-school students with the help of Peace Corps Volunteers already in Liberia.

"The idea is to help them feel like they can do this, to give them the tools they need to apply to and succeed at the university level," said Cotel. Faculty and graduate students from U-M traveled to Liberia to teach the camp programs.

Also as part of the EHELD initiative, male and female students accepted into university programs can take advantage of preparatory math and science "Summer Start" courses in anticipation of their undergraduate studies. CEE graduate student Sara Rimer taught the courses to 70 incoming Liberian students in summer 2011.

At the time CEE News went to press, Cotel and CEE Professor Steven Wright were preparing for a month-long return trip to Liberia with 11 U-M students as part of the University’s Global Intercultural Experience for Undergraduates 2012 program. Cotel and Wright will teach project-based science and engineering courses to both the U-M students and 20 of the second-year Liberian Summer Start participants.

While in Liberia, Cotel also will work on developing a curriculum for civil and environmental engineering as well as rebuilding lab facilities and designing experiments for University of Liberia students. "The way you really learn engineering is hands-on. It’s important for students to have that kind of experience when they’re learning fluid mechanics or hydraulics," said Cotel. "If, by the end of the project, we can have nice lab set-ups and simple but meaningful experiments, I would feel really good about that."

The $18 million EHELD program runs through 2016.
BRIDGES TO PROSPERITY: NEW STUDENT CHAPTER HELPS CEMENT OPPORTUNITY

For communities in the developing world, a roaring river or deep gorge can mean the difference between isolation and connection, sickness and health, illiteracy and education. A new U-M chapter of Bridges to Prosperity (B2P), founded by CEE Professor Ann Jeffers, is working to improve pedestrian infrastructure in remote locales to enable access to healthcare, education and economic opportunities.

WHEN JEFFERS FIRST learned about Bridges to Prosperity, she thought it would be a perfect fit for students within the CEE department as well as the College and University. She had a specific first project in mind, too: a colleague in Anthropology had recently asked her to review plans for a footbridge in Mali. The bridge is needed so that villagers can reach their growing fields and a market during the rainy season, when flooding makes them otherwise inaccessible.

Jeffers organized an informational meeting about B2P in late 2011 and was "amazed at the level of excitement" among the 40-plus students who attended—not only about the Mali bridge project but also undertaking the design and construction of similar footbridges all over the world.

"I’d been looking for a way to use my civil engineering skills to help others," said Lizzie Grobbel, chief designer. "I felt like a lot of my education revolved around learning civil engineering concepts but not as much on applying them. When I read about B2P, it jumped out as an opportunity to apply the skills I’ve learned to truly make a difference in people’s lives."

Since that first meeting, students have been working on the technical design of the footbridge in Mali, including expanding it from its original one-meter deck width to 1.5 meters to accommodate villagers carrying large baskets of vegetables and other goods to and from the market. Students also have been conducting cost estimations, devising safety plans and fundraising to cover construction material and travel costs. Both the CEE department and the College have made generous contributions in support of B2P efforts.

The young chapter has gained momentum and a lot of experience, said Jeffers, who made a solo visit to Mali in spring 2012 to meet with villagers to identify the exact building site and take measurements. But political problems and a travel advisory have prevented the student team from making the journey to begin construction.

In the meantime, the chapter is working with the parent B2P organization and investigating other locations in need, including potential sites in Central America. "We were all disappointed when [the political issues arose] this spring. None of us expected it and it slowed our progress, but it’s been a good learning experience nevertheless," Jeffers said.

"We’re still extremely excited to continue to hone our design and project management skills and eventually travel to a site to physically construct a bridge," added Grobbel. "It will be thrilling to make our vision a reality."

VISIT UMICH.EDU/~UMBRIDGE/ TO LEARN MORE ABOUT THE U-M CHAPTER OR EMAIL B2P-OFFICERS@UMICH.EDU.
CLEAN WATER IN RURAL BRAZIL: PANTANAL PARTNERSHIP WINS SECOND U-M DAVIS FOUNDATION PROJECT FOR PEACE AWARD

SCHOOLCHILDREN IN THE Brazilian Pantanal now have safe, clean water to drink, thanks to the vision of U-M CEE students—and a $10,000 Davis Foundation Project for Peace award. The U-M team is part of the Pantanal Partnership, a student-led organization co-founded in 2009 by Julie Bateman (BSE CE ’12; BS ’12) that works to improve access to education, healthcare and sustainable technologies in underserved communities in the Brazilian Pantanal. Designated a UNESCO world heritage site, the Pantanal spans three countries and is the world’s largest wetland.

This summer, members of the U-M team—including three from CEE—lived among local students and led the construction of two biosand filters at each school. During daily lessons, U-M students gave talks in Portuguese about the importance of clean drinking water and waterborne diseases, and they taught the Brazilian students how to build their own filters.

“We worked at the students’ pace,” said Gregory Ewing, Pantanal Partnership president. “The shared building experience was a great way to engage and get to know the students and the community as well as to share information on how you can get clean water without electricity or chemicals.”

The U-M team also built a combined water and internet tower at its headquarters in the area, the Pantanal Center for Education and Research (PCER). The PCER was designed and built by Pantanal Partnership in 2010, also with a Davis Foundation Project for Peace award.

Students will return in summer 2013 to continue their work. The dissemination of information and new technologies throughout the region is core to the Pantanal Partnership’s mission. "At first we didn’t know exactly what that process would look like," said Ewing, "but we naturally developed a format of developing technology at PCER and, once the systems work well, spreading them out to the community at large." ■

FOR MORE INFORMATION ON THE PANTANAL PARTNERSHIP, INCLUDING HOW TO DONATE AND/OR VOLUNTEER, VISIT PANTANALCER.ORG.

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STUDENT NEWS

STUDENT HONORS

SEUNGJUN AHN
3rd Place for Best PhD Poster Award at the 2012 ASCE Construction Research Congress (CRC)
Advisor: Sanghyun Lee

YUQIANG BI
Richard and Eleanor Towner Prize for Distinguished Academic Achievement
Advisor: Kim Hayes

JENNIFER BUISON
2012-13 U.S. Student Fulbright award

EDWARD BYRNE
2012-13 U.S. Student Fulbright award

ABHISHEK CHATTERJEE
2012 NOAA Climate and Global Change Postdoctoral Fellowship Award
Advisor: Anna Michalak

JESETH DELGADO VELA
NSF Fellowship
Advisor: Nancy Love

DEVKI DESAI
NSF Graduate Fellowship
Advisors: Jerry Lynch and Victor Li

ELIZABETH GROBBEL
Henry Ford II Prize

LINGLI HE
Rackham International Student Fellowship
Advisors: Valeriy Ivanov and Nikolaos Katopodes

LAUREN HICKEY
AISC/GLFEA Fellowship
Advisor: Ann Jeffers

YUNGHEE HONG
Commissioned as an officer in the Air Force (Second Lieutenant)

NADINE KOTLARZ
Michigan Water Environment Association Scholarship
Advisors: Kim Hayes and Lutgarde Raskin

HONGHAO LI
1st place in the CEE Department at the Engineering Graduate Symposium held on November 11
Advisor: Sherif El-Tawil

DARIN MCLESKEY
Distinguished Academic Achievement Award

JENAHVIVE MORGAN
MSU Graduate Academic Conference oral presentation winner
Advisor: Aline Cotel
SRINIVASA NADUKURU
Rackham Predoctoral Fellowship
Advisor: Radoslaw Michalowski

COURTNEY PECKENS
Honorable mention for the Ford Foundation Fellowship Program 2012 Dissertation Competition
Anna Olcott Smith Award
Advisor: Jerry Lynch

RAVI RANADE
Rackham Predoctoral Fellowship
Advisor: Victor Li

SARA RIMER
2nd place in the CEE department at the Engineering Graduate Symposium
NSF Graduate Fellowship
Advisor: Nikolaos Katopodes

ADAM SMITH
2011 winner of a student whitepaper competition sponsored by the Groundwater Action Group (GWAG) at Geosyntec Consultants
Advisors: Lutgarde Raskin and Steve Skerlos

AMBER SPEARS
Distinguished Leadership Award
Marian Sarah Parker Prize
Martin Luther King Jr. Spirit Award

ANDREA TRESE
2012 National Security Education Program (NSEP) David L. Boren Fellowship
2012-13 U.S. Student Fulbright award
Advisors: Kim Hayes and Lutgarde Raskin

APRIL WARNOCK
Rackham Predoctoral Fellowship
Advisor: Nikolaos Katopodes

QIAN (MAPLE) ZHANG
Rackham International Student Fellowship
Advisor: Victor Li

RECIPIENTS NOT PICTURED

KIMBERLY LAMOTE
2011 Richard D. Woods Award for excellence and leadership in geotechnical engineering

SARAH ROMER
Martin Luther King Jr. Spirit Award

KWAME SEARCY
Martin Luther King Jr. Spirit Award
OVER THE PAST year the University of Michigan’s ASCE chapter has continued to be one of the most active student groups on North Campus. Numerous events took place this year, starting with the annual Faculty vs. Student Softball Game in September. The faculty put up a decent fight. However, the students scored 14 points and an additional three style points for grilling tasty hot dogs and hamburgers, solidifying a faculty defeat. Other social events included Pumpkin Carving, Skate Night at Yost Arena and the Student Appreciation Pancake Breakfast (tasty flapjacks flipped by our fabulous faculty and staff!).

Guest speaker Andrew Hermann, president of American Society of Civil Engineers, presented at one of our professional development speaker meetings. His talk on the Report Card for America’s Infrastructure was a major highlight of our activities this year and a very well-attended event. Another great event was our annual ASCE Chicago Trip (pictured below on right), which attracted a group of 22 students who visited the Chicago Lakeside Development site, enjoyed a networking dinner with alumni, toured the Skydeck of the Willis Tower, and attended a lecture on the mass transit system of the Windy City. Also, the ASCE Career Fair was a big hit for students and companies alike. The officers were also busy developing a new initiative this year: Leadership in Energy and Environmental Design (LEED) mini-courses that focus on prepping for the Green Associate (GA) and Advanced Placement (AP) exams. Given their success, ASCE will be promoting the courses again in the coming year.

Community service always has been a great strength of ASCE. We held a hard-fought Student vs. Faculty Food Drive during November and December. The students collected the most food by weight and won the Pork and Beans trophy for their efforts. We also continued our strong relationship with the Detroit Area Pre-College Engineering Program with a successful spring event. Finally, around 12 ASCE and CEEFA volunteers worked with Habitat for Humanity in Ypsilanti on the renovation of a local home.

In the coming year, our goals include hosting another Habitat for Humanity event and attracting even more civil and environmental engineering volunteers, incorporating a wider variety of companies at the ASCE Career Fair in the fall and, finally, increasing involvement among younger underclassmen in the Department. We have a great group of new officers who are ready for the challenge. See you in the fall!

For information on ASCE and how to support our efforts, please contact the officers at asce-officers@umich.edu.
GREENPEAS ORGANIZED SEVERAL successful social and outreach events this past year. New graduate students had an opportunity to meet and mingle with each other, current students, faculty and staff at happy hours organized in the fall semester. In addition to social events, GrEENPEAS participated in both the fall and spring Huron River Roundup events (pictured right), organized by the Huron River Watershed Council. This allowed students to interact with the Ann Arbor community and assist in monitoring the health of the Huron River. In the spring semester, GrEENPEAS teamed up with EERI and the Geo-Institute student groups to host the annual CEE Technical Symposium, a departmental symposium for students to present their work to each other and to faculty. We look forward to organizing more events next year and finding new and innovative ways to build departmental community.

If you have any questions or are interested in supporting our efforts or getting involved, please contact the officers at greenpeas@umich.edu.
THE GEO-INSTITUTE (G-I) GRADUATE STUDENT ORGANIZATION
By Yao Zhang, President

The GEO-INSTITUTE Graduate Student Organization (G-I GSO) had a very successful third year. In October, the G-I hosted a picnic in Gallup Park. G-I members and geotechnical faculty had a wonderful event, enjoying the beautiful sunshine, delicious barbecue and exciting volleyball games. During the winter semester, the G-I co-hosted two speakers for the Geotechnical Seminar Series. Professor Jorge Zornberg from University of Texas, Austin, presented a seminar on "The Unsaturated Soil Covers at the Rocky Mountain Arsenal: Important Lessons Learned from their Monitored Performance." We also invited Professor Kenneth Stokoe to deliver the Kari Terzaghi Distinguished Lecture. Professor Stokoe spoke about "The Increasing Role of Seismic Measurements in Geotechnical Engineering." In March, the G-I also collaborated with EERI and GrEENPEAS to jointly host the fifth annual CEE Technical Symposium. During this event, graduate students throughout the Department presented their research on a broad array of topics. We are pleased with the progress that our third year has brought and look forward to the upcoming year.

The G-I is a specialty membership organization of the American Society of Civil Engineers focused on the geo-industry, with the purpose of enhancing the education and personal experience of students in the geotechnical community at U-M. The G-I works to provide geotechnical graduate students with professional development and networking opportunities. Pictured above L-R: Athina Gkrizi, secretary; Yao Zhang, president; Hyon-Sohk Ohm, social chair; Clinton Carlson, vice-president; Xunchang Fei, treasurer and Professor Adda Athanasopoulos-Zekkos.

We will soon begin planning events for the coming fall semester. If you have any questions about the G-I or are interested in supporting our efforts, please contact the officers at gi-officers@umich.edu or visit www.umich.edu/~geotech.

EARTHQUAKE ENGINEERING RESEARCH INSTITUTE (EERI) STUDENT CHAPTER
By Clinton Carlson, President

The U-M EERI student chapter organized four lectures this past year, with two in conjunction with Geo-Institute. Topics covered "Dynamics of Urban Earthquake Risk," "A New Paradigm for Economical and Reliable Steel Building Design in Moderate Seismic Regions," "Seismic Performance of Earth Slopes," and "The Increasing Role of Seismic Measurements in Geotechnical Engineering."

Along with GrEENPEAS and Geo-Institute, EERI co-organized this year’s CEE Tech Symposium where graduate students presented their research on a variety of topics. EERI members also participated in community outreach to promote math and science at Bates Elementary in Dexter. Second grade students used software to build and test their own bridges.

Professor Jason McCormick serves as faculty advisor. New officers include: Clinton Carlson, president; Julie Fogarty, vice president; Sean O’Connor, treasurer; and Adam Lobbestael, secretary. Outgoing officers are: Xiaohu Fan (president) and Alex DaCosta (secretary). Pictured above, officers at one of the lectures (L-R: Xiaohu Fan, Professor Larry Fahnestock, Julie Fogarty, Alex DaCosta). For next year, EERI plans to continue inviting distinguished professors for guest lectures, co-organizing the CEE Tech Symposium and participating in community outreach.

Our chapter welcomes undergraduate and graduate students to learn about and share new research. For information, email eeri-officers@umich.edu.
ANALYSIS

WHEN JEFF MCMAHON (BSE CE ’12) stands before a crowd, baton in hand, he is acutely aware that he represents over 300 musicians and 100 years of U-M tradition. In his second year as drum major for the Michigan Marching Band (MMB), Jeff says the role has given him a “home” on campus. “With so much diversity in the band, I’m almost always sharing a class with a band mate. Early in my studies this gave me a way to feel comfortable in my classes and have friends to study with. Though time consuming, the MMB has given me an experience I could not have had any other way at Michigan.”

The time commitment—at least 20 hours each week leading fellow members so they’re game-ready—has forced him to hone his time management skills and has taught him lessons he’s applied as a student in CEE. “I’ve learned the importance of being able to work both individually and as part of a team. As an engineering student I’ve learned to work hard on my own, while being able to bring my ideas to the table in a team setting. In order to thrive, both responsibilities take hard work, dedication and strong attention to detail.”

During his last semester this fall, Jeff plans to explore career options and finalize post-college plans, which he hopes will utilize both his passion for working with people and his technical skills. And the music won’t end when he graduates, since he plans to participate in the U-M Alumni Concert Band. “Playing music brings me so much peace and happiness. I’ll definitely continue [playing] even if it won’t be for 110,000 screaming fans in The Big House.”

AS CAPTAIN OF the U-M Women’s Ice Hockey Team, Kristina Vaclavek proves that hard work and determination are a winning combination. Hockey has been a passion since childhood, when she played in her family’s Westland, Michigan, driveway with her dad and sister, using only a PVC net and some wooden sticks.

Over the years, Kristina has learned there’s more to a team’s success than a perfect season. As captain, she strives to keep teammates motivated and focused. “I like to lead by example and not so much [with] speeches between periods. Being a good role model to younger players and teaching them about Michigan hockey is the best part.”

Leading on the ice has helped Kristina’s confidence grow off the ice as well, although it can be a challenge to balance demands: hockey, coursework and a new executive board position on the U-M Club Sports Council. But Kristina loves each of her roles and is fiercely determined to excel. When she graduates, she hopes to combine her passion for history, architecture and civil engineering and is still deciding whether to pursue a job or graduate degree. She is sure about one thing, though: “The more effort you put in, the more reward you will obtain, whether it’s goals, assists, knowledge or grades.”
FACULTY AND STUDENTS in the CEE department are taking steps to reverse a long-standing and counterproductive trend: Nationwide, women are underrepresented in the civil engineering discipline. At the university level, female enrollment is considerably lower in the natural and applied sciences overall, and enrollment has not increased in the past 25 years.

Now a new departmental organization, The Network for Women in Civil and Environmental Engineering (NeW in CEE), has launched with a mission for change. Funded through a two-year grant from the Rackham Graduate School, NeW in CEE can boast a very productive first year.

A core team of faculty from across the CEE department spearheaded the founding and launch of NeW in CEE. Professor Adda Athanasopoulos-Zekkos and Professor Dimitrios Zekkos (Geotechnical Engineering) lead the new group, designed to improve women’s university experience, increase graduate school enrollment in civil engineering and help women become leaders in their profession. Not only does the organization bring awareness to the many educational and professional opportunities available; it also provides a road map of sorts, so female students can identify paths to follow in order to achieve their goals. The group’s leadership team also includes professors SangHyun Lee (Construction Engineering and Management); Gustavo Parra-Montesinos (Structural Engineering); and Avery Demond (Hydraulics and Environmental Engineering).

"Just telling women they can become leaders is not enough," said Athanasopoulos-Zekkos. "Advising and mentorship is important, too." The organization therefore places a strong emphasis on providing role models, mentors and research opportunities. NeW in CEE includes students, faculty and alumni to provide a full spectrum of resources as well as a global perspective.

To engage students at every level and ensure the longevity and sustainability of NeW in CEE, student leaders help advance the mission and implement programs. Julie Tibbitts (BSE CE ’11; MSE ’12) and Lauren Hickey (BSE CE ’11; MSE ’12) provided both leadership and enthusiasm during the group’s first year. The two were instrumental in implementing a mentorship program, mock interview sessions with alumni and a well-received lecture series.

Through brainstorming sessions and evaluations, Tibbitts and Hickey identified programs that would be most beneficial to and appreciated by students. "They were passionate about it and took the initiative," said Zekkos. Both recent graduates will remain active as mentors.

The organization’s first summer research program resulted in several fruitful partnerships, many of them partially funded by NeW in CEE. "We’re making it easier for industry professionals and researchers to engage women in the Department," said Zekkos. "In return, the women receive a fulfilling and rewarding summer experience that is related to their field and helps them grow professionally and improve their CV."

In fall 2012, NeW in CEE will introduce an awards program that honors female students and will
actively reach out to alumni to solicit new mentors, internship opportunities and donors to help fund the organization beyond its two-year grant.

"Our mission is to promote excellence in women in civil engineering and attract women to the program," said Athanasopoulos-Zekkos. "If we achieve that, these students will come out of school with the experiences and qualifications that make them very strong candidates, whether they pursue careers in academia or industry." ■

"We're making it easier for industry professionals and researchers to engage women in the Department. In return, the women receive a fulfilling and rewarding summer experience that is related to their field and helps them grow professionally and improve their CV."

IF YOU ARE INTERESTED IN LEARNING MORE ABOUT NEW IN CEE AND UPCOMING EVENTS, ACTING AS A MENTOR OR MAKING A DONATION, PLEASE CONTACT PROFESSOR ADDA ATHANASOPOULOS-ZEKKOS AT ADDAZEKK@UMICH.EDU.

NEW IN CEE’S FIRST ANNUAL REPORT IS AVAILABLE HERE: CEE.UMICH.EDU/NODE/667

ALUMNI ARE ENCOURAGED TO VISIT THE NEW IN CEE LINKEDIN GROUP LINKEDIN.COM/GROUPS?ID=4170750&MOSTPOPULAR =TRK=TYAH TO CREATE A PROFILE.
Dear CEE Alumni, Students and Friends:

I am delighted to have this forum to provide a roadmap of where Civil and Environmental Engineering Friends Association (CEEFA) is headed this year, its 33rd. Our organization, or, more correctly, your organization was founded as a social, service and benevolent association to provide a vehicle for alumni to

“... promote a close working relationship between civil engineering alumni and friends and the Department of Civil and Environmental Engineering, and to cooperate with the University in its service to the public.”

Over the decades, CEEFA has evolved from what was primarily an alumni body to a more inclusive organization whose primary focus is on the friends of CEE, be they alumni, faculty, staff, students, student’s families, prospective students or any constituents within the larger community. Of the belief that “many hands make light work,” we are pleased that the coming year will provide us with even greater opportunities to serve the Department as a result of our growing membership. (I would like specifically to recognize Evan Avery (BSE CE '11), whose enthusiastic embrace of all things CEEFA has produced an active e-mail list of nearly 100 young alumni. Well done, Evan!)

As some of you may recall from last year, this letter presented a summary of action steps from a CEEFA board-sponsored visioning session. We have since adopted a graphic representation, referred to as the CEEFA Structure, of the functional components we believe will best support our maxim: “Help a Student – Change the World.” We are actively seeking individuals to join one of the following four committees, which constitute the foundation and framework of our organization:

1. **Fundraising**: Enhancing the CEEFA Faculty Scholars Fund

2. **Recruiting**: Locating the best, brightest, most diverse and passionate students possible

3. **Developing**: Honing leadership skills in graduate and undergraduate students

4. **Connecting**: Building an alumni support structure for new graduates

These are exciting times for CEEFA. I strongly encourage all friends of Civil and Environmental Engineering at U-M to share their talents with at least one of our growing initiatives. Please do not hesitate to contact me should you have any questions or wish to participate.

Daniel J. Sinnott (BSE ’79, MSE ’80)
CEEFA President
dsinnott@tcio.com
CONGRATULATIONS NEWLY ELECTED CEEFA BOARD MEMBERS!

Meet your complete CEEFA Board at cee.umich.edu/alumni/ceefa

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<tr>
<th>Position</th>
<th>Name</th>
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<tr>
<td>Secretary 2014</td>
<td>Lynley Weston</td>
</tr>
<tr>
<td>Director 2015</td>
<td>R. C. (Charley) Ireland</td>
</tr>
<tr>
<td>Director 2015</td>
<td>Evan Avery</td>
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ASCE-CEEFA BANQUET AWARDS

On March 30, 2012, ASCE and CEEFA held a joint banquet in the Lurie Engineering Center located on North Campus. The banquet recognized the accomplishments of student organizations, the students’ win over faculty and staff in collecting the most donations for the annual Food Drive, and presenters gave a year-in-review of both CEEFA and ASCE activities.

Several awards also were presented during the event. Professor Steven Wright was the recipient of the 2012 CEEFA Faculty Award. Previous winners include Associate Professor Terese (Terri) Olson (2011), emeritus professors E. Benjamin Wylie (2010) and Eugene Glysson (2009).

<table>
<thead>
<tr>
<th>Award</th>
<th>Recipient</th>
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<tr>
<td>ASCE Faculty of the Year</td>
<td>Jason McCormick</td>
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<td>ASCE GSI of the Year</td>
<td>Bryan VanDuinen</td>
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<tr>
<td>ASCE Staff of the Year</td>
<td>Matt Blank</td>
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<tr>
<td>CEEFA Faculty Award</td>
<td>Steven Wright</td>
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2013 CEEFA FACULTY AWARD NOMINATIONS

are now being accepted for the 5th annual CEEFA Faculty Award. Please submit a letter of nomination detailing why a current or past CEE faculty member is deserving of the award. Letters should be sent to the following address:

Daniel J. Sinnott, CEEFA President
University of Michigan
Dept of Civil & Environmental Engineering
2350 Hayward Street
2340 GG Brown
Ann Arbor, MI 48109-2125

You may also email your nomination to kagauss@umich.edu

Deadline: Friday, Feb 1, 2013

did you know...?

<table>
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<th>CEEFA Membership is FREE!</th>
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<tr>
<td>U-M CEE graduates are automatically enrolled as CEEFA members upon graduation</td>
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<tr>
<td>CEEFA sponsors activities around the world and on campus to support the growing CEE community</td>
</tr>
<tr>
<td>Your sponsorship helps support CEEFA initiatives, including annual faculty and student scholar awards and career mentorship activities</td>
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STUDENT AWARDS CEREMONY AND ALUMNI RECEPTION

In conjunction with Michigan Engineering Homecoming Weekend, the CEE department held the 4th Annual Student Awards Ceremony and Alumni Reception on Friday, October 28, 2011. Alumni, students, faculty and staff enjoyed a lunch and talk given by 2011 Alumni Society Merit Award Recipient, Jennifer Macks.

JENNIFER MACKS
2011 Alumni Society Merit Award

Jennifer (Starrman) Macks (BSE ’94) is a vice president at Skanska USA Building. A licensed professional engineer and LEED Accredited Professional, she oversees Skanska’s healthcare and higher education projects in the greater Washington, D.C. area.

In 2003 Macks received the Recent Engineering Graduate Award from the U-M College of Engineering. She has been involved with CEEFA since 2004, and completed a two-year term as president last July. She previously served on the College of Engineering’s Board of Governors.

Macks has been married to her husband, Jefferson, for 11 years. They have two children, Cassie, 8, and Allison, 6.

MICHAEL LEPECH
2011 Recent Engineering Graduate Award

Michael Lepech (MSE ’02; PhD ’06; MBA ’09) received the Recent Engineering Graduate Award presented at the Alumni Awards Dinner on Friday, October 28, 2011. The award recognizes contributions by the recipient in the early stages of his or her career, in addition to achievements that will enhance the field of engineering. Criteria include demonstrated leadership, professional contribution and service to the community or the College of Engineering. Recipients must be 35 years old or younger, or have graduated from the College in the last 10 years.

CEEFA TAILGATE

On October 1, 2011, CEEFA hosted its 28th Annual Tailgate at O’Neal Construction. Over 70 alumni, family and friends, CEE faculty, students and staff attended the event. Several student organizations were on hand to talk about their projects and upcoming activities. The atmosphere was festive, and it was a great reunion of friends old and new.

Don’t miss the next CEEFA Tailgate and Football Game on November 10, 2012! Visit the CEE homepage for event and registration information cee.umich.edu.
When Evan Avery (BSE CE ’11) joined Hensel Phelps Construction Co. in June 2011, he immediately went to work on the same extensive construction project he’d been involved in during a summer internship the year before. When the $170 million building is complete, The Harbor UCLA Medical Center in Torrance, California, will be approximately 190,000 square feet, and Avery has been playing a pivotal role in its construction.

**EVAN AVERY: BUILDING A BRIGHT FUTURE IN THE FIELD**

During Avery’s internship, the building’s foundation and steel work were in progress. Now, its exterior is closed up and the interior work is well underway. Because of the project’s scope, Avery was one of several engineers assisting the area superintendents. "We were all given areas of responsibility in order to thoroughly understand the drawings and run the show in our specific areas," he said. Initially, he worked on the elevator tower, but when the structural part of the job was complete, he became lead field engineer for the exterior work.

Avery has been responsible for a significant amount of quality control for high-risk areas of the hospital, and the large project has given him ample learning opportunities and insights into both construction systems and management styles. He applies the skills he learned at U-M to navigate the complexities of his role. "My courses strengthened my ability to reason, solve problems and communicate clearly," he said. Activities outside of class helped him hone the "people skills" he uses to facilitate group problem solving among owners, architects, engineers, inspectors and contractors.

"My courses strengthened my ability to reason, solve problems and communicate clearly."

Pictured top left and right: Facade of the Harbor UCLA Medical Center in Torrance, California. Evan Avery at construction site.

Pictured left: Evan Avery

Continued on page 25
ALUMNI NEWS

IN MEMORIAM

In order by year of graduation:

Vernon Bengal (BSECE ’42)
August 10, 2011

M. Tarik Ataman (BSECE ’48)
November 4, 2011

Dr. Dah-Cheng Woo (MSE ’48; PHD ’56)
June 4, 2011

John E. Lyons, P.E. (MSE ’48)
October 28, 2011

Merlin Elmer Damon (MSE ’50)
May 29, 2011

William Glen Walker (BSECE ’51)
June 26, 2011

Robert Henry Corey (BSECE ’52)
May 13, 2009

Harold Keith Pederson (MSE ’53)
July 2, 2011

James C. Wilte, P.E. (BSECE ’53)
March 29, 2011

Allyn W. Barrows (BSECE ’54)
September 9, 2011

Michael P. Bittner (BSECE ’60; MSE ’61)
July 29, 2011

Calvin A. Bidwell (BSECE ’62)
April 2, 2011

Dorwin Bruce Wile (MSE ’65)
September 27, 2011

Mr. Paul M. Friesch (MSE ’69)
October 31, 2011

Allan N. L. Yee (BSECE ’72)
August 29, 2009

Mr. Mark C. Butterfield (BSECE ’76)
November 29, 2009

Richard D. Frederick (BSECE ’77; MSE ’77)
June 27, 2011

Grace Wan-King Chu (MSE ’81)
October 22, 2010

Despite the demands of his job, Avery tries to find time for beaches, museums and hikes in the nearby Santa Monica Mountains. As the son of two librarians, he devotes a little time each day to reading—mainly classic fiction and philosophy. He also has increased his involvement with Civil and Environmental Engineering Friends Association (CEEFA). As a student, his limited but positive interactions with members of the alumni group, who are passionate about the College and the Department, fueled a real desire to stay connected.

To facilitate connection, Avery created an email list so the Department can reach alumni with information about upcoming events and opportunities. And he developed a searchable Google map (pictured above) that alumni can use to find others who are living or working in a specific locale. The map also offers new grads valuable contacts as they venture into new positions and unfamiliar places. “There’s a lot of potential both to build an even stronger alumni network and to harness that network to help the Department,” he said.

ALUMNI CAN JOIN THE CEEFA NETWORK AND BE INCLUDED IN BOTH THE EMAIL LIST AND THE GOOGLE MAP BY VISITING CEE.UMICH.EDU/ALUMNI/CEEFA
DEPARTMENT NEWS

STAFF UPDATES

NEW STAFF

Jennifer Huntington joined CEE in December 2011 as a Financial Specialist. She has been working at the University of Michigan for over five years. Prior to joining CEE she worked at the Ross School of Business and at the School of Public Health. Jennifer started her undergraduate degree in Metalsmithing and finished with a Bachelor’s in Business Management in 2009. She enjoys jewelry making, painting, drawing and designing websites.

Jack Stewart comes to CEE with over seven years’ experience working in both the Psychology and Radiology units at the University of Michigan hospital. He joined CEE in January 2012 as a Financial Specialist. Jack earned a degree from the Michigan State University Master Gardener Program. In his free time he enjoys landscaping, plant propagation and soap making.

STAFF HONORS

MATT BLANK
U-M ASCE Student Organization Staff of the Year Award
Nominee for the Excellence in Staff Service Award at the College of Engineering
Excellence in Staff Service Award from CEE

PAT BRAINARD
Finalist for the Candace J. Johnson Staff Award for Excellence
Nominee for the Work/Life Champion Award for Supervisors

LINDA FINK
Retired from the University of Michigan after 20 years of dedicated service, 12 of which were in CEE

STUDENT WORKER

Olivia Marshall joined CEE at the start of the fall semester last year assisting the department with administrative duties and events. She is a third-year undergraduate student pursuing a Bachelor’s degree in Civil and Environmental Engineering. Olivia is actively involved with Chi Epsilon, the Society of Women Engineers (SWE) and New Life Church.
Operation Education
CEE Announces Four New Programs

This fall CEE is adding four significant programs to its curriculum, all designed to equip undergraduate and graduate students with the knowledge and tools required to play leadership roles in their professions. With new educational opportunities in environmental and sustainable engineering and energy and infrastructure systems, CEE graduates will continue to be well prepared for careers in industry, academia, government and the nonprofit sector.

CEE News asked faculty program advisors to tell us more about each.

Terese Olson
BSE Degree in Environmental Engineering

Steve Skerlos
Program in Sustainable Engineering

Christian Lastoskie
Specialization in Sustainable Energy Systems

Jerome Lynch
MSE Concentration in Infrastructure Systems
## New Undergraduate Programs

### 1. BSE Degree in Environmental Engineering

**What were the drivers for the new program? In other words, why now?**

We see an ever-widening scope of environmental problems that will require greater specialization to solve and so there is a need for engineers with this preparation. We also see increasing student interest in an environmental engineering undergraduate degree, as well as increasing employer demand. The Department has a highly ranked environmental engineering graduate program and an environmental engineering focal area within its civil engineering bachelor’s program, so we’re in a strong position to offer this new degree.

### 2. Program in Sustainable Engineering

**What were the drivers for the new program? In other words, why now?**

The short answer is: There’s a lot of interest among students. Enrollments in CEE 265, Sustainable Engineering Principles, went from 80 to 140 in one semester—we’re seeing a lot of interest—and students involved in BLUElab (a student-run organization that finds sustainable solutions to development problems) number in the hundreds now. Issues of environmental sustainability are only becoming more challenging, and students want formal opportunities to pursue those issues educationally.

**Who should consider the new program?**

Students who are interested in providing society with sustainable infrastructure systems—water, sanitation, air quality—that protect human health and natural resources for current and coming generations. Since these systems bring together many disciplines, students also should have an interest in working on complex, highly interdisciplinary problems in both the natural and built environment.

**Can you give us an overview of the curriculum?**

The new degree program gives students an opportunity to focus their coursework more deeply in the necessary sciences, such as courses in aquatic chemistry, earth science and environmental microbiology. In addition to core courses, students take nine credits of technical electives—Water Quality and Health, Earth Systems, Environmental Fluid Dynamics, Energy and Sustainable Infrastructure, Environmental Policy and Entrepreneurship. Students also take 12 credits of general electives outside the College as well as the capstone design course, CEE 402.

**What kinds of career opportunities can graduates expect?**

Environmental engineering is projected to have one of the highest growth rates among all engineering disciplines in coming years. Possible opportunities include positions in engineering consulting firms, major corporations, government agencies and non-governmental organizations, both in the U.S. and abroad. Environmental engineering graduates are frequently sought by humanitarian organizations for the knowledge they bring to development projects.

**What’s your vision for the program?**

To produce tomorrow’s leaders who will create more sustainable urban centers and who possess the necessary interdisciplinary background to help society meet the complex challenges of global resource limitations and human environmental impacts.

**Where can readers find more info?**

Visit cee.engin.umich.edu/academics/ug or email Matt Blank, undergraduate programs coordinator, at blankm@umich.edu.

**Who should consider the new program?**

Every CEE student should, in part because they already have one-third of it in the bag. Three of the nine credits in the program are taken by CEE 265, which is required by the CEE BSE program. Anybody interested in environmental economics, social sustainability or broader issues of technology and society should be interested in this program.

**Can you give us an overview of the curriculum?**

Beyond CEE 265, three credits come from a choice of College courses that offer significant sustainability content, and three come from a choice of courses outside the College that deal with non-engineering issues at the intersection of technology and society. In those nine credits, we’re putting tools into students’ hands to complement what they’re learning technically. And students from any department can take the PISE Specialized Study area within their degree without taking extra classes.

**What kinds of career opportunities can graduates expect?**

Very few students in the world are educated in sustainability. This program is a leg up, a differentiator. There isn’t a major company around that isn’t thinking about sustainability. They can find narrowly educated technicians anywhere, but to have people who understand systems, who can contextualize technology and analyze issues in a mature way from business and environmental and social perspectives, that’s rare.

**What’s your vision for the program?**

Our vision is to provide baseline education, awareness and competency for engineers in all programs so that the people we graduate can make decisions that positively effect the sustainability domain, particularly environmental sustainability.

**Where can readers find more info?**

Visit pise.engin.umich.edu or email sustainable.engineering@umich.edu.
### New Graduate Programs

#### Specialization in Sustainable Energy Systems
- **What were the drivers for the new program? In other words, why now?**
  - We have an existing dual degree program with the School of Natural Resources and Environment, Engineering Sustainable Systems, and within the CEE department we offer specializations in Sustainable Water Systems and Sustainable Manufacturing and Design. We’ve had a number of students interested in an energy specialization, too. Since we have a new Sustainable Energy Systems major in our single degree program, it made sense to add that focus to the dual degree program as well. Conceptually it works.

- **Who should consider the new program?**
  - Dual-degree students who want to focus specifically on energy infrastructure systems, including energy generation for civil power infrastructures. That’s how to deal with air and water emissions associated with energy generation. It’s also a fit for students interested in emerging topics, such as energy storage for renewable power systems and smart grids.

- **Can you give us an overview of the curriculum?**
  - The cornerstone course is CEE 567, Energy Infrastructure Systems. Students select one of three CEE electives on hydraulic system design, geoenvironmental engineering or biological processes. They take two energy electives from other departments within the College on topics such as fuel cells, grid integration and alternative energy, combustion, and nuclear waste management.

- **What kinds of career opportunities can graduates expect?**
  - Graduates could enter the industrial sector, working with utilities, cleantech and green energy startups, or play a role in the nonprofit or public sectors, including policymaking for government agencies. Some graduates might want to enter academia. This specialization is a good jumping-off point for a number of avenues.

- **What’s your vision for the program?**
  - Our vision is for graduate students to gain good core exposure to environmental issues related to energy generation and to participate in all the cutting edge, interdisciplinary research going on. Eventually our energy infrastructure of centralized power generation from the mid-twentieth century is going to be retired, and there will be an opportunity to replace it with something more nimble and efficient that takes advantage of microgrids and smart grids. That’s how tomorrow’s infrastructure will look like, and we want to educate the students who will be able to design it and build it.

- **Where can readers find more info?**
  - Visit ess.umich.edu/specializations/sustainable-energy-systems or email Professor Lastoskie at cmlasto@umich.edu.

#### MSE Concentration in Infrastructure Systems
- **What were the drivers for the new program? In other words, why now?**
  - The deterioration of our civil infrastructure systems and their exposure to natural hazards such as hurricanes and earthquakes is the major challenge for the twenty-first-century civil and environmental engineer. The traditional way of preparing CEE students, with curricula geared toward infrastructure design and management on a component-by-component basis, fails to provide a holistic view of how infrastructure operates as a system and, more importantly, how various systems are interconnected.

- **Who should consider the new program?**
  - Students who want to analyze, design and optimize highly dynamic civil infrastructures from a systems perspective and those who are interested in looking at advanced and nontraditional technologies to improve resiliency and sustainability of infrastructure systems, such as embedded sensing, intelligent control and "smart" materials.

- **Can you give us an overview of the curriculum?**
  - It includes five core systems courses, covering topics such as sustainable design, dynamical systems and advanced sensing. Students concurrently specialize in a foundational area, such as materials, structures or hydraulics. Electives in system theory, decision theory, applied mechanics, embedded intelligence and critical systems technologies complement core courses. A capstone project integrates the systems engineering perspective with the student’s specialization.

- **What kinds of career opportunities can graduates expect?**
  - Our graduates will be prepared to pursue a variety of career paths. Those inclined to follow more traditional paths, for example engineering consulting, will be well equipped. A new set of tools also opens up opportunities for alternative paths, perhaps more focused on the management of infrastructures. Students will be able to pursue careers in more research-oriented lines of work.

- **What’s your vision for the program?**
  - Our goal is to create the next generation of thought leaders in our profession. The business models the civil engineering profession has relied on for decades are growing less competitive in our globalized economy. Our profession is thirsty right now for new models and opportunities, and we envision that our students will drive that change— for the betterment of the profession and of society. This program also will reinforce the ability of civil engineers to maintain leadership in terms of design and management of large societal assets.

- **Where can readers find more info?**
  - Email Professor Lynch at jerlynch@umich.edu.
TISHMAN CONSTRUCTION MANAGEMENT PROGRAM CHARTS PROGRESS

The CEE department's Tishman Construction Management Program (TCMP) continues to expand and make progress, offering new programs that support world-class education and research in construction.

**Master's Scholars**
A new scholarship program to recognize and assist master's students is underway this fall. Up to 10 Tishman Scholars will receive support for their U-M Construction Engineering and Management graduate work. Awards will be made at the start of the fall semester, and any remaining scholarships will be awarded again at the end of the term to high-performing students.

"Our philosophy for the Tishman Scholars program comes directly from the vision of Mr. John Tishman himself: to attract the most talented students to study construction at U-M and to reward those who perform exceedingly well and emerge as tomorrow's leaders," said Professor Vineet Kamat, program advisor.

**Global Frontiers**
The new Tishman Global Frontiers program will offer 10 third-year undergraduate students who have not yet declared a technical concentration the opportunity to travel abroad and visit an awe-inspiring construction project. Escort by senior post-doctoral researchers and faculty, students will spend 10 days behind-the-scenes at some of the world’s most complex and inspirational structures. "We hope the experience will be a tipping point for these students, the point at which their passion for construction management is ignited," said Kamat.

**U-M Construction Industry Alliance Program**
Created to promote the cross-pollination of ideas and facilitate collaboration between the TCMP and industry, the U-M Construction Industry Alliance Program (UMCIAP) quickly has become an integral component—and a welcome addition for its industry members. Professor SangHyun Lee serves as director of the UMCIAP; Kamat serves as associate director.

"We were really overwhelmed with the reception we received from each member company, and they all enthusiastically agreed that such a forum should exist. They said they were delighted we took the lead to create this program and assured us of their wholehearted participation."

The first 10 member companies have joined the UMCIAP, and representatives from each will comprise the TCMP Industry Advisory Board. "They’ll be our champion for the TCMP within industry and provide a valuable external perspective on our programs," Kamat added. In addition, members will participate in two annual research symposia hosted at U-M by the TCMP.

**Amplifying Opportunities**
The TCMP master’s degree programs have been growing significantly, reflecting increasing demand for highly trained professional construction managers both domestically and abroad.

"There are only a handful of quality construction programs at the graduate level, and U-M is recognized

Continued on page 31
as a top university for the quality of training of its graduates,” said Kamat. The U-M’s construction graduate program also was the first, getting its start back in 1954. The U-M CEE department continues its role as a key player in construction research and education, with support from a recent $5 million endowment from Mr. John Tishman (BSE EE '46, D. Eng Hon. '00) of Tishman Construction. Tishman has built some of the world’s most iconic buildings, including the original World Trade Center towers, Chicago’s John Hancock Tower and the EPCOT Center in Walt Disney World.

"There are only a handful of quality construction programs at the graduate level, and U-M is recognized as a top university for the quality of training of its graduates."

DEPARTMENT NEWS

COMING EVENTS

OCT 12-13
Michigan Engineering Homecoming Weekend
Visit the College of Engineering’s website for event information: mconnex.engin.umich.edu/upcoming-events/

OCT 12
CEE Student Awards Ceremony and Alumni Reception
Merit Award Recipient, John McCarthy (BSE CE '78; MSE '82)
12:00 – 1:30 pm
Location to be determined

OCT 24
Rackham Centennial Alumni Lecture
Paul Freedman (BSE '72; MSCE '73)
4:00 – 5:00 pm
Johnson Rooms, Lurie Engineering Center

NOV 9
ASCE Career Fair
9:30 am – 4:30 pm
Duderstadt Center, North Campus

NOV 9
CEEFA Board Meeting (open)
12:00 – 5:00 pm
2355 GG Brown

NOV 10
CEEFA Tailgate and Football Game
Begins 2 hours before kickoff
O’Neal Construction, Argus Building
525 W. William, Ann Arbor
Register today on our homepage cee.umich.edu
Want to show some Michigan pride?
Running low on University of Michigan apparel?
Need something to wear for football Saturdays?

Check out the CEE polo shirts!
Shirts are embroidered with the CEE and Michigan Engineering logos and are available in both MAIZE and BLUE.
For more information, please call (734) 764-8495.

If you will not be picking up your shirt in person, please be sure to include a mailing address. There is a $5 charge for Shipping & Handling.
Checks should be made payable to “University of Michigan.” To submit order, cut along dashed line and send to:

CEE Polo Shirts
University of Michigan
Dept of Civil & Environmental Engineering
2350 Hayward Street
2340 GG Brown
Ann Arbor, MI 48109-2125

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Stay Connected

CEE would love to hear from you! Please send updates and photos about your latest achievements to kagauss@umich.edu. Please be sure to include your full name, mailing address, phone and email. You may also submit entries by mail to:

CEE Alumni Updates | Dept of Civil & Environmental Engineering | 2350 Hayward Street, 2340 GG Brown | Ann Arbor, MI 48109-2125

cee-chair@umich.edu cee.umich.edu facebook.com/UMCEEEFA

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Welcome the latest members of our Michigan CEE community

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Shattering the Glass Ceiling
The Network for Women in Civil and Environmental Engineering (NeW in CEE) has launched with a mission for change

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Building a Bright Future in the Field
Alumni profile of Evan Avery (BSE CE ’11) who is working on the construction of the Harbor UCLA Medical Center in Torrance, California

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Coming Events
Check out our event calendar for students, faculty and alumni

Visit cee.umich.edu for event updates and latest CEE news.