# 2013 CEE Highlights

## Civil and Environmental Engineering

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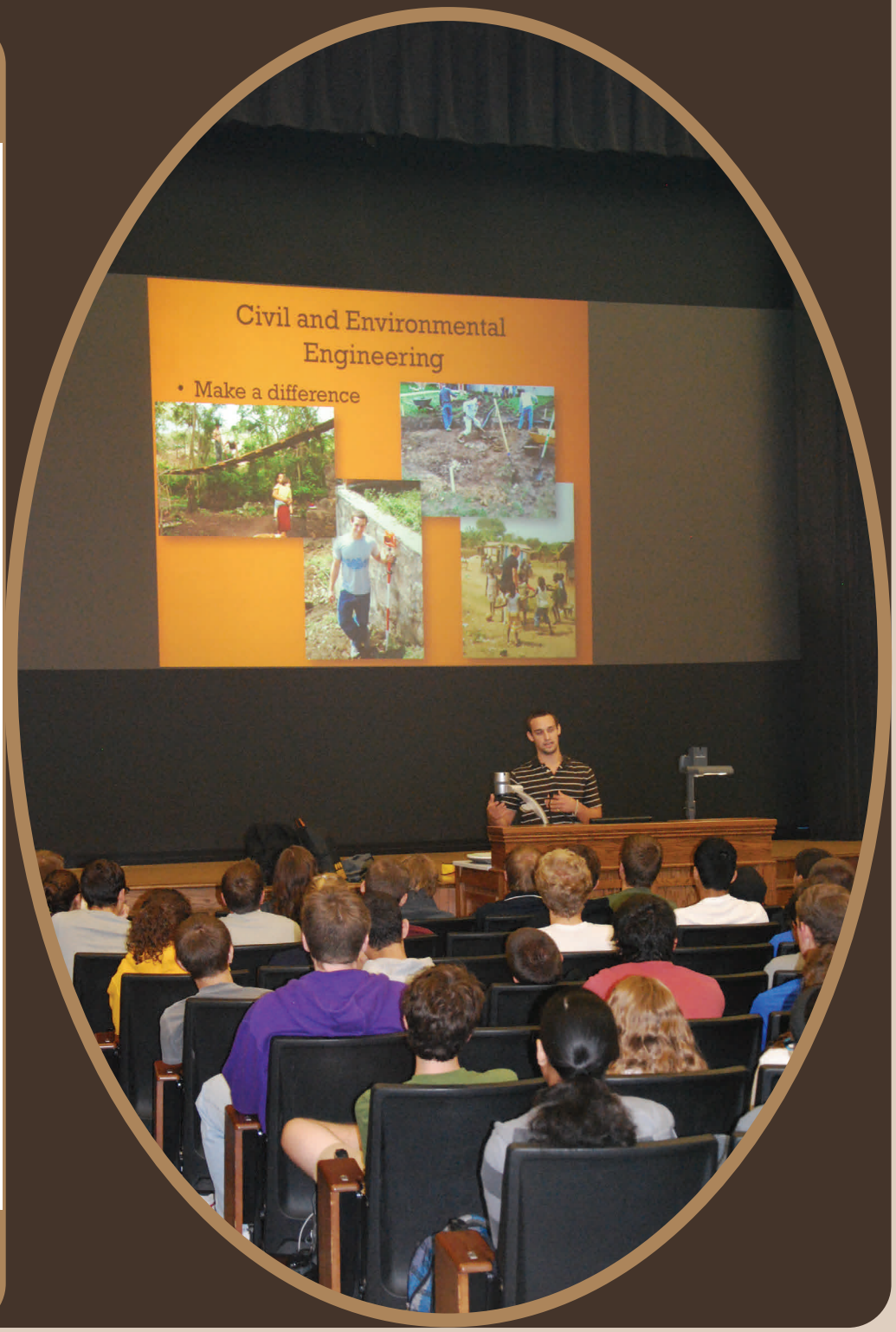
**What's Inside:**

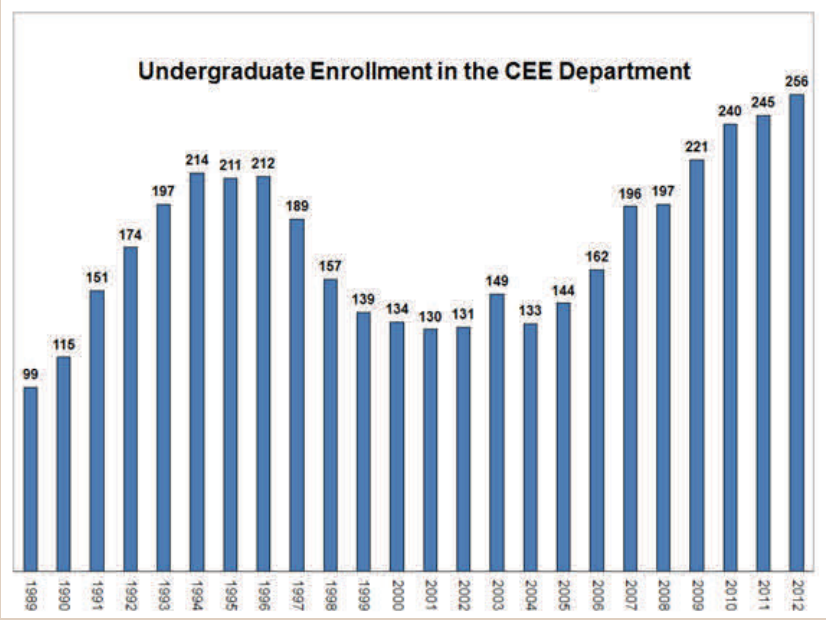




# From The DEO — Michelle Scherer

**Dear CEE Friends,**

It is March 12th, 2013 and when I walked in this morning it was a beautiful sunny day. Now there is a horizontal snow blizzard outside my office window. Ahh, Spring in Iowa — you never quite know what's around the corner. Here in the CEE Department we are in what I call the height of the academic year and what a year it has been! Our undergraduate population is steadily growing and this last year hit 256 students, almost doubling our student population over the last ten years. We saw similar increases in the early 1990's to the 200 plus range, but never as high as we are now. When combined with our 94 graduate students, we have a total of 350 students in our department. In this last calendar year, we had 50 B.S, 22 M.S., and 12 Ph.D students graduate. Congratulations and best wishes to all of you!




With our growing enrollment, we are in need of additional faculty and this year we are fortunate to **welcome Gabriele Villarini** to CEE. Gabriele is an expert in flood prediction and hydroclimatology and joins us from Princeton where he was a Research Associate for several years. Look forward in our Highlights for a profile of Gabriele's background and interests. Gabriele, along with our other recent hires, **David Cwiertny, Chris Stoakes, and Craig Just are *outstanding young faculty*** --- stay tuned in the coming years for news of their accomplishments!

Despite the difficult political funding environment, our faculty and undergraduate and graduate programs continue to improve and thrive. This year, CEE's **Witek Krajewski received The Graduate College Outstanding Faculty Mentor Award**. Witek has advised 21 doctoral students through their degrees and currently advises five other doctoral students. Witek's ability to inspire and excite students with his vision is legendary in our department and we are so pleased that he received this recognition for his everyday efforts to motivate his students to reach their potential. In 2012, **CEE conducted over $11 million dollars in research and published 72 journal articles**. We have completely revamped our undergraduate seminar series to focus more on Leadership, Professional Skills, and Design. Read more about our plans on page 6 of our Highlights. We continue to build strong links between our undergraduate and graduate program through our CEE Research Experience for Undergraduates Program which funded 17 undergraduates.

This year we also say goodbye to a cherished colleague. **Jim Stoner will retire** at the end of this semester after 35 years here in CEE. Jim played an instrumental role in establishing CCAD and the Driving Simulator and for many years WAS transportation engineering at the University of Iowa as he was the sole full time faculty member in that area. Needless to say, he has taught many students and has helped them to establish their own careers, many in the area of transportation and urban planning. He has left his mark on many of us and the college is a better place than it might have been if he was never here. Everyone should be so lucky to have a colleague that you can say that about. We wish him and Terri a joyful retirement with lots of dog walks, visits to the kids, coffee at Hy-Vee, antique car shows, and bicycling in exotic places.

Looking forward right now in higher education is a bit like Spring in Iowa — you never know what is around the corner. It is clear though that there are some changes occurring. Increasing enrollment has brought some space and class size challenges and our 2014 ABET accreditation review is just around the corner. The political funding environment continues to be uncertain and the challenge to the need for and role of Universities grows louder as Massive Open Online Courses (MOOCs) hit the mainstream. As I watch the snow outside my window subside and the sun start to peek out, I can,say with confidence that the next few years will be interesting. I can also assure you that the faculty in our department stand ready to embrace these challenges and to continue to provide a first-class education to our students.

# Advisory Board

The CEE Advisory Board meets in the Fall and Spring in the College of Engineering. The CEE department is very appreciative of the Board members support and willingness to share their expertise and wisdom. At the April 2013 meeting, the focus will be preparing for the ABET Self Study.

### *From the Advisory Board President, Dan Rest*

Dan Rest is originally from Evanston, IL, and is a 1998 UI Civil Engineering graduate. Following graduation, Dan went to work for the Wood Dale, IL office of ENTACT, an environmental remediation contractor headquartered in Dallas. While traveling extensively to a variety of contaminated sites throughout the country, Dan's primary role was in remediation QA/QC. He also spent time drafting EPA closeout reports, installing silt fence, babysitting pumps, and operating heavy equipment. Thankfully, no injuries resulted. After about 18 months of steady travel, Dan moved back to Chicago permanently, and took a job in 2000 with HBK Engineering, located in the West Loop area of downtown Chicago. At the time, HBK was a startup civil engineering firm of six full-time employees, specializing in routing and design of telecommunications infrastructure within Chicago's Central Business District, and throughout the Chicagoland area. In thirteen years with HBK, Dan has seen the firm grow into a full-service utility engineering firm, serving all utility sectors, with over 100 employees, and offices in Chicago, suburban Philadelphia, and Iowa City. Dan's current role at HBK is to oversee HBK's natural gas industry work with Peoples Gas, the City of Chicago's natural gas utility. One of the major projects that HBK is involved with is the Peoples Gas Accelerated Main Replacement Program (AMRP), a 20-year effort to overhaul the City of Chicago's gas delivery infrastructure. AMRP will see the retirement of approximately 1,900 miles of leak-prone, low-pressure cast iron main, dating back as far as 150 years, with medium- and high-pressure plastic and steel main, creating a safer and more cost-effective gas delivery system for generations to come.

### CEE Advisory Board Members (Year Joined)

Heather Anderson — Project Engineer, Corps of Engineers, Rock Island District (2008)
Avery Bang — Executive Director, Bridges to Prosperity (2013)
Jay M. Brady — Senior Civil Engineer, Stanley Consultants (2006)
John Clark — Project Engineer, STV Incorporated (2010)
Jane Driscoll — Senior Engineer, Deere & Company (2006)
Bill Eichinger — Professor, Civil and Environmental Engineer, The University of Iowa (2013)
Aaron Granquist — Project Manager, McClure Engineering Co. (2009)
Ron Knoche — City Engineer, City of Iowa City (2010)
Dick Larew — CEE Professor (retired), Ohio State University (2009)
Greg Parker — Johnson County Engineer (2009)
Dan Rest — Civil Engineer, HBK Engineering (2008)
Jim Schnoebelen — District Engineer, IA Department of Transportation (2012)
Terry Wipf — Department Chair, Iowa State University (2012)
Allen Witt — Hall & Hall Engineers (2008)

# New Faculty

**Gabrielle Villarini —**

Gabriele Villarini is an assistant professor in the Department of Civil and Environmental Engineering at the University of Iowa. He joined the faculty at Iowa in the summer of 2012. Villarini, who was born and raised in Italy, developed an interest in remote sensing and hydrology while studying for his master's degree. He received an M.S. in civil engineering in 2003 from the University of Rome "La Sapienza," and then came to the University of Iowa, where he earned a Ph.D. in Civil and Environmental Engineering in 2008. Villarini went on to work as a Willis Research Network Fellow in the Department of Civil and Environmental Engineering at Princeton University from 2008 to 2012. Through his research at Princeton, he met many new researchers and was able to broaden his research perspective. These contacts led him to new and interesting areas of research, including climate change and extreme events, including flooding.. In 2012, Villarini returned to IIHR, where he is also affiliated with the Iowa Flood Center, the only university-based center devoted solely to flood-related research and education, with the overarching objective of improving flood monitoring and prediction capabilities in Iowa. Villarini's research group broadly focuses on flood hydrology, extreme events, hydroclimatology, economic impacts of natural hazards, and seasonal forecasting. He is particularly interested in examining whether it is possible to detect an anthropogenic climate change signal in the historical records of extreme flooding, rainfall, and tropical cyclones. Villarini and his team study historical weather data records that stretch back 75 or 100 years or even longer. One of the issues in working with these historical records is that the environment around many of these long-term measuring stations changed over time, affecting the quality of the data. In dealing with discharge data, for instance, changes in land use and agricultural practices, and construction of dams and other structures in the watershed, have all affected how water moves in the basins. Given all these alterations, Villarini says it can be challenging to interpret the data, but he still thinks it's worthwhile. "Before getting into the future, we should try to understand the past," Villarini says.

PHOTO BY: JIM HEEMSTRA

# Faculty Retirement

JIM IN 1975, GREENWICH, ENGLAND

**Jim Stoner —** Not many remember what the College of Engineering was like in 1977. And that number will soon grow smaller. Jim Stoner will retire at the end of this spring semester. Jim has indeed been here a long time but has managed quite a full and varied life making contributions that have been seminal in molding the culture of the College and providing guidance and stability in its transition to undeniable excellence in an incomparably inviting, cheerful, and cooperative environment.

After graduating with a BS in Engineering from Iowa State University in 1966 Jim joined the Navy, serving in Vietnam until 1970 as an Engineering Officer. After his service he came to the University of Iowa in 1972 to work on a Masters degree in Urban Planning and met and married Terri, a recent pharmacy graduate. After obtaining his MS, he enrolled at Northwestern University obtaining his Ph.D. in 1977. While finishing up the last two years of his doctoral work, he came back to the University of Iowa to work at Institute for Urban and Regional Research, followed by an offer in 1977 of a position as an assistant professor at the University of Iowa.

Jim has had many affiliations and worked in many areas related to transportation engineering. This includes an instrumental role in establishing CCAD and the Driving Simulator, and associated nascent research programs. It is quite accurate to say he WAS transportation engineering at the University of Iowa for much of his time here, being the sole full time faculty member in that area. Needless to say, he has taught many students and has helped them to establish their own careers, many in the area of transportation and urban planning.

I'd like to think he would say he would do it all again if asked. He has left his mark on many of us and the college is a better place than it might have been if he was never here. I know I am better and happier than I might have been. Everyone should be so lucky to have a colleague that you can say that about.

Jim doesn't plan to slow down in retirement. He will be found walking the dogs, attending classic car show, bicycling, visiting his kids in Michigan and Montana, and enjoying weekend coffee at Hy-Vee.

# Undergraduate Highlights

**CEE Launches a New Undergraduate Seminar Series**

Starting in Fall 2014, CEE undergraduates will start taking a new set of seminar series which will include four semesters of seminars. In the past we required one semester of Sophomore seminar and four semesters of Professional Seminar which consisted mostly of outside speakers and our juniors and seniors took the class together making for a class size of almost 150 this year! Our revised seminar series will split the juniors and seniors making a more manageable class size and each seminar will target a different set of professional skills. **Leadership** will be the focus of in their first upper-level seminar with **Professional Skills**, such as ethics and business practices discussed in the second seminar and the series will culminate in a third seminar that will be used as a preparatory class for their Spring **Senior Design** class. In the new format, each of the seminars will contain 3-4 seminars of content on each skill developed by the faculty and then 4-5 outside speakers focused on those skills. Students will also receive one semester hour of credit for the each of the three upper-level seminars and will have no seminar in their final Spring semester during their capstone design class. Both the faculty and students are excited to implement this new series. We will keep you posted on how it goes!

**1. Welcome to CEE**
**CEE:3000**
*Spring Sophomore year*

**2. Leadership Seminar**
**CEE:3001**
*Fall Junior year*

**3. Professional Skills Seminar, CEE:3002**
*Spring Junior year*

**4. Senior Design Seminar**
**CEE:3003**
*Fall Senior year*

**CEE Research Experience for Undergraduates Program Funds 17 Students**

Research provides a unique and effective educational experience for undergraduate students. The Department of Civil and Environmental Engineering is committed to student participation in all kinds of research - whether disciplinary, interdisciplinary, or educational in focus - encompassing efforts by individual investigators, groups, centers, and others. This program seeks to attract a diversified pool of talented students in careers in engineering and to help ensure that they receive the best education possible. This program is modeled after the National Science Foundation's Research Experiences for Undergraduates, and is one semester in length.

This year, the CEE Department funded 17 students, working under the supervision of CEE faculty. The students are working on projects ranging from fate of persistent organic pollutants, transportation design and materials analysis, and water sustainability. The students typically ten hours per week in the lab or field, and are fully engaged with the faculty members research group. The program has been popular among both the faculty and students. We hear from students graduating from this program that it was one of their favorite experiences as a student.

# Undergraduate Degrees Conferred in 2012

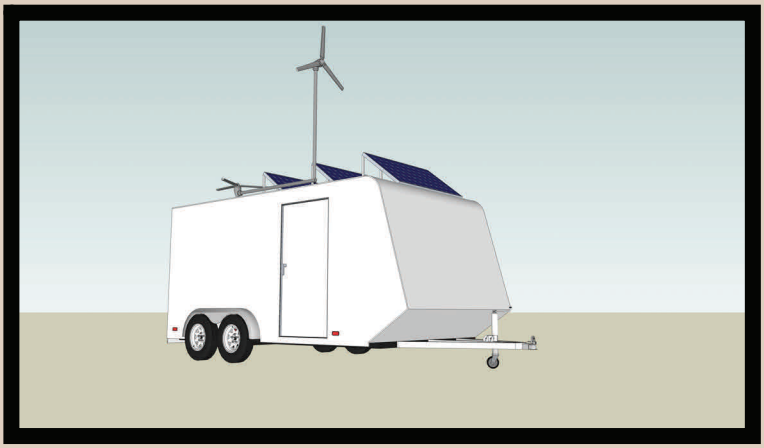
Franklin Adler
Mathew Ayers
Adam Barnett
Alexander Bogue
Stephen Browne
Jonathon Camporese
Russell Carlson
Matthew Causey
Robert Casiello
Grant Goldsmith
Ryan Grassly
Zachary Hanson
Yiming He
Willie Hilkin
George Hoyos
Zachary Ihde
David Klein-Rodick
Rebecca Kohles
Kent Krause
Claudia Larkin
Leonard Larson
Carly Lintner
Matthew Litwin
Lu Liu
C. Taylor Mcclendon
John Messaglia
Samir Michael
Robert Newcomb
Mary Nielsen
Ian Nilausen
Jeremy noah
Joseph Olson
Chris Parizek
John Perkins
Sean Plenner
Alex Potter
Riley Quinn
Bradley Reuter
Kenneth Roth
Theodore Schmidt
Jason Scholbrock
David Sellnau
Ryan Sikes
Luke Smith
Paige Stevens
Taryn Tigges
Anthony Walas
Cory Westphal
Ryan Wright
Drew Zeipen

# Student Organizations

**Engineers for a Sustainable World (ESW)**

*Craig Just, Faculty Advisor*
***Officers:***
*Carl Christiansen: President*
*Meghan O'Connor: President Elect*
*Nick Smith: K-12 Outreach*
*Brennan Ayres: Webmaster*
*Ben Klaus: Treasurer*
*Nick Schickel: Head of Rain Gardens Project*

**Our Vision:** A world in which engineering fosters environmental, social, and economic sustainability to improve both the quality of life and the condition of our planet.

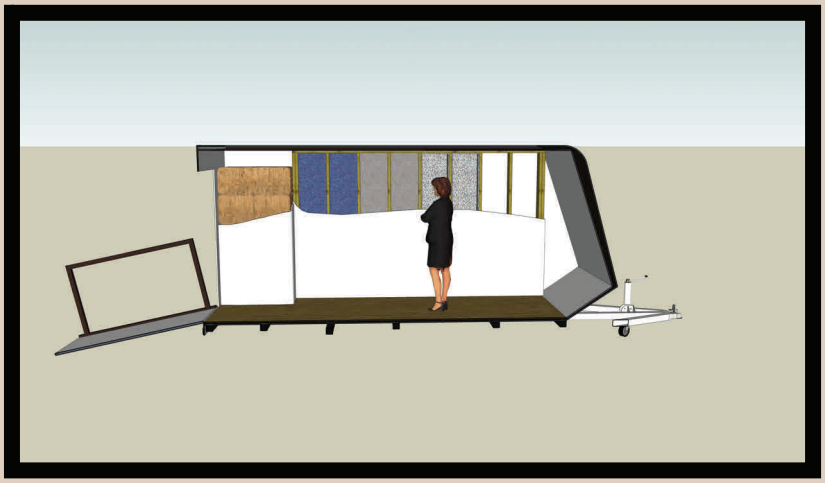


**Our Mission:** ESW mobilizes students and professionals through education, technical projects, and collaborative action to impact local and global sustainability challenges.

***Our Goals***

**Rain Garden Design and Construction:**
Rain gardens serve two important purposes for our community; both as a decorate element and as a functional solution of flooding. The garden's soil help filter rain water before it reaches the city's sewer system, thus helping keep Iowa's water clean. With major success in years past, Nick Schickel has taken on the lead role for this part of our organization with enthusiasm. We have set on a new site, the Boyd Law building at the University. We are currently in the design and planning phase, and hope to be able to begin construction once spring arrives, sometime in April.

**Renewable Energy and Efficiency Education:**
As we move forward with our partnership with the Kirkwood chapter of the U. S. Green Building Council, we are making plans to build two Net Zero Trailers to be used to educate the public about renewable energy and energy efficiency. Net Zero is the idea of building a structure that can produce, store, and use its own energy, taking zero energy in from outside sources. Though still in the beginning design phase, our plan is to have one trailer, overseen by the USGBC Kirkwood, showcase various building materials that help make living spaces more energy efficient, while the second trailer, overseen by ESW, showcase the engineering side of Net Zero housing.



# Student Organizations

## Engineers Without Boarders (EWB)

*Craig Just, Faculty Advisor*

***Officers:***

*Brianna Knoll (President)*
*Adrianna Jarosz (Vice President)*
*Amanda De Hoedt (Graduate Advisor)*
*Tim Houser (Advisor)*
*Caroline Sanderson (Community Health lead)*
*Kayley Lain (Fundraising Lead)*
*Matt Gazdziak (Online Presence Lead)*
*Brandon Bohlender (Water Tower Project Lead)*
*Mike Steiff (Energy Lead)*
*Jennifer Smith (Secretary)*
*Keyan Zarei (Treasurer)*
*John Baumhover (Social Chair)*

Engineers Without Borders began the year off very determined and focused with the plans of implementing a solar water pump in Kobriti, Ghana during the summer of 2013. The group has used several successful assessment trips to Kobriti to determine that the village needed a new bore hole along with a water pump. With the help of several IIHR employees, EWB has been in the process of constructing a model of our solar pumping system. By constructing the pumping system, group members were able to run test to determine if our system would successfully pump water out of the bore hole. The main issues our group wanted to test were, would there be enough solar energy for the pump to work, how would we store the energy for night time use, and could we properly simulate the pump head. A long with making progress towards our implementation trip to Ghana, the group has been trying to draw awareness to issues developing world's face due to their lack of sanitation systems. EWB joined forces with UI Global Health Club to celebrate World Toilet Day. On November 15, both groups squatted on the T. Anne Cleary Walkway to protest the taboos surrounding the sanitation crisis.

## Chi Epsilon

*Richard Valentine, Faculty Advisor*

***Officers:***

*Tyler Beduhn, President*
*Ryan Posluszny, Vice President*
*Tyler Olson, Treasurer*
*Andrew Constant, Secretary*
*Heidi Ranschau, Associate Editor*
*Emery Waterhouse, Marshal*

The UI Chi Epsilon chapter has been active and successfully growing over the past year. Seven new members were initiated at semiannual initiation ceremonies. Two members were also sent to the 2012 National Conclave in Los Angeles. This year's activities included several pizza socials, fundraising efforts and organizing review sessions for those students taking the FE Exam. Volunteer activities included conducting a waste audit for the State Hygienic Lab, where it was found 45% of a day's garbage could be recycled, and a house remodel for Habitat for Humanity. Future goals include increasing membership and awareness, sponsoring or co-sponsoring events within the College, and potentially starting K-12 outreach activities.

# Graduate Degrees Conferred in 2012

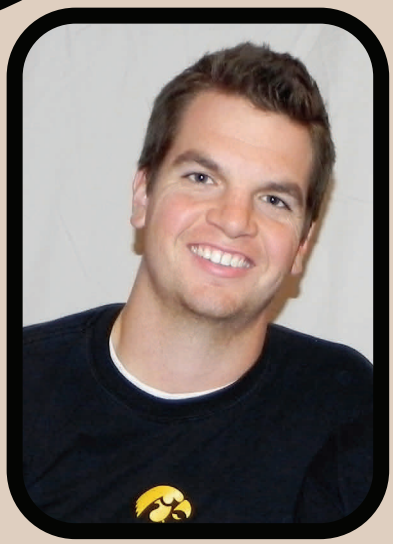
## Master of Science (M.S.)

**Jared Barr,** A Multiscale Investigation of the Role of Variability in Cross-sectional Properties and Side Tributaries on Flood Routing
**Vijaya Bijukchhe,** Comparison of Experimental Results of Horizontal Kaplan Turbine with Computational Fluid Dynamics
**Jun Choi,** Multibody Dynamics of Mechanism With Secondary System
**Ashley Cobert** (Nonthesis)
**Meredith Dobson,** Assessment of Methanortoph Presence and Activity in Dilute Vinyl Chloride Contaminated Groundwater
**Jonathan Durst** (Nonthesis)
**Thomas Glueckert,** Impacts of WMA Additives on Rutting Resistance and Moisture Susceptibility
**Emily Gorsalitz,** Comparative Removal of Pharmaceuticals and Antimicrobials in Conventional and Constructe4d Wetland Wastewater Treatment in Cold Climate
**Jin-Young Hun** (Nonthesis)
**Yi Liang** (Nonthesis)
**Meng-Chen Lee,** Vinyl Chloride Biodegradation by Methane-oxidizing Bacteria and Ethene-oxidizing Bacteria in the Presence of Methane and Ethene
**Natalia Loukinova** (Nonthesis)
**Osama Mohamed** (Nonthesis)
**Iordanis Moustakidis,** Detection of Erosion/Deposition Depth Using a Low Frequency Passive Radio Frequency Identification (RFID) Technology
**Suresh Niraula** (Nonthesis)
**Nicholas Petrich,** Simulating and Explaining Passive Air Sampling Rates and Analyte Air Concentrations for Semi-volatile Compounds on Polyurethane Foam Disks
**Eric Redmond,** Nitrogen Removal From Wastewater by and Aerated Subsurface Flow Constructed Wetland
**Benjamin Reith,** Flood Risk Analysis for the Iowa Statewide Floodplain Mapping Project
**Charles Schallhorn,** Localization of Vibration-based Damage Detection Method in Structural Applications
**Timothy Schulz,** Comparison of PCBs in East Chicago, Indiana, and Columbus Junction, Iowa, In Indoor and Outdoor Air
**Cory Shannon,** Fractionation of Recycled Asphalt Pavement Materials: Improvement of Volumetric Mix Design Criteria for High-rap Content Surface Mixtures
**Brice Stafne,** Development and Application of a Two-dimensional Hydrodynamic Model for Assessment of Modern and Historical Flow Conditions of Upper Mississippi River Pool 8 Near La Crosse, Wisconsin
**Kimberly Van Meter** (Nonthesis)
**Bryson Winsky,** A Redisigned Instrument and New Data Analysis Method Used to Measure the Size and Velocity of Hydrometeors
**Adam Woods,** Evaluation of Curing Criteria for Cold In-Place Recycling of Asphalt

# Graduate Degrees Conferred in 2012

## Doctor of Philosophy (Ph.D.)

**Antonio Arenas Amado,** Development and Application of A Mechanistic Model of Juvenile Salmon Swim Paths
**Jeremy Bril,** Measuring Mussel Behavior and Analyzing High Frequency Nitrate Data to Explore New Phenomena in Dynamic Nutrient Cycling
**Dimitrios Dermisis,** Developing an Improved, Shock-capturing Watershed Model for Simulating Spatially Variable Runoff and Soil Erosion Processes at the Hillslope Scale
**Piotr Domaszczynski,** Performance Evaluation of a Network of Polarimetric X-band Radars Used for Rainfall Estimation
**Luciana Kindl Da Cunha,** Benefits of Satellite Remote Sensing for Flood Prediction Across Scales
**Joshua Livermore,** Microbial Ecology of a Managed Aquifer Near the Iowa army Ammunition Plant (Middletown, IA)
**Richard Meggo,** Rhizosphere Biotransformation of Selected Polychlorinated (PCB) Congeners by Switchgrass and Poplar
**Nikhil Sikka,** Understanding Travelers' Route Choice Behavior Under Uncertainty
**Yang Wang,** Passive and Muscle-based Predictive Computer Models of Seated and Supine Humans in Whole-body vibration



# Featured Graduate Students

### Investigating Arsenic Geochemistry — Brittany Huhmann

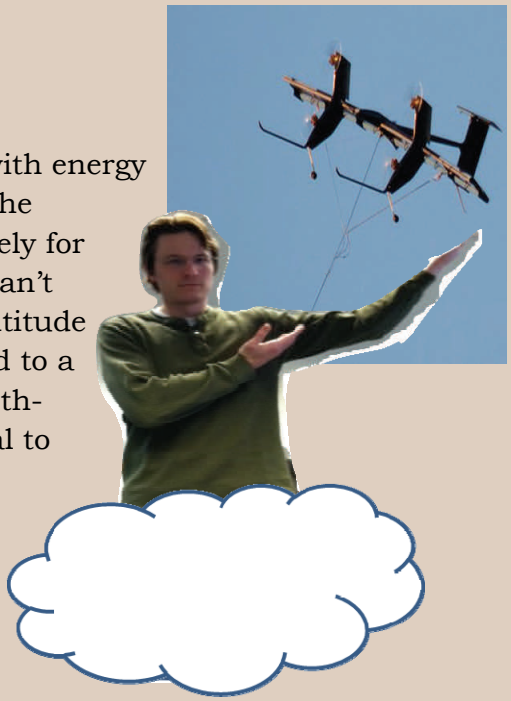
I'm a master's student in Environmental Engineering working with Michelle Scherer and investigating processes that control arsenic mobility in groundwater. More specifically, I study whether arsenic can be incorporated into or released by iron oxide minerals in the presence of reduced iron in solution. This work has local relevance for Iowa since more than 8% of private wells tested in the state show arsenic concentrations greater than the EPA drinking water standard, and it has global relevance since arsenic contamination of groundwater poses a public health threat throughout Southeast Asia and many other regions of the world. Prior to starting my master's degree, I contributed to policy-relevant science research with a range of government organizations, including the US Geological Survey, Pacific Northwest National Laboratory, and the Missouri Department of Conservation. I also spent a year volunteering at small organic farms, including a 2-month stint with a farming collective in Ecuador and a 9-month stint at a community-supported agriculture (CSA) farm run by Roman Catholic religious sisters in western Pennsylvania. When I'm not doing research, I spend time with the River City Housing Collective, a fabulous intentional community where I cook vegan and gluten-free meals monthly for a house of 17 people and lead and participate in skill shares on topics such as crocheting, hooping, and non-violent communication. After graduation, I look forward to finding work at the science-policy interface with a government agency or nonprofit organization.

http://www.youtube.com/watch?v=tnG7KDPZ6uc&list=PLwBH6gKE0yJi4fLcIPOLGVDkan1BvFL2z&index=5&feature=plcp.

### Numerical Human Lung Model — Shinjiro Miyawaki

I am a Ph.D. candidate in Hydraulics and Water Resources graduate program. I am studying the human lung with Dr. Ching-Long Lin by using my knowledge in Civil and Environmental Engineering (CEE). My engineering education started at Nagano National College of Technology in Japan, a 5-year engineering-oriented high school, where I got my associate degree in CEE by studying how to restore ecosystem in artificially altered rivers. I earned my bachelor and master degrees at the Nagoya University in Japan studying how floods flush plants in rivers and how plant seeds deposit on riverbeds. As a Ph.D. student at the University of Iowa, I first studied how water flows around freshwater mussels and at river confluences with Dr. Tatsuaki Nakato and Dr. George Constantinescu by performing numerical simulations. In 2010, I started researching how air flows and how aerosols (e.g., pollutants, cigarette smoke, pharmaceutical drug) deposit in the human lung, which consists of bifurcations (inhalation) or confluences (exhalation), by using numerical models. I grew up in a ski resort where I volunteered in the 1998 Winter Olympics. I enjoy nature and would like to use my career help people better understand and interact with natural systems.

# Featured Graduate Students



**Nathan Nissen —**

I am currently working on the design of high altitude tethers with energy transfer capabilities. Windmills work off of the principle that the higher they are the more power they can produce. Unfortunately for ground based windmills the towers have size limitations that can't be overcome with conventional methods. This is where high altitude energy comes into play. To simply put it a windmill is attached to a glider and flown to heights not achievable by ground based methods. This innovative way of harvesting energy has the potential to tap into the jet stream winds and produce enough electricity to supply the entire nation. To make this all possible I am designing a tether to handle the harsh elements 30,000 feet above the earth all while maintaining its structural integrity and ability to transfer electricity. In my free time I enjoy bowling, working on my car, and watching movies.

**B.S/M.S. Student Feature — Heidi Ranschau**

When my senior year of high school rolled around and it was time for me to start looking at colleges, the University of Iowa was the first application I completed (because there was no essay required). As the year wore on and I began getting acceptance letters and visiting schools, something about Iowa really stuck out to me. I got the feeling that they really wanted me here, that I wasn't just another number among the masses. Another big selling point that Iowa had was their BS/MS program. Going into Civil Engineering, I had talked to other professionals in the field and it seemed like getting your Master's was definitely the way to go if you wanted that extra leg up on the competition. I thought, "Why not save money and time and get my Master's in one year instead of two?!" Being in my last semester of my undergraduate career, I have recently begun work on my thesis. My research involves calculating evaporation rates using water vapor concentrations found using Raman Lidar which Professor Eichinger helped develop here at Iowa. This machine is one of only two in the entire world so we like to think we're pretty cool! Given the smaller size of the Civil and Environmental Engineering Department at the University of Iowa, I have been given the unique opportunity to get to know the faculty and staff here really well. In return, they have taught me just as much inside the classroom as out of it. After spending four years here at Iowa, I have grown a lot as a person. Even though I will be sad to leave, the lessons I have learned and the friends I have made will last a life time.

# Program Highlights—Senior Design

### Project Design and Management, CEE:3084

This is a course where students have a chance to use design skills they have developed in previous course work to work on real-world design projects, projects formulated by local consulting companies, local or state agencies or a cities. This year students have projects from Stanley Consultants, HR Green, Shive-Hattery, John Deere, Buchanan County, the National Park Service, the City of Coralville, and local developers (including fictitious projects formulated by University faculty). All projects are multidisciplinary in the sense that they include substantial elements from at least two of the program areas/sub-tracks within Civil and Environmental Engineering (Structures, Transportation, Water Resources, and Environmental Engineering). For example, the redesign of the Coral Ridge Mall parking lot (the City of Coralville project) requires structural and transportation engineers to reconfigure the parking stalls, and water resources and environmental engineers to evaluate the runoff from the parking lot and its impact on the receiving stream.

To enforce multidisciplinary activity in the class, each project team is made up of 'experts' who represent the sub-tracks that are required to complete the project. For example, the Coral Ridge Mall project requires experts from four sub-tracks: Structures, Transportation, Water Resources and Environmental Engineering. To become an expert and fulfill the required function on a team, a student must pass a mini FE exam with that sub-track focus.

This class differs from most other classes in that students have to not only solve a given problem but also in many cases formulate the problem. A problem statement is typically obtained only after the students have met with the client and surveyed the area. This was the case with the Hoover Creek Steam Management Plan. Figure 1 (upper right) shows a team meeting with National Park Service Superintendent Peter Swisher, who is explaining the flooding problems of the Hoover Creek and some of the constraints the students will have to consider in their design of mitigation alternatives. In the Barn and Bridge project for a local developer, students had to go to the site to make measurements (Figure 2, left) before being able to grasp the magnitude of the project and prepare a good proposal.

Along with work on their individual projects, in this class students attend lectures on how to write and present proposals, how to develop schedules and cost estimates, and on how to develop a preliminary design with site/project analysis, design alternatives, selection criteria, specification, schedule, budget etc. These lectures include discussions on how to give an oral presentation, how to delegate tasks among team members, how to resolve conflicts, and how to address ethics issues. Figure 3 (lower right) is a photo from such class activity.

# CEE Happenings, 2012-2013

## Awards and Recognition

*Witek Krajewski won The Graduate College Outstanding Faculty Mentor Award (November 2012)

*Gabriele Villarini won the Hydrological Sciences Outstanding Young Scientist Award from the European Geosciences Union (April 2013) as well as the Premio Terricilli, Gruppo Italiano di Idraulica for the best young Italian researcher in hydrology and hydraulics (September 2012)

*Allen Bradley won the 2012 UI President and Provost Award for Teaching Excellence (October 2012)

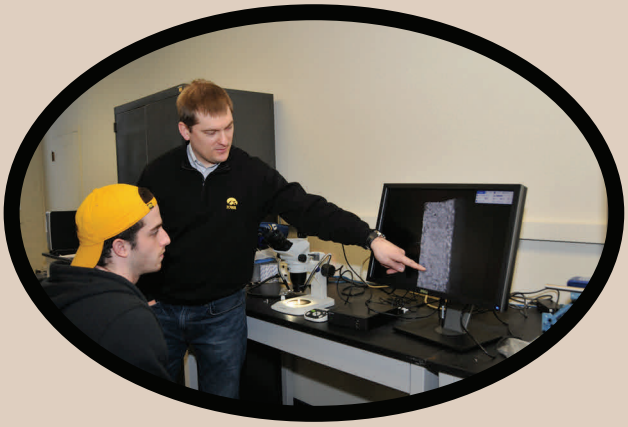
*Wilf Nixon received the George K. Wadlin Distinguished Service Award, American Society of Engineering Education (June 2012)

*Jacob Odgaard received the 2012 Lifetime Achievement Award, The Environmental and Water Resources Institute of the American Society of Civil Engineers (May 2012)

*David (Hosin) Lee was Elected Member to The National Academy of Engineering Korea (February 2012)

*Della Caldwell won the UI Daniel W. Mead Paper Competition, which was organized by the UI ASCE Student Chapter. Her paper was submitted as the UI entry to the ASCE National Daniel W. Mead Student Contest, where she received second place. (March 2013)

## Our Classes in Action

THE UNIVERSITY OF IOWA

Civil and Environmental Engineering

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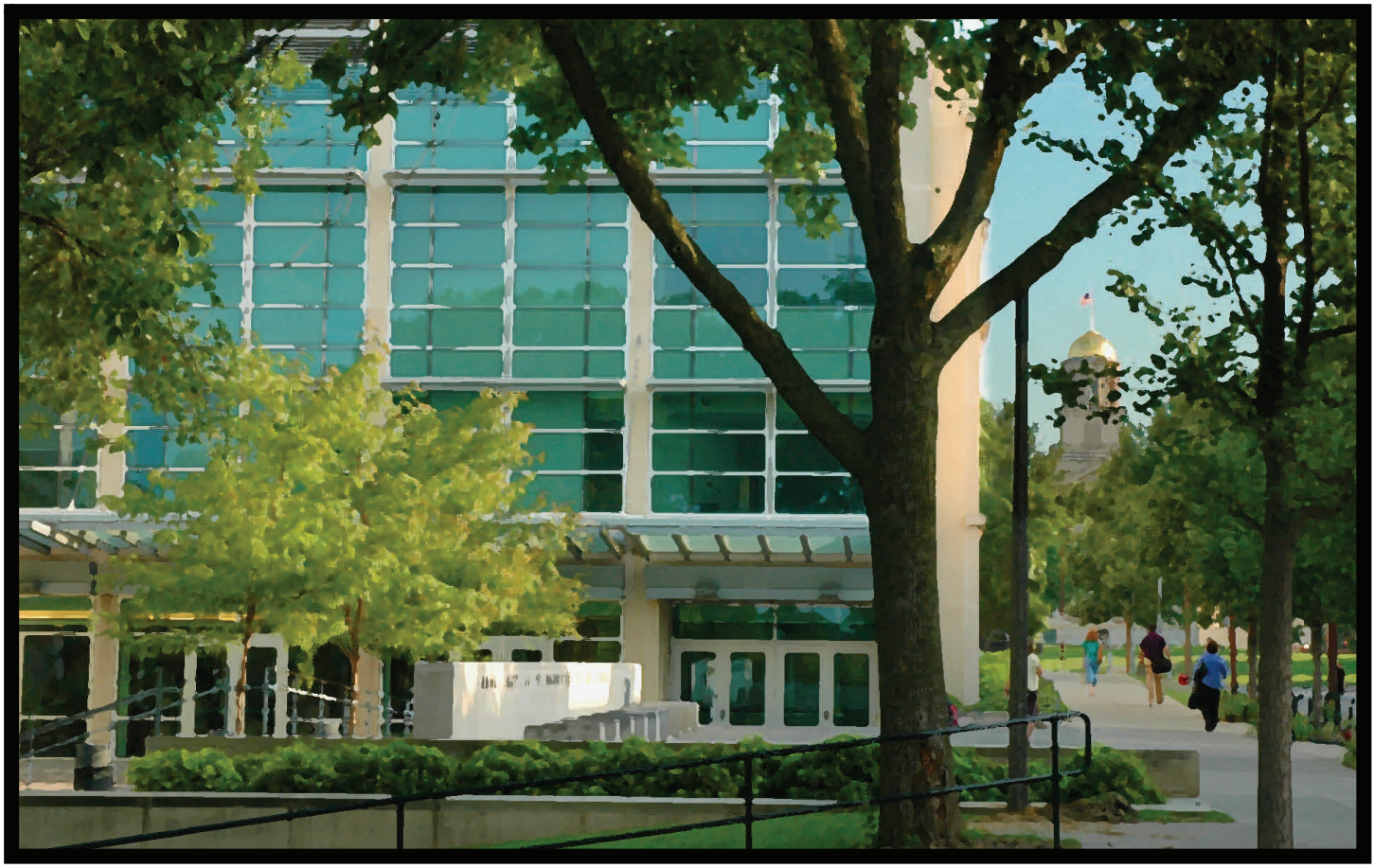

PHOTO BY: MIKE JENN