CCEE at ISU

OurRoles

Civil, Construction and Environmental Engineering at Iowa State

Fall 2011/Winter 2012

in the future of **WIND ENERGY**



Hello CCEE Alumni and Friends

I am delighted to serve in my new role as interim department chair of Civil, Construction and Environmental Engineering. I recognize the compassion you have for the CCEE department and notable legacy you leave behind for our current and potential students, faculty and staff. Thank you for thinking of us.

We have much to be proud of in 2011. As you will see in the stories ahead, there are many achievements to celebrate of our students, faculty, staff, alumni and visiting scholars. Members of the department have been recognized at the college, university, national and international levels for their achievements in teaching, research, and even patriotic sacrifice – true representations of the land grant philosophy that originates at Iowa State University. CCEE faculty and staff awards include Professor Doug Gransberg's 2011 Distinguished Design-Build of America Leadership Award, Professor Sri Sritharan's Iowa State University Mid-Career Achievement in Research Award, Bioeconomy Institute Proposal Coordinator Chris Knight's Dean's Staff Excellence Award and Associate Professor Chris Rehmann's Superior Engineering Teacher Award. Also read about Professor Hans van Leeuwen's international collaboration on fungal-ethanol research on page 8.

This year we welcome a record enrollment of undergraduate students. This fall the CCEE department has 1,048 undergraduate students, which is a two percent increase from fall 2010. Numbers reflect an overall record of students enrolled within the College of Engineering, which is the fastest growing college on Iowa State campus in terms of enrollment. The department also welcomed 134 graduate students, which is the most combined master's and doctorate students we've ever had.

Our department alumni shine. Anson Marston Distinguished Professor Emeritus Dr. Richard L. Handy (Ph.D. CE '56) established an endowed professorship. The inaugural recipient of this professorship is Associate Professor Dr. David White, which we feature on page 6. We also recognize Thomas Jellinger (M.S. Industrial Engineering '63) and his wife, Ro, with their dedication of a computer lab that benefits undergraduate construction engineering students and industry partners (also page 6).

Please join me in congratulating them and other honorees for their awards. We are very proud of their achievements.

To conclude, I wish you a happy 2011 holiday season, wherever you call home.

Regards,

all bel

Terry Wipf Interim Department Chair of Civil, Construction and Environmental Engineering Pitt-Des Moines Professor in Civil Engineering

IOWA STATE UNIVERSITY Department of Civil, Construction, and Environmental Engineering



Our Roles

Iowa State wind energy research strengthens





Students

See what our students have done to make CCEE shine

New to us Meet the talented additions to CCEE faculty and staff

Visitors Scientists, engineers come to CCEE from around the world

Legacy We honor the greatest that inspire us today

To our donors

We recognize individuals and organizations who gave this year





9/11: 10 years later *CCEE faculty recall personal stories, research impacts of 9/11 aftermath*





Faculty honors Congrats to our faculty and staff awardees from this past year



CCEE at ISU

Interim Department Chair *Terry Wipf* **Editor, Writer and Lead Designer** *Chris Neary* **Student Writers** Jordan Joynt, Brady Rebhuhn

CCEE at ISU gratefully accepts articles, story ideas, photos, alumni story contributions, comments, inquiries and address changes at the following address: Chris Neary, Communications Specialist; Department of Civil, Construction and Environmental Engineering; Iowa State University; 307 Town Engineering Building; Ames, IA 50011. For current and recent news and events from CCEE, see us online at www.ccee.iastate.edu. Iowa State University does not discriminate on the basis of race, color, age, religion, national origin, sexual orientation, gender, marital status, disability or veteran status. Anyone with inquiries concerning this may contact ISU's Director of Affirmative Action: 318 Beardshear Hall, 515 294-7612.

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Lecturer recalls 9/11 as a Naval officer

isbelief. Shock. Anger. And Helplessness. Iowa State University Civil and Construction Engineering Lecturer Beth Hartmann was a U.S. Naval personnel officer on September 11, 2001. For one day she was a hopeful ear to a nation who had little hope left.

On that infamous day, Hartmann was stationed at Naval Support Activity in Millington, Tenn. She was attending a command indoctrination course when word broke about the first plane striking one of the World Trade Center Towers in New York. Classes were cancelled shortly thereafter and members surrounded the television, witnessing the second plane hit the second tower. The Army's Personnel Command Headquarters was hit in the attack on the Pentagon, requiring the Navy to pick up their duties.

A 1-800 number on CNN was put in place for anyone with questions regarding individuals working in the Pentagon. Hartmann was one of many who answered as thousands of frantic loved ones called during the night and into the morning. She and others in her class held a list of those confirmed dead, followed a specific script and, most importantly, listened. The toughest call Beth received was from a woman looking for her cousin located in the Pentagon, who was already confirmed dead. People from all over the globe called offering condolences and asking what they could do to help.

Hartmann's emotions ranged from disbelief and shock to anger and a feeling of helplessness. Through the call line she was able to feel a sense of purpose in helping people find loved ones. Hartmann said there were times she cried off the phone, but stayed professional and regained composure on site. She credits the Navy with her training and ability to handle a crisis.

Shortly after the attacks, Hartmann describes a feeling of patriotism and camaraderie amongst those in the Navy and around the U.S. In other cases, there was a spectrum of political beliefs in response to the attacks, in response to those who were responsible.



CCEE Lecturer Beth Lin Hartmann, seen here with Naval Facilities Engineering Command Pacific Commander Mike Giorgione in October 2009, was a U.S. Naval personnel officer on September 11, 2001. She helped answer phone calls to CNN from people trying find their loved ones victimized by the terrorist attacks in New York, Washington, D.C., and Pennsylvania.

The 9/11 terrorist attacks had a strong impact on Hartmann's life, resulting in a strengthened passion to live each day to the fullest and feel an appreciation for life and relationships. It was a constant reminder to tell those around her how she felt about them.

Hartmann graduated from Iowa State in 1989 with a Bachelor of Arts in Architecture, while also involved in the campus' Navy ROTC program. She was later commissioned within the Civil Engineer Corps working in public works and construction. She earned her master's degree in civil engineering from Iowa State in 1996. In 2009 she retired from the Navy after 20 years of service and joined CCEE faculty as a lecturer for civil engineering and construction engineering undergraduate courses. **- Jordan Joynt.**

Assistant professor studies airport security post-9/11



Konstantina (Nadia) Gkritza

The aftermath of the 9/11 U.S. terrorist attacks brought an increase in airport security screening, among many other things affecting national security. In 2006, ISU Assistant Professor in Transportation Engineering **Nadia Gkritza**, who was a PhD student in civil engineering at Purdue University then, and two colleagues reported on the standpoint of airport

passenger satisfaction post-9/11. They assessed the effects of Transportation Security Administration's (TSA) increased airport security with whether a passenger was unsatisfied, indifferent or satisfied with their airport experience.

Gkritza, her major professor, Fred Mannering, and University of California-Davis Professor Deb Neimeier, applied probability

models to predict outcomes of passenger experiences – either unsatisfied, indifferent or satisfied. Using research data collected by the U.S. Department of Transportation's Bureau of Transportation Statistics, they assessed reaction patterns by passenger age group, household income, gender, race, level of education and wait time at the airport. Gkritza and her colleagues concluded that although a boost in airport security increased wait time, "TSA has been effective in federalizing airport security from a passenger satisfaction perspective."

The paper has been cited 10 times. It was named No. 3 in the Science Direct Top Hottest Articles between July and September 2006. The paper is entitled, "Airport security screening and changing passenger satisfaction: An exploratory assessment."

Jian Chu, PhD

Jian Chu, a researcher and consultant well established in southeast Asia, became the James M. Hoover Chair in Geotechnical Engineering on August 16, 2011.

Chu's most recent venture was director of the Centre for Infrastructure Systems in the School of Civil and Environmental Engineering at Nanyang Technological University in Singapore. There he spent 20 years teaching, conducting research and consulting in geotechnical engineering, in particular in soil properties, in-situ and laboratory testing, soil improvement and land reclamation. Chu also served five years as chairman of a technical committee for the International Society of Soil Mechanics and Geotechnical Engineering and was vice president of the Geotechnical Society of Singapore. He led more than \$10 million in research projects in Singapore.

Chu received the Excellent Paper Award from the International Association for Computer Methods and Advances in Geomechanics in 2011 and R.M. Quigley Award from the Canadian Geotechnical Society in 2004. He earned a PhD in civil engineering from University of New South Wales (Australia) in 1991 and a B.Eng. in civil engineering at Logistical University of the people's Liberation Army (China) in 1983.

Chris Neary

Chris Neary is the new communications specialist for CCEE and Chemical and Biological Engineering, developing and implementing each department's communication plans. His first day was August 1, 2011.

Before coming to Iowa State, Neary

worked at Aiken Technical College (ATC) in Aiken, South Carolina. At the regional community college he implemented a marketing and communication plan and developed promotion designs, print advertisements, press releases, daily web news and social media – including establishing Facebook and Twitter pages for the college. Prior to working at ATC, Neary was a portrait and studio photographer for Lifetouch National School Studios, where he developed creative photography skills in portrait photography. He graduated from MSU with a journalism Bachelor's degree in 2009.

While at Michigan State University, Chris was a student intern for two years at the university's physical plant. There he learned internal corporate communications, where he wrote, edited and redesigned the division newsletter and web news. As the division's photographer he was a top-five national finalist in the 2008 Association for Physical Plant Administrators Photo Contest.

Simon Laflamme, PhD

New structural engineering Assistant Professor **Simon Laflamme** has devoted the last several years to research in structural control. On August 16, 2011, he brought his expertise to the CCEE department.

Laflamme's credentials are quite impressive. He earned a Bachelor's in Commerce degree (2003) from McGill University, emphasizing in economics and finance. A Bachelor's in Civil Engineering degree came next (2006) at McGill University. He later earned master's (2007) and doctorate degrees (2011) in civil engineering from Massachusetts Institute of Technology.

While At MIT he published four journal papers in structural control and health monitoring research, spoke at four conferences in the U.S., Canada and Japan, and gave three invited talks in Germany, Japan and Ireland. In May 2011 Laflamme was awarded



the Ernest A. Herzog Award from the Boston Society of Civil Engineers for his work on the patent-pending structural sensing skin. In August 2009 he and a team of international graduate students won the research competition for the Asia-Pacific Summer School on Smart Technologies, held at the University of Illinois Urbana-Champaign. They earned the highest combined score of structural monitoring field tests and oral presentations.

Jessica Van Winkle, MBA

Jessica Van Winkle joined CCEE February 21, 2011, as an academic advisor for civil and environmental engineering students. She shares advising duties with the Mechanical Engineering Department.

Van Winkle brought nine years of advising experience, both in academia and financial services, before coming to CCEE. She spent a combined two years as a graduate assistant in the Iowa State University Department of Business and academic advisor for the ISU Department of Animal Science. Previous to that she was a sales specialist in financial services for seven years at various companies in the Des Moines area. Van Winkle also had served as an advisor and recruiter for adult education at Grand View University in Des Moines.

She received her bachelor's degree in business finance (2001) and master of business administration degree (2009) here at Iowa State. Iowa State traditions are high on her list, including Campaniling.

White appointed first **Handy Professorship**



Dr. Richard L. Handy Geotech Professor, 1956-91

Dr. David White, CCEE associate professor in geotechnical engineering/materials, was recognized for his appointment to the inaugural Dr. Richard L. Handy Professorship November 4 at a department ceremony in Kiewit Student Study Center. Dozens of guests, including Dr. Handy, Dr. White's graduate students and colleagues, CCEE emeritus faculty and others were there to celebrate.

"I am truly honored to be the first to receive this professorship from Dr. Handy," Dr. White said. "His teaching is world class, and his students are world class."

The Richard L. Handy Endowed Professorship was established last May in honor of Anson Marston Distinguished Professor Emeritus of Engineering Dr. Richard L. Handy, who taught in the geotechnical engineering area of CCEE from 1956-91. He also graduated from Iowa State with a Ph.D. in civil engineering in 1956.

Dr. White has been teaching geotechnical engineering/materials at Iowa State since 2000. In line with his research interests in ground improvement, soil compaction, soil-structure interaction and in-situ testing, his latest project involves integrated earthwork operations. He also is developing a method of preventing dirt from sticking to steel.

Dr. White earned master of science and doctorate of philosophy degrees in civil engineering at Iowa State in 1999 and 2000, respectively. Both degrees had an emphasis on geotechnical engineering/materials. In 1997 he earned a bachelor of science degree in civil engineering from the University of Missouri-Columbia.



Dozens of family members, friends and colleagues also celebrated the inaugural Dr. Richard L. Handy Professorship in Geotechnical Engineering November 4 at The Knoll, the oncampus residence of Iowa State University's president and his family. (Left to right) Iowa State University President Dr. Gregory Geoffroy, inaugural Handy Professorship honoree and Associate Professor Dr. David White, Anson Marston Distinguished Professor Emeritus of Engineering Dr. Richard L. Handy and College of Engineering Dean Dr. Jonathan Wickert. Photo courtesy of the Iowa State University Foundation.

a CCEE reception November 4 on behalf of his appointment of the first Richard L. Handy Professorship in Geotechnical Engineering. ConE lab named after

Tom and Ro Jellinger



On September 25, 2010, the CCEE department dedicated the Thomas and Ro Jellinger Lab for the benefit of construction engineering undergraduates students and industry. The lab, located on the first floor of Town Engineering, provides virtual site tours, building information modeling, and a conducive learning environment for the senior-level design course. Thomas Jellinger graduated from Iowa State with a M.S. in industrial engineering in 1963 and was an instrumental professor in establishing the lowa State construction engineering program. Photo courtesy of the Iowa State University Foundation.



Thank you for your contribution.

Richard & Shirley Fidlar

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Van Leeuwen hosts four int'l scientists



Visiting scientists formed a research team, led by Vlasta Klima Balloun Professor of Engineering Hans van Leeuwen, to study the use of fungi to improve ethanol production. Pictured left to right: Nicholas Davidson, master's student at King Abdullah University of Science and Technology in Saudi Arabia; H. Duygu Ozsoy, assistant professor at Mersin University in Turkey; Elif Alaydin, research assistant at Zonguldak Karaelmas University in Turkey; and Ezgi Bezirhan, graduate student at Mersin University.



Left: Bezirhan, Alaydin and Ozsoy prepare bioplastics samples as part of their research to use fungi to improve ethanol production. Right: Davidson, a master's student in Saudi Arabia who is originally from Scotland, conducts chemical-oxygen demand (COD) tests on fungus inside an ISU Food Sciences laboratory.

ans van Leeuwen , the Vlasta Klima Balloun Professor of Engineering recruited four top researchers from around the world last summer to help with his goal of using fungi to improve ethanol production.



Hans van Leeuwen

Van Leeuwen invited Nicholas Davidson, a master's student from Saudi Arabia's King Abdullah University of Science and Technology; H. Duygu Ozsoy, an assistant professor from Turkey's Mersin University; Ezgi Bezirhan, a graduate student also from Mersin University; and Elif Alaydin, a research assistant from Turkey's Zonguldak Karaelmas University in the "hopes of making better co-products for the biofuels industry and producing a cleaner environment," van Leeuwen said.

Most of their work took place at the Food Sciences Building inside a pilot-scale facility that grows fungi on corn thin stillage from a local bioethanol plant. The ultimate goal of the research team is to find industrial applications of a fast-growing, edible fungus. In their research the scientists explored fungal application to bioplastics, or plastic derived from biomass like corn starch, which is comparatively unknown to bacterial degradation of bioplastics.

Iowa State graduate students, scientists and faculty also are involved with this project, including post-doctorate research associate Mary Rasmussen and graduate students Dan Erickson, Chris Koza and Debjani Mitra.

Van Leeuwen also attributes the Turkish High Education Council, Turkish Airlines and King Abdullah University of Science and Technology to providing high-caliber visiting scientists for his research.

— Kelsey Schirm, a journalism and mass communication junior who writes for Engineering College Relations, contributed to this story.

College creates certificate in leadership, communication

The College of Engineering created an opportunity for engineering students: the Leadership Certificate in Engineering. The certificate is an engineering-focused track in the existing Leadership Certificate Program in the College of Liberal Arts and Sciences.

The certificate was created in response to industry needs. "We are hearing from recruiters that they would love to see engineering graduates with more training and experience in communication and leadership," explained Gary Mirka, associate dean for undergraduate and graduate education.

This certificate requires 21 credit hours of coursework, nine of which cannot be applied to other program requirements. The capstone course, ENGR 490L, is an opportunity for students to bring the skills they've learned full circle. A requirement of the class is for each student to shadow an engineering leader in a company, and then practice their leadership within a student organization, research project, or similar group.

To compliment this new certificate, a student organization has been formed called Emerging Leaders in Engineering (ELE), which "creates an environment for the leaders of tomorrow to realize their full potential and to recognize the responsibility to make the world a better place." By offering these two opportunities in parallel, students can learn from each other and gain an even more rounded skill set.

— Kelsey Schirm, a journalism and mass communication junior who writes for Engineering College Relations, contributed to this story.

Geotech expert C.F. Leung visits from Singapore



Dr. C.F. Leung, a professor at the National University of Singapore, was invited for a talk October 4 about jackup spudcan foundations, a common base for offshore, shallow water oil and gas drill sites.

The Civil, Construction and Environmental Engineering Department welcomed Dr. C.F. Leung, a professor in the Department of Civil Engineering at the National University of Singapore, to expose students and faculty to more international offshore research and engineering. His presentation was October 4.

Dr. Leung's lecture was about the studies of centrifuge models on jackup spudcan foundations. Problems with spudcan foundations today include the punch through of upper stiffer soil into weaker underlying soil during the installation of offshore, shallow water oil and gas drill rigs. The goal, through Dr. Leung's research at National University of Singapore's Centre for Offshore Research and Engineering (CORE), is to engineer a jackup spudcan that can be moved from one offshore site to another without having to extract deeply buried spudcans, without causing damage to permanent platform piles and avoiding sliding failure when reinstalling in used areas.

His lecture was a James M. Hoover Geotechnical Engineering Seminar, hosted by James M. Hoover Chair **Jian Chu**. Chu became a CCEE professor of geotechnical engineering and materials in August after spending 20 years at the University of Singapore, most recently leading the Centre for Infrastructure Systems at University of Singapore's School of Civil and Environmental Engineering.

Greek academic speaks on statistics, neural networks

CCEE assistant professor in transportation engineering **Nadia Gkritza** invited Dr. Matthew Karlaftis to speak October 19 about statistics and neural networks regarding transportation engineering. Dr. Karlaftis is an associate professor of transportation planning and engineering at the National Technical University of Athens, Greece.

Dr. Karlaftis spoke about statistics and neural networks involved in transportation engineering projects. The goal of his seminar was to give students insight when choosing an appropriate approach to analyze data. In Karlaftis' presentation he discussed the similarities and differences between statistical analysis and computational intelligence on projects and presented three case studies that compare the two distinct approaches on the same data.



Bridge engineering expert, Miller, talks improvement



Maury Miller (B.S. CE '58), presented a lecture November 18 on the history of bridge engineering and what engineers have learned to improve their design and construction methods.

Miller is retired vice president for the HNTB Corporation, a company he worked at for 51 years. With the company he engaged in bridge design and engineering in 36 states, Puerto Rico and Brazil. He is an American Society of Civil Engineers fellow, a life member of the National Society of Professional Engineers and a life member of the American Segmental Bridge Institute. Miller also is a licensed engineer in 12 states and is well-recognized for his contributions to the design, construction and preservation of bridges.

Wind Energy Teaching & Kesearc

CCEE and several other lowa State

College of Engineering departments are collaborating to

provide an interdisciplinary, comprehensive curriculum on wind energy.

CCEE plays its part as it develops various lesson plans and research projects based on the transportation, structural, geotechnical and construction aspects of wind energy **production**. Check out the CCEE faculty players in wind energy below







Jeramy Ashlock

Nadia Gkritza

Simon Laflamme







Matt Rouse

Sri Sritharan

he College of Engineering has begun offering a wind energy course that gives an interdisciplinary look at the production and maintenance of wind farms. It is open to all engineering students.

ENGR 340X: Introduction to Wind Energy – System Design and Delivery, is an introductory course that provides students everything from the economic analysis of wind energy to the supply chain of wind farm production to the design of wind towers. Perspectives from the CCEE department, Electrical and Computer Engineering Department, Materials Science Engineering Department and Industrial and Manufacturing Systems Engineering Department instructors give students a comprehensive approach to making wind energy. Among faculty of other departments, CCEE faculty members teaching the course are Professor Sri Sritharan, Assistant Professor Nadia Gkritza, Institute for Transportation Director Shashi Nambisan, Assistant Professor Jeramy Ashlock, Assistant Professor Jennifer Shane

and Assistant Professor Matt Rouse. Each instructor contributes student outcomes

Sritharan ensures students understand wind turbine tower design objectives: feasibility, constructability, safety, serviceability/ operability, economy, functionality, aesthetics, environmental impact, sustainability and maintainability, ease of demolition.

Gkritza and Nambisan teach students to solve the problems of the logistics of wind farm energy and infrastructure. They are researching how to solve issues that come with the impacts of construction of wind energy farms.

In Ashlock's lectures, the assistant professor provides students with three objectives: introduce students to foundation design and provide brief background on geotechnical engineering; Provide students with the ability to select the most suitable types of wind turbine foundation for a given site; and discuss a typical gravity foundation design procedure for an onshore wind turbine. Shane teaches students how to develop schedules for the logistics and construction of a wind turbine.

Rouse's research focuses on new, more resilient and cost-effective designs for structures that support overhead power transmission systems. He's helping to develop a course on materials for wind energy in terms of generation, distribution and storage.

ENGR 340X will become one of two courses required for a new wind energy minor. The minor will be available to all engineering undergraduate students once the other course is developed.



ssistant Professor Dr. Simon Laflamme is developing a nondestructive monitoring method to detect damage on a wind turbine blade. This technology would allow timely decisions on wind turbine maintenance, resulting in considerable savings.

Dr. Laflamme's detection method, or way of structural health monitoring, involves his patent-pending sensing skin for health monitoring of civil infrastructure. The skin

is made of a flexible thermoplastic elastomer sandwiched by black carbon electrodes. With wind blades, electrodes capture the skin's capacity to store energy, directly related to micro changes in the skin's geometry. Variations in this capacity detect changes in the skin dimension, which could easily be related to damage within the blade structure and be analyzed to evaluate how bad the damage is. This technology has not been commercially developed yet.

"We aim to demonstrate that the sensing skin is a simple and cost-effective technology for automating the health monitoring process of wind turbine blades," Dr. Laflamme said.

owa State University will soon - become the first institution to award students PhD degrees in Wind Energy Science, Engineering, and Policy thanks to a \$3.1 million, five-year grant from the National Science Foundation (NSF) Integrative Graduate Education and Research Traineeship (IGERT) program.

The program will broaden students' academic exposure through three distinct types of experiences: interdisciplinary, industry, and international. It is a collaborative effort with the University of Puerto Rico – Mayagüez that will support a total of 28 domestic PhD students over the next five years, and will provide them with multidisciplinary training in the skills required for conducting research in engineering, science, and policy-related disciplines.

IGERT fellows will receive an annual stipend of \$30,000, as well as tuition, fees, and health insurance for two years. Additional support will be available for textbooks, journals, short courses, and professional travel. In the following years, they will be supported via research grants and other funding sources and/ or as teaching assistants. The expectation is that all IGERT fellows will be provided a total of three to five years of support depending on the nature of their research and contingent on adequate progress toward the degree.

The degree of damage informs engineers and manufacturers whether a wind blade needs to be repaired or must be replaced if posing an imminent threat to turbine function and/or its surrounding environment. Wind turbine maintenance is expensive. However, if wind blade damage is detected on time, timely scheduled maintenance has the potential to decrease the life cycle cost of wind turbines, thus more effective wind energy harvesting.

Several Iowa State engineering departments work with Dr. Laflamme to ensure that best electrical, material, aeronautical and manufacturing processes are applied with structural health monitoring of wind turbine blades.

These departments include Aerospace Engineering; Civil, Construction and Environmental Engineering; Electrical and Computer Engineering; Materials Science Engineering; and Industrial and Manufacturing Systems Engineering.



adia Gkritza, an assistant professor in transportation engineering, works to solve the problems of the logistics of wind farm infrastructure and construction.

She analyzes road damage costs resulting from the transportation of wind turbine materials. She works with county engineers and Iowa Department of Transportation workers to determine the logistics of who should pay maintenance costs.

Transportation logistics

Transportation logistics comes with the size and weight of the wind turbine parts. They are usually shipped in three components: blades, tower pieces and nacelle. The weight capacity of country roads and bridges makes this a problem. Drivers of vehicles carrying wind turbine structural materials must consider routes that require the least amount of turns, include the most highway and low traffic times.



evin Deters, general manager of renewable energy groups at M.A. Mortenson Company of Minneapolis, Minnesota, led a discussion in Howe Hall's Alliant Energy-Lee Liu Auditorium September 8 on how producing wind turbine farms incorporates several engineering disciplines and how these turbines affect communities. His discussion led to a 45-minute O-and-A session with several engineering students and faculty.

Partnering with industry

The Wind Energy Initiative, identified by Engineering Dean Jonathan Wickert, was set to facilitate the nation's achievement of 20 percent of energy from wind by 2030. The strategy is to drive heavy wind energy growth in lowa and the U.S. through leadership in research, education and outreach.

Gransberg named Distinguished DBIA Leader



Douglas Gransberg

The methods of design-build projects have been an important part of the life of **Douglas D. Gransberg**, Iowa State professor in civil, construction and environmental engineering. Emerging into the market as Gransberg was beginning his career as an engineer, designbuild's nontraditional way of delivering construction projects has given him many

opportunities in industry, academia and research. After many years of experience in these areas and involvement in the Design-Build Institute of America (DBIA), Gransberg was named the 2011 recipient of the Distinguished Design-Build Leadership Award at this year's Design-Build Conference & Expo in Orlando, Florida.

Recipients for the award are chosen based on various criteria specific to each of the five categories: owner, industry professional, legislator, full-time faculty, and student. Gransberg, who was chosen for his contributions as a full-time faculty member, was surprised to hear that he had been chosen for the award.

He felt nothing short of gratitude. "The development of designbuild contracting as a way to deliver construction projects is a topic that I've been involved in since the very beginning," explained Gransberg. "So, being recognized by my peers for my work is very meaningful, and I 'm just so honored they wanted to select me for this award."

Joining not long after the organization formed, Gransberg has made enormous contributions to DBIA. He was a key contributor in the group's efforts to develop a standardized approach to design-build. Working with public agencies, particularly government agencies, he was able to establish an approach that was used in industry.

Additionally, he has been involved in promoting DBIA's goals of advancing design-build. He assisted in writing the national exam for certifying people in design-build contracting, worked on several research projects, and has been on numerous committees. For the past two years, his committee dedication has been with the board of directors in which he oversees education and research initiatives on a national level.

Although Gransberg was selected for the award based on his academic contributions, he hasn't always been a professor. Gransberg spent the first 20 years of his career in the U.S. Army Corps of Engineers. After many years of traveling, he was ready for a break and the free time to see his kids through high school.

Thinking that it would be temporary, Gransberg took a job in academia and was surprised by what he discovered. "By the end of the first year, I fell in love with teaching," said Gransberg. "I liked the idea of working with young people and having the opportunity to leave something behind."

Continuing his new career, Gransberg held the Harold W. Connor Professorship at the University of Oklahoma before coming to Iowa State. He now holds the Donald F. and Sharon A. Greenwood Professorship in Construction Engineering. At Iowa State, he has kept busy by engaging himself in research and teaching.

Gransberg, hoping to make further contributions to design-build methods, will continue his work in academia, a place he truly loves.

— Kelsey Schirm, journalism and mass communication junior who writes for Engineering College Relations, contributed to this story.

Sritharan gains mid-career achievement in research

Through his passion of earthquake-resistant design of structures, Wilson Engineering Professor **Sri Sritharan** earned the Iowa State University Mid-Career Achievement in Research Award. Sritharan's award was recognized at the University Convocation September 26.

The award, which comes with a \$1,500 stipend, recognizes faculty members who have demonstrated outstanding accomplishments in research and/or creative activity at the midcareer stage. Sritharan's interest in advanced research in seismic, precast concrete and soil-foundation-structure-interaction disciplines helped develop a strong, diverse research program in CCEE.

"Sri is a credible and well-respected member of the College of Engineering and University community," said former CCEE Department Chair **Jim Alleman**, who nominated Sritharan.

Iowa State University President Gregory Geoffroy presents Professor Sri Sritharan with the Mid-Career Achievement in Research Award at the University Convocation in September.





Knight earns Dean's Staff Excellence Award

Chris Knight, proposal coordinator for the Bioeconomy Institute and former CCEE administrative specialist, was honored with the College of Engineering Dean's Staff Excellence Award August 31 at the College of Engineering Convocation.

"Chris is poised in accuracy and grace on multiple demanding projects," Engineering Dean Jonathan Wickert said at the convocation. "With that she is absolutely committed to the success of her colleagues."

Last year, while as an administrative specialist for the CCEE Department, Knight chose to support the Electrical and Computer Engineering Department's proposal budget management processes in addition to her CCEE duties. Her "can-do team-minded spirit" in this task was what earned her the award, said former CCEE department chair Jim Alleman.

Knight attributes the honor to the many faculty and staff whom she collaborated. "I wouldn't have met the many proposal and administrative deadlines and tasks without the help of Electrical and Computer Engineering and Civil, Construction and Environmental Engineering faculty and staff."

Knight has been employed at Iowa State University in several capacities since 1984. She also earned the Staff Exceptional Performance Award in 2007.



'Superior teaching' honors go to Rehmann

Chris Rehmann, associate professor in environmental engineering, received the 2011 Superior Engineering Teacher Award at the College of Engineering Convocation August 31.

"Chris is passionate about the student learning experience," Dean Jonathan Wickert said as he presented the award to Rehmann.

The Superior Engineering Teacher Award is an annual award that recognizes an Engineering College faculty member for superior performance in undergraduate, graduate or extension teaching. Rehmann received a plaque and \$500 honorarium with the award. One example of Rehmann's teaching excellence is his three-week teaching module on "systems" thinking within the E2020 Scholars Program. With his innovative teaching methods comes consistently high reviews from his students (4.5-4.9 on 1-5 scale).

"Chris has ample evidence of exemplary teaching accomplishments and impact with academic contributions," said former CCEE Department Chair Jim Alleman, who officially nominated Rehmann for the award.

Rehmann has taught at Iowa State since August 2004 as assistant professor, associate professor, courtesy associate professor for the Department of Agricultural and Biosystems Engineering, and assistant CCEE department chair.

ACI names ISU 'most outstanding'

In spring 2011 the American Concrete Institute (ACI) named Iowa State University a 2010 Outstanding University. Student members of Iowa State's ACI chapter, led by Professor **Kejin Wang**, applied for the award that only 15 universities worldwide received. The Iowa State group was recognized at the ACI Convention in Tampa, Florida, April 3-7, 2011.

"I hope this award will encourage more students to be interested in civil engineering and concrete materials," Professor Wang said.

— Sophie Hayek, journalism and mass communication graduate who wrote for Engineering College Relations, contributed to this story.



Jessica Garder "Precast UHPC Piles to Support Vertical Loads in Bridge Foundations"





Left to right: Graduate students Jeanna Schierholz, Chandra Kilaru, Ashley Buss, Miguel-Andres Guerra, Nicole Oneyear and Joel Sikkema produced the first CCEE showcase and poster competition September 15 for graduate students.

"Effect of Culture. Risk and Trust on the



Ghada Gad

Graduate students form first poster competition

A handful of graduate students hosted the inaugural CCEE Graduate Student Research Showcase and Poster Competition September 15. Seventeen graduate students presented research in many civil, construction and environmental engineering disciplines. Participants competed for the \$150 top prize, which went to Jessica Garder. Second place prize, at \$125, went to Nishant Garg, and third place went to Ghada Gad, who earned a \$100 prize. People's Choice Award went to Jeff Meng. Students practiced presentation skills in a conference-like setting and shared research. Poster presentations were judged by Iowa Department of Transportation traffic safety engineer Mark Bortle, Iowa Department of Natural Resources environmental engineer Eric Evans, Construction Engineering Associate Professor Chuck Jahren, Institute for Transportation Director Shashi Nambisan, graduate student Nicole Oneyear, Geotech/Materials Engineering Professor Kejin Wang and Interim Department Chair Terry Wipf.

NECA chapter places fifth in National Green Challenge

The Iowa State University chapter of National Electrical Contracting Association (NECA) recently placed fifth nationally in The NECA Green Energy Challenge.

NECA members Jeremy Bruecken, Kathleen Miller, Mathew Santee, Jon Schrobilgen, Megan Vollstedt and Alex Weiss and formed the Cyclone Energy team to complete an energy audit and proposal for Helser Hall on campus. To compete in the NECA Green Energy Challege, a student team like Cyclone Energy needed to identify a dormitory facility on their campus in need of energy efficiency improvements.

Cyclone Energy conducted an energy audit of Helser Hall's power and lighting systems and created a preliminary design of an energy retrofit for power and/or lighting systems. The areas included in the project consisted of a lighting retrofit, energy use analysis, photovoltaic implementation, and schematic estimate and scheduling. Initially the students inspected existing lighting fixtures, windows, ventilation and heating systems. The updated structures included in the plan consisted of higher efficiency bulbs, window replacements, and photovoltaic implementation.



A Leadership in Energy and Environmental Design (LEED) analysis was performed to judge current conditions of the building's structure as well as the new improvements to the building. The proposal also included electricity and heating usage in Helser Hall prior to the updates. - Jordan Joynt.

Civil engineering senior Mary Burroughs combines strategic planning, problem solving, and her own artistic flair in her hobby-turnedbusiness called Cake Engineering.

It started during her senior year of high school when Burroughs decided to make herself a cake. But, she didn't want it to be just any cake. "I see something cool and I think, 'Oh, that would look great in a cake," Burroughs says. She also draws inspiration from her civil engineering studies and her recent internship with the Woodbury County Secondary Roads department. The idea for one of her works—a wedding cake with blue tiers that list diagonally back and forth under a pair of bride and groom frogs—came to her while she was checking floodwater elevations.

Besides Cake Engineering, Burroughs bends her crafting abilities and engineering skills on the concrete canoe project, for which she is a co-captain with Josh Leyh, sophomore in civil engineering. At about the same time that she began working on the concrete canoe, she switched from her original major of materials engineering to civil engineering, which she says she enjoys for its emphasis on designing materials. Burroughs also serves as secretary of the Frederiksen Court Community Council, for which she designs community-building events and competitions.

"All I know is that no matter what happens, I like to decorate cakes and always will," she says.

— Kristen Dontje, technical communication senior who writes for Engineering College Relations, contributed to this story.



Mary Burroughs

Owns her own business called **Cake** Engineering

Started decorating cakes as a high school senior

Has met Ace of Cakes star **Duff Goldman**

Never went to culinary school

CE senior wins DBIA Student Leadership Award



Krista Morris

Civil engineering senior Krista Morris earned the Design-Build Institute of America (DBIA) Student Leadership Award. The award recognizes a student who has demonstrated leadership in the advancement of best design-build practices and promotion of design-build as the project delivery method of choice.

jak

CE SENIOR

Morris has been president of Iowa State's DBIA student chapter for two years, and has been a member for three years. As president she traveled the country for three different conferences, worked directly with industry professionals, learned design-build perspectives beyond what she saw in the classroom.

Morris was the only student chosen this year by DBIA, making her even more ecstatic to receive the award. "It feels great to be recognized at such a high level for all the time and dedication that I have put into this organization over the years," she said.

— Kelsey Schirm, journalism and mass communication junior who writes for Engineering College Relations, contributed to this story.

ConE students sweep ASC Region contest, again

Engineering

BURROUGHS

Iowa State University construction engineering students proved their scholarship as they won all four divisions of the 19th Annual Associated Schools of Construction (ASC) Region IV Student Competition October 26-29 in Nebraska City, Nebraska.

This was the second time, the first in 2009, that Iowa State student teams swept the competition.

"Their accomplishments are truly amazing," said CCEE Senior Lecturer **Larry Cormicle**. "As a faculty coach this is a dream come true for me." Cormicle coached all student teams. Sixteen ConE students were part of four winning teams.



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