

IOWA STATE UNIVERSITY

Department of Civil, Construction, and Environmental Engineering

Fall 2013

STUDENT ORGANIZATION NEWSLETTER



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Civil engineering senior places 3rd nationally for manure, greenhouse gas research



Kelsey Bruning

Dr. Jacek Koziel, an associate professor in the Department of Agricultural and Biosystems Engineering at Iowa State, offered Bruning a position in his research group after teaching her in a civil engineering course on air pollution. Her submission to the contest explained their research project entitled “Greenhouse Gas Emissions from Land-Applied Swine Manure: Development of Method Based on Static Flux Chambers.” This work was funded by the National Pork Board.

Kelsey Bruning, a senior in civil engineering who emphasizes environmental engineering at Iowa State, showcased her research project in the Ron Sheffield Memorial Student Poster Contest in Denver, Colo., and placed third with her submission. The poster contest took place at the inaugural Waste to Worth: Spreading Science and Solution National Conference from April 1-5, 2013.

The group’s research method is based on gas emissions collected daily from four static flux chambers. It is applicable to measuring changes of greenhouse gasses from area sources involving crops and soils, agricultural waste management, municipal waste, and industrial waste. Their method was used at the AG 450 Farm from last October through November to assess GHG emissions from land-applied swine manure on cropland.

Bruning explained that their research is contributing to the creation of a user-friendly model that would allow farmers to input information about their own operation in order to estimate the amount of air pollutants their farm emits and, if necessary, to develop strategies to lower that number. She said this would not only be beneficial for the environment, but it also would be cost-effective for the farmer.

She also said her course work helped her prepare for the research project and the competition. “The class Koziel taught definitely helped me prepare for this research project. I had a lot of environmental engineering classes that helped with my research—even classes I wasn’t expecting to directly use in my profession. I still use textbooks from past classes daily in my research.”

Cork Peterson named to Iowa State Construction Engineering Hall of Fame

Gale M. “Cork” Peterson, Jr. (BSConE’66), a longtime supporter and collaborator with the Iowa State construction engineering program, was recently named to the Iowa State University Construction Engineering Hall of Fame.

After graduating from Iowa State, he served two years as an officer in the U.S. Army Corps of Engineers. His company, PCI, was instrumental in improving construction efficiencies of the GEOPIER ground improvement system, an internationally preferred method of building foundation systems. Throughout his career at PCI, Cork has served on the Iowa State Construction Engineering Industry Advisory Council, including chairman from 2005 to 2008. He also has been involved with the Associated General Contractors (AGC) of Iowa in many capacities, including president in 1978. He is past chairman of AGC of America’s highway and transportation division.

Cork was officially recognized for his Hall of Fame honor April 26 at the Construction Engineering-AGC of America Iowa State Student Chapter Spring Banquet. A photo and summary of him are placed on the Construction Engineering Hall of Fame wall near the Town Engineering Building northeast entrance.



Cork Peterson



CCEE students write NECA's top green energy plan, again

For the second year in a row, civil, construction and environmental engineering (CCEE) students of the National Electrical Contractors Association (NECA) Iowa State chapter placed first in the written portion of the annual ELECTRI International Foundation Green Energy Challenge.

The 2013 Green Energy Challenge summons U.S. collegiate teams, comprised of members of NECA student chapters, to conduct an energy audit of a parking garage on their campuses or in their neighboring communities. Iowa State students chose the Iowa State University Memorial Union Parking Ramp. With extensive study and analysis, the team suggested more efficient lighting systems, electric vehicle charging stations, and solar power systems. They also proposed a financing plan, construction schedule, and evidence of outreach to make the community desire the plan.

Students involved in the top written plan are construction engineering senior Alex Buscher, construction engineering senior Joseph Hahn, construction engineering junior Margaret Holt, civil engineering senior Kate Glowacki, spring 2013 civil engineering graduate Katie Maschmann, spring 2013 construction engineering graduate Eric Ryan, construction engineering senior Alex Toth, spring 2013 civil engineering graduate Caitlin Weber, spring 2013

construction engineering graduate Justin Wenger, and spring 2013 civil engineering graduate Bryan Whitson. They call themselves "Cyclone Energy," and their aim is to develop an energy-saving, cost-saving construction project much like a professional contractor.

CCEE Lecturer Beth Hartmann, a licensed professional engineer and LEED-accredited professional, coaches the team. Also, Iowa Chapter NECA, Metro Electric (Des Moines, Iowa), Baker Electric (Des Moines, Iowa), and Nelson Electric Co. (Ames, Iowa) sponsor them. Students receive additional advice from other construction engineering faculty members, as well as from staff members in Iowa State's Facilities Planning and Management and the LiveGreen! Initiative.

Iowa State, along with University of Washington and Pennsylvania State University, advances to the oral presentation portion of the competition, set to be held at the NECA Convention Oct. 12 in Washington, D.C. Results of the oral presentation and overall national winner will be announced Oct. 13.



NECA team chose the Iowa State Memorial Union Parking Ramp as their 2013 energy retrofit project.

Civil engineering student becomes a contractor



Hamza Janjua pursues a head-start to his civil engineering career. While many earn the degree before working professionally, Janjua works to be one step ahead.

The civil engineering senior also is a licensed general contractor in the state of Iowa. His new business, SSB Construction, LLC, thrives in Ames with his first project—a Burger King being built just west of Interstate 35 on 13th Street. “SSB,” Janjua said, stands for “scope, schedule and budget—the three basic things of project management.”

Born in Baltimore, Md., he grew up in Abbottabad, Pakistan, about 70 miles north of Islamabad. At age 18 he moved to New York City. In nearby Valhalla, N.Y., he earned core credits from Westchester Community College. From there, he transferred to Iowa State University to follow his family's legacy in civil and construction

engineering—his great-grandfather, grandfather, father, and now Janjua, have owned construction companies.

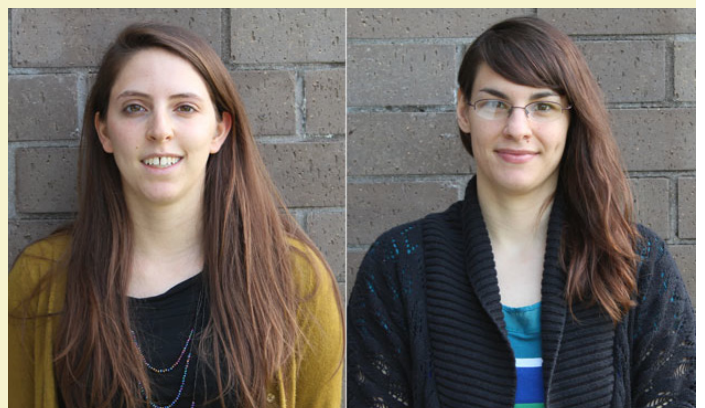
“(Civil engineering) is in my blood. It’s a family tradition; and besides that, it’s very constructive,” Janjua said. Janjua said that lessons learned in Iowa State reinforced concrete design (CE 334) and project management for civil engineers (CE 306) courses serve him well in everyday work decisions. In addition to attending civil engineering courses, Janjua worked for Khurram Mian to develop an understanding of the construction business. Mian owns Mian Group of Companies, an Ames-based group that owns and manages many restaurant chains throughout Iowa. Janjua interned for Mian last year as a project manager.

“If you decide to run a business, then you just have to step in,” Janjua said.

InTrans students Nicole Oneyear (left) and V. Dimitra Pyrialakou were selected to receive prestigious 2013 Dwight David Eisenhower Graduate Fellowships. Oneyear, a PhD student studying with Professor Shauna Hallmark, received a \$10,000 fellowship and Pyrialakou, a PhD student studying with Associate Professor Nadia Gkritza, received a \$5,000 fellowship.

The Dwight David Eisenhower Transportation Fellowship Program awards fellowships to students pursuing degrees in transportation-related disciplines. This program advances the transportation workforce by attracting the brightest minds to the field through education, research, and workforce development.

InTrans students receive Eisenhower Fellowships



Engineers design and test high-strength concrete towers

Grant Schmitz, an Iowa State graduate student of civil, construction and environmental engineering, and Sri Sritharan, Iowa State's Wilson Engineering Professor and leader of the College of Engineering's Wind Energy Initiative, were trying to answer some basic questions about using concrete panels and columns to build wind turbine towers using prefabricated, easily transportable components.

Sritharan and Schmitz watched as Doug Wood, engineering specialist and manager of Iowa State's Structural Engineering Research Laboratory, typed in the commands for the lab's hydraulic equipment to push or pull with bigger loads on a full-size test segment of a 100-meter concrete wind turbine tower. With each increase, the segment creaked and thumped. The goal was to test three column-and-panel segments for the expected loads at the top of a turbine tower. The engineers wanted to see if the segments could handle 150,000 pounds of load, 20 percent over the extreme load at that height.



Sritharan and Schmitz designed the concrete towers to be built in hexagon-shaped segments, with six panels connected to six columns. They tested three methods to connect the panels and columns: bolted connections; horizontal, prestressed connections with cables running through the tower pieces; and a grout connection using ultra-high performance concrete poured into the joints between panels and columns. In addition, the concrete columns were attached to a foundation using prestressing methods.

All three versions of the test segments withstood 150,000 pounds of lateral load. The researchers also tested the segment with the grout connections under 170,000 pound, 36 percent beyond extreme load. In each test, the segments performed well with no sign of distress at the operational load of 100,000 pounds. Some distress to the test segments was visible at the extreme load and beyond. After all the testing, Schmitz said, "I definitely think we're getting close to being able to use this technology in the industry."

CCEE Student Clubs And Organizations

www.ccee.iastate.edu/current-students/student-organizations

American Concrete Institute
American Society of Civil Engineers
Associated General Contractors of America
CE Ladies Group
Chi Epsilon
ConE Ladies Group
Design Build Institute of America
Earthquake Engineering Research Institute
Emerging Green Builders
Engineering Ambassador Program
Engineering Student Council
Engineers Without Borders
Environmental Technologies Club

Freshman Leaders in Engineering
Geo Engineering Society
Mechanical Contractors Association
Minds of Tomorrow
National Association of Home Builders
National Electrical Contractors Association
National Society of Black Engineers
Sigma Lambda Chi
Society of Women Engineers
Transportation Student Association
Water Environment Federation Student Chapter
Women in Science and Engineering

National Association of Home Builders (NAHB)



NAHB members construct a wall



NAHB Cabinet

The National Association of Home Builders student chapter (NAHB) is a club designed to inform members about all aspects of the home building, purchasing and maintaining process. They cover everything from the design process, construction, to home ownership, as well as the home buying process. Monthly meetings are attended by local contractors, Realtors, and other industry professionals present on a topic related to home construction or products. This fall, NAHB is planning on having club socials such as grill outs, bowling, and FACs.

In November NAHB plans on having their Mock Wall Build Day, which is one of the biggest meetings of the

year. Last year's Mock Wall Learning Day was held at the warehouse of one of NAHB's biggest supporters, Kinzler Construction Services. Ned Rasmussen, a framing professor from DMACC, taught members three different framing techniques and provided helpful tips, which came to be of great use for members of NAHB and AGC on AGC's Thanksgiving Break Trip to Tennessee one week later. This year's Mock Wall Learn Day will be prior to the AGC Thanksgiving Trip and will help those attending gain experience and knowledge before they leave.

Associated General Contractors (AGC)



As the year kicks off, Iowa State AGC has some big plans. One main goal is to have two service break trips to disaster areas. They hope to get 45 members for both the Thanksgiving and Spring Break trips. For the Thanksgiving trip, AGC is most likely going down to the Moore, Okla., area to help rebuild after the devastating tornado they experienced this past summer. Also this fall, AGC will hold their second annual technology fair for students and anyone who wants to learn about technology in the construction industry. This will hopefully include companies such as Bluebeam, Synchro, Multivista and possibly more.

AGC also pursues several community service jobs throughout this semester. One event that they will do is build a patio trellis for Friendship Ark Homes for their new home that is being built. In addition, the group is looking to sponsor three families for Christmas this year to buy gifts for their whole families. In addition to the service events, this fall AGC will host presentations from Mortenson, Burns & McDonnell, Boldt Construction and PCI. AGC continues to provide great opportunities for students interested in the construction industry. It is a great organization to learn about construction, meet friends, and interact with industry professionals. AGC says that they are all really excited about the fall semester.

National Society of Black Engineers (NSBE)



NSBE at the 2013 CCEE Fall Welcome Picnic

The National Society of Black Engineers (NSBE), one of the largest student run organizations in the U.S., is focused on increasing the number of culturally responsible black engineers who excel academically, succeed professionally and positively impact the community. This motto has since evolved to incorporate people of all races, color and creed, as well as all students in the science, technology, engineering, and mathematics (STEM) fields.

The core of our chapter's goal this fall semester is to build our members as professionals through monthly professional development workshops and increase our membership GPA through collaborative study sessions, online tutoring sessions and guaranteed 4.0 workshops. We also give back to the local Ames community through a multitude of outlining opportunities and provide special membership access to companies at "NSBE @ ISU" general assembly meetings, hosted information sessions, Fall Regional Conference Career Fair and National Convention Career Fair, which houses more than 300 companies.

The objectives of High V to 4.0 program are to increase the academic performance of the collegiate member and help strengthen the student's academic performance. Through working with others to execute the system, they enhance their individual educational profile by providing them with the steps on how to obtain higher grade point averages. This two-part program consists of a proven learning system called Guaranteed 4.0, developed by a

former Chair of the NSBE. Guaranteed 4.0 is laid out as a five-workshop seminar program designed to teach students the best way to learn, manage time and stress and actually reduce study time. The second part of the overall program is an online tutoring service at 24houranswers.com. The tutoring is there to enhance our membership's learning and give them another perspective to their informational input, including general assistance and clarification.

A second project is Project Lead the Way. Associated with the national K-12 STEM initiative, NSBE's Project Lead the way is a community enrichment program started the the chapter adopted last year. Due to recent budget cuts with our local schools, there has been a lack of attention to planning and assistance for teachers. This program started in place to give assistance to teachers at a local elementary school to help prepare them for classes, and we hope to increase the spread of this program to the local middle school and high school.

Making Strides Tutoring

Making Strides Tutoring is a program started a couple of years ago. This program is focused on tutoring in early education children at the Baptist Church. We meet for about five Saturdays per semester to help elementary school kids develop their reading and math skills.



American Society of Civil Engineers (ASCE)

The Iowa State Steel Bridge Team, as part of the American Society of Civil Engineers (ASCE) chapter, celebrates their best place yet at the National Student Steel Bridge Competition. They placed fifth in the 2013 contest, held June 1 at the University of Washington (Seattle). Iowa State was in good company as a top-five finisher: University of California, Berkeley, placed first; Massachusetts Institute of Technology placed second; University of California, Davis, placed third; and Michigan Technological University placed fourth.

The Ames-based team placed highest among teams that competed in the Iowa State-hosted Midwest Regional Steel

Bridge Competition this past March. Midwest regional winner Lakehead University placed 10th in the national contest. The national place was a composite of ranks in six categories: No. 4 in structural efficiency, No. 7 in lightness, No. 7 in construction speed, No. 10 in stiffness, No. 15 in aesthetics and No. 20 in construction economy. Ranks compared to those of other teams put Iowa State fifth overall out of 49.

The competition was primarily one of speed. The crew built their bridge about three minutes faster in the national contest than in the Midwest competition, where they placed second.



Transportation Student Association (TSA)

This summer the Transportation Student Association (TSA) won the Outstanding Student Chapter Award as given by MOVITE. We also received 2013 Student Chapter Activities Award as given by the Midwestern ITE District. In addition to winning two awards as a club, three members participated in the regional traffic bowl in Milwaukee and advanced to the Traffic Bowl Grand Championship in Boston.

There were nine district champions. Though the team did not win, they were thankful for being able to make it to the finals. This trip was a great opportunity for them to meet other people in the profession as well as other students from universities in the U.S. and Canada. Not only did the conference have great sessions, it was located in downtown Boston. The team was able to take the “T,”

Boston’s subway, all around the city. In their free time, the team got to visit to Harvard, MIT, the U.S.S. Constitution, the Old North Church, Trinity Church, and the Boston Library. Overall, the team had a wonderful time visiting the wonderful city of Boston, making new friends and experiencing history firsthand.

Already this semester TSA has participated in both Clubfest and the CCEE Welcome Picnic to recruit students. Further events this semester will include some fascinating speakers such as The Des Moines Metropolitan Planning Organization, Dart (A transit Company from Minnesota), and a librarian from the Iowa DOT. They also plan on holding social events such as bowling, and perhaps participate in other relevant social or outreach events that arise over the course of the semester.

American Concrete Institute (ACI)

Last Spring ACI attended the ACI Convention in Minneapolis, Minnesota and competed in the ACI Mortar Workability Competition. This was the first ACI student competition that any of the current members competed in. They received second place out of ten universities from North America. This fall ACI plans on attending the ACI Convention in

Phoenix, Ariz., and compete in the Pervious Concrete Cylinder Competition.

For this competition, they must apply sustainability concepts and use our knowledge of concrete mixture design to produce pervious concrete. The concrete design must balance permeability and splitting tensile strength. This will give the team an opportunity to learn more about concrete design and technologies.

The American Concrete Institute will also have the opportunity to meet with industry professionals and learn more about the concrete industry.



Earthquake Engineering Research Institute (EERI)

EERI is busy in the fall with preparation for the Undergrad Seismic Design Competition (USD). They are getting ready for the 2014 competition in Anchorage, Alaska. Students will begin materials testing, damper design, building design and fundraising. All the structural aspects will undergo testing through practical simulation and computer modeling. The best from each test will be compiled and used in a student-constructed building. This building will undergo a series of three seismic events

modeled after real earthquakes. Iowa State EERI will compete against national and international schools.

A primary goal of EERI is focused on education outreach. The outreach program is working on a presentation for a local 4-H group. The presentation focuses on the effects of earthquakes in foundations and structures by using K'nex, a shake table and a "food" foundation simulation.



Coming off a ninth place finish at the 2013 EERI International Seismic Design Competition, they aim higher in 2014.

CCEE Software Exploration Club (SEC)

Civil, Construction and Environmental Engineering



CCEE Software Exploration Club (SEC) was founded a year ago with the philosophy to provide software tutorial resources for students in the CCEE department. SEC helps students become professional engineers through sharing software and leadership skills.

In fall 2013, SEC has planned both basic software such as Microsoft Word and Autodesk Revit and advanced lectures such as Tekla Structure and Building Information Modeling introduction. Another event is Autodesk Revit training by Andrew Barone from Raker Rhodes Engineering (RRE) Company, hosted on Sept. 30. RRE has been involved with many college building projects and has extensive knowledge on Autodesk Revit modeling. The lecture

will touch basic functions of Autodesk Revit and provide essential training on floor plan development, 3-D modeling, detail rendering, and construction phases. Another big event after Autodesk Revit will be BIM introduction. CCEE Assistant Professor Yelda Turkan will be presenting this interactive lecture at the end of October.

The lecture will cover basic and intermediate levels of Building Information Modeling technology. 5-D modeling, which is 3-D modeling with cost and schedule added, will be introduced to students. SEC looks forward to recruiting more new members and providing leadership positions for passionate learners.

The Engineering Ambassador and Mentor (TEAM) Program

The Engineering Ambassador & Mentor Program (TEAM) gives tours to more than 2,000 prospective students, families, alumni, and other guests each year. The group also supports other College of Engineering and Iowa State recruiting efforts through events such as Engineering Senior Visitation, Experience Iowa State, Taking the Road Less Traveled, College of Engineering football tailgates, and more.



Society of Women Engineers (SWE)



The Society of Women Engineers (SWE) is a student organization designed to empower women in all engineering majors. There are many goals of SWE, including 1) creating a positive environment for Iowa State women in engineering, 2) holding outreach events to excite and encourage younger generations about the opportunities engineering provides, and 3) helping all members gain the ability to smoothly transition into the professional world.

SWE has many big events planned throughout the semester and year. One of our biggest events is our Kickoff Picnic held at the beginning of the fall semester. This event is held to celebrate the beginning of a new school year, catch up with fellow SWE members, and meet new students starting their engineering journey at Iowa State University. At the event we have a sponsor company attend to network with our members and tell us more about their opportunities for engineers. The Kickoff Picnic is one of our largest events and is fun and informative for both new and returning students. If you missed the Kickoff Picnic, the Society of Women Engineers also holds General Meetings every other week, where free food is served! Not only that, we also catch everyone up on SWE

events, and have a sponsor company present to us about themselves and their opportunities for us. These meetings serve a dual purpose of getting students involved in a student organization and facilitating casual discussions with professionals in engineering.

Another opportunity for SWE members is the Society of Women Engineers Annual Conference. The conference is held throughout the country and is an amazing way to network with other students in SWE, develop professionally, and network with successful women engineers. SWE also sponsors one freshman to attend the conference for free! Each year this is one of the most anticipated events of the semester for those who are attending.

Being a member of the Society of Women Engineers has benefits such as leadership experiences, great networking opportunities, and community involvement. The Society of Women Engineers provides many opportunities to its members and is an exceptional student organization to join in order to be a stronger, more professional, and well-rounded individual.

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