The CEE Department is partnering with the Jilin University of Architecture and Civil Engineering (JUACE), located in Changchun, China, on a new cooperative curriculum and “2+2” program. JUACE and the CEE Department signed a Memorandum of Understanding confirming their intent to collaborate when representatives of JUACE traveled to PSU in November 2012 to discuss the details of the program. Scott Wells, the CEE Department Chair, visited JUACE in April 2013 to meet with faculty and staff and tour the university’s facilities.

Under the shared curriculum program, JUACE will collaborate with PSU on thirty-percent of their courses taught in Changchun. These collaborative courses will share textbooks, course materials, and syllabi, and PSU will also deliver some of the course content in a video format. In addition, JUACE faculty will travel to PSU to learn from PSU faculty, and the PSU CEE Department will send faculty to JUACE to deliver lectures in the “Introduction to Civil Engineering” course and also participate in upper-level courses or collaborative research.

JUACE students participating in the “2+2” program will spend two years studying at JUACE and then complete their final two years of study at PSU. The CEE Department has agreed to accept as many as 40 students per year into this program. The first class of students in this program may arrive at PSU as early as Fall 2015.

The program will allow the CEE Department to hire additional faculty and offer more trailer sections for courses and will also provide opportunities for international collaboration to PSU students and faculty.
The CEE Department continues to have notable accomplishments as we keep looking at ways to ensure that our students are successful. To that end, we (1) acquired new space for faculty offices and the CE321 Materials class and ASCE concrete canoe construction, (2) continued to have the highest external research expenditures of any of the other Departments in the College (see table below) especially considering that we are the smallest in terms of tenured faculty, (3) had an excellent student and alumni recognition banquet in May with about 110 in attendance (especially notable were the presentations of ‘cross-training’ and the ‘most exciting faculty member’, and what a band!), (4) had our third annual graduate student open house with 19 visiting potential graduate students, (5) started a new summer bridge program for students who need to be readied for the junior year rigor, and (6) initiated a series of freshman trailer sections to allow more capacity and flexibility for our incoming freshman.

We also said goodbye to Elizabeth Alarid our receptionist who is going to spend more time with her wonderful daughter before going back to graduate school. She was a wonderful asset to our Department. As Liz left us, we welcomed our new receptionist, Kirsten Hendrickson, who will now become the face of the Department. She not only will be helping as visitors enter our office suite, but she will be working with our social media sites and performing many duties associated with student enrollment and student success.

This academic year we have 3 faculty on sabbatical – Gwynn Johnson, Miguel Figliozzi, and Hamid Moradkhani. We have 82 new students in our upper-division program this fall. This incoming class has an amazing average GPA of 3.4.

On the horizon though we have many challenges as the University continues with budget cuts while at the same time we are looking to expand our classes in preparation for our joint program with the Jilin University of Architecture and Civil Engineering in Changchun, China. We are expecting to add trailer sections for all our junior and senior required classes. Besides increasing our capacity, we expect class sizes to go down. This will also allow more flexibility for our existing students.

We are enjoying the beginning of the new academic year and inaugurated our new materials laboratory this fall term. Please come visit us and this new laboratory!

Scott Wells, Chair

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CEE DEPARTMENT UPDATES

January 2013: Christopher Monsere was named Associate Chair of the CEE Department. In his role as Associate Chair, Dr. Monsere is tasked with overseeing the graduate program and graduate application review process, advising prospective graduate students, working with CEE faculty and staff to implement the CEE internship program, overseeing department space planning and inventory, and meeting with the Chair periodically to coordinate Departmental planning.

March 2013: The CEE Department welcomed nineteen prospective graduate students to campus for the third annual CEE Graduate Open House. Many students traveled from out of state to attend the event. The CEE Graduate Open House is an opportunity for prospective students to meet faculty, staff, and current students, tour laboratory and research facilities, and learn more about the program.

April 2013: CEE seniors again performed spectacularly on the Fundamental of Engineering (FE) examination. Ninety-three percent (93%) of Civil Engineering majors at PSU passed the April 2013 examination compared to a national average of 80%. One hundred percent (100%) of Environmental Engineering majors passed the examination compared to a national pass rate of 88%. ENVE majors have had 100% pass rates on the FE examination since the establishment of the program five years ago.

September 2013: The Department has created the CEE Summer Bridge Program to help students transition from the lower division coursework to the upper division program. This two week course provides an intensive review of lower division coursework. Some students are required to take the course as a condition of their admission, but it is open to any student wanting to review this material.

ASCE STUDENT CHAPTER SHINES AT REGIONAL COMPETITION

PSU’s American Society of Civil Engineers (ASCE) student chapter made a great showing at the ASCE Northwest Regional Conference in Corvallis, OR in April 2013, placing fifth in the Steel Bridge competition and sixth in the Concrete Canoe competition. The chapter was also ranked third in the general engineering knowledge category, and CEE junior Lisa Okimoto’s paper placed third in the technical writing competition.

PSU’s student chapter was also recognized in March 2013 by the national ASCE Committee on Student Members with a Letter of Honorable Mention for its outstanding activities in 2012.

PSU’s Concrete Canoe team at the regional conference
THE BENNETT BAROMETER:
A RECORD-BREAKING TEACHING TOOL

On April 18th the college commissioned the Bennett Barometer, an exciting new teaching implement designed and constructed by CEE Department lab technician Tom Bennett.

With a fluid column measuring 12.4 meters tall, the Bennett Barometer is the largest instrument of its kind in the world. “It’s a visual demonstration of the equivalent pressure of a more dense liquid for the Earth’s atmosphere,” Tom Bennett explains. “The traditional mercury barometers are disappearing because mercury has been considered a dangerous substance. Electronic barometers are replacing them, but big deal; there’s an electric signal, but no real physical representation.”

From the outset of the project Bennett envisioned the barometer as an innovative teaching device. “When I began to plan the barometer, I had some internal guidelines. I wanted to have a device with no hidden parts—you can look at it and see how everything works,” he noted. “As a teaching aide the barometer can be used at many different levels. I can think of lab exercises for elementary school classes, for high schoolers, and for PSU students. At the moment we are testing various options for using it as a lab apparatus.”

The barometer has become a staple in college building tours as well as a local landmark: it has been featured on many local news stations and visited by many regional atmospheric professionals, including a delegation of nearly 500 physics teachers attending a national conference.

Though the barometer was Bennett’s brain child, the design and implementation of the apparatus was a college-wide effort. “Through working in the EB shop and the iStar Lab I have lots of contacts with many students and staff, so I went to people who I knew were really good,” Bennett explained. “The vacuum cap valve was welded by Bob Turpin, a staff member who is an expert welder. I contacted the ASCE Steel Bridge Team to help weld the frame. Austin Hudson was available to help move the supplies from SRTC. Liz [Alarid, CEE staff] helped paint on the shatter proof epoxy coating. Austin and I glued the reservoir together. Hank Chiu in the EB machine shop (a Mechanical & Materials Engineering student) did the detailed machining for the openings and the o-rings. When he got stuck, Mike Chuning, MME Department Lab technician, stepped in to help. Zumr Zdenek [MME graduate student] took my design for the glass holder and improved it. I came up with the design for the brackets and had Franz Rad [CEE faculty] look them over. He made a suggestion for a big improvement that strengthened them by a factor of 20.”

The barometer project uniquely embodies PSU’s sustainability emphasis. The body of the device is comprised of glass pipes that were used in PSU’s Chemistry labs for over 35 years. During the renovation of the Science Research and Teaching Center, Bennett salvaged these materials and repurposed them as a record breaking scientific instrument.

The Bennett Barometer Commissioning event held in April was a resounding success. Keynoted by barometry expert David Burch, the event drew a sizable crowd of students, staff, faculty, and meteorological enthusiasts. The Department expects future demonstrations of the barometer as interest in the device continues to grow on both a regional and global scale.

Tom Bennett’s work on the barometer is just one example of his dedication to his role as CEE’s lab technician. His hard work has not gone unnoticed; this year he was recognized by the Sigma Xi Columbia-Willamett Chapter with a citation for outstanding service in support of STEM education and research.
FACULTY PROFILES

EVAN KRISTOF, INSTRUCTOR

Evan Kristof joined the faculty in December 2012. He teaches freshman and sophomore-level courses as well as CE 321 CEE Materials and also co-teaches the Senior Capstone course. In addition, this summer he developed and taught the new CEE Summer Bridge Program, a two-week review course that prepares students for the junior year.

One of Evan’s goals as an instructor is to keep the lessons students learn in the freshman year introductory courses alive through the sophomore year sequence. For example, in his curriculum for Strength of Materials, he gives students opportunities to use the Excel, calculations software, and engineering computations software skills that they learned during the freshmen year sequence. He also includes hands-on experiments whenever he can in his teaching. Evan enjoys helping student groups apply the lessons learned in class to extra-curricular activities. As an adviser for the Bridges2Prosperity student group, he recently traveled to Nicaragua to help with the construction of a bridge that the group had designed. He also advises the ASCE concrete canoe and steel bridge teams; having participated in the steel bridge competition during college, he enjoys being involved in the competitions in an advisory role.

Prior to joining the faculty, Evan practiced as a bridge designer. He is also a registered attorney and practiced as an intellectual property lawyer.

RESEARCH SPOTLIGHT: STEFAN TALKE, ASSISTANT PROFESSOR

The last 150 years have brought many changes to estuary and river ecosystems. Dr. Stefan Talke’s mission is to find out how much important system indicators such as tides, sediment transport and water temperature have changed and why these changes are occurring, a task that requires him to be part engineer, part historian. His research has lead him to search for historical data (such as data on tides, water temperature, and bathymetry) in archives around the country, which he has his student researchers digitize. The data is then quantitatively analyzed using modern techniques to create hydrodynamic models from the mid-19th century. When compared to the present-day models and data, these models provide a more accurate picture of how much the physical environment has changed over the last 150 years.

Moreover, these historic models have the potential to provide new insights into the trajectory of change today. Dr. Talke and his research team are analyzing historic extreme events, such as floods and storm surge, to shed light on how future extreme events might affect the local environment, and what changes can be made locally to lessen the adverse impacts of these events. Looking forward, variables in the historic models can also be manipulated to determine the effects that various human activities, such as changes in reservoir systems, deforestation, channel dredging, or wetland reclamation, have had on the environment. Manipulating the models in this way could help researchers to understand extent to which changes are the result of climate change or local human interventions in the system. This knowledge will help to pinpoint ways that policymakers may be able to mitigate the adverse effects of climate change by addressing local issues.

Stefan Talke was selected by the Coastal and Estuarine Research Federation as an “Outstanding Reviewer” for the journal Estuaries and Coasts.

Ed Zaron was awarded a grant from the National Geospatial Agency. The three-year project is in collaboration with researchers at the Scripps Institution of Oceanography and aims to improve models of the Earth’s gravity over its oceans with widespread applications to coastal oceanography, oil exploration, and marine geodesy.

Franz Rad served on the Organizing Committee of the Earthquake Engineering Research Institute (EERI) Annual Meeting held in Seattle February 12-15, 2013. Dr. Rad also made a presentation titled “Seismic Upgrades: Return on Investment” and moderated a panel on “Retrofit and Rehabilitation of Vulnerable Buildings.” The EERI Annual meeting attracted over 300 participants.

Hamid Moradkhani was invited by the Chinese academy of science to deliver the keynote at the “Terrestrial Water Cycle Observation and Modeling from Space” conference in Beijing, China, April 26-30.

Christopher Monsere was awarded a contract from Vanasse Hangen Brustlin Inc. for the National Cooperative Highway Research Program project # 17-59, “Safety Impacts of Intersection Sight Distance.”


Ed Zaron was awarded a grant from NASA for the project, “Combined Estimation of Tides and Bathymetry from Multi-Satellite Altimetry.”

Jim Pankow was noted in a Bloomberg article titled “Tobacco Firms Save $1 Billion With Kitty Litter in Cigars.”

Hamid Moradkhani chaired the technical committee of the Chapman Conference from American Geophysical Union on “Seasonal Forecasting and Water Management” held at PSU, July 28-31.

Scott Wells gave a national EPA webinar on “Impacts of Sediment Dynamics on Water Quality” on May 23, 2013.

Bill Fish presented a seminar via teleconferencing to the Department of Civil & Environmental Engineering at the Universidad Autonoma de Ciudad Juarez, Mexico, entitled “Behavior of Fertilizer Derived Cadmium in Oregon Agricultural Soils.” The work presented was in collaboration with Gwynn Johnson.

Christopher Monsere was awarded a contract from ODOT for the project, “Improved Safety Performance Functions for Signalized Intersections in Oregon.”

Jim Pankow contracted with the Centers for Disease Control to advise them on improving their analytical method for what fraction of the nicotine in cigarette smoke is in the “free base” form.

Tom Szymoniak was awarded a Katherine Bisbee II Conservation Research grant from the Oregon Community Foundation for the project, “Stormwater Assessment.”

Hamid Moradkhani gave an invited talk at Swiss Federal Institute of Aquatic Science and Technology entitled “The Value of In-situ and Remotely Sensed Data Assimilation for Hydrometeorologic Forecasting: From Theory to Operation.” Sample data from PSU’s Intelligent Transportation Systems Lab’s PORTAL data archive was included in the Research Data Exchange (RDE), a new transportation data sharing system developed by the U.S. Department of Transportation (USDOT). PORTAL was one of three regional archives selected to provide these data in a competitive process. The project was a collaborative effort of regional transportation partners, led by Kristin Tufte (PI) as well as Christopher Monsere.

FACULTY NEWS

Scott Wells, CEE Department Chair, and Christopher Berger, Senior Research Associate, were recognized for their service to Portland State University at the PSU Length of Service Award Celebration held in March 2013. Dr. Wells and Dr. Berger have been with PSU for 25 and 20 years, respectively.

Thank you both for your service to PSU and to the Department!

Scott Wells with PSU President Wim Wiewel

FACULTY HONORED FOR LENGTH OF SERVICE

Scott Wells, CEE Department Chair, and Christopher Berger, Senior Research Associate, were recognized for their service to Portland State University at the PSU Length of Service Award Celebration held in March 2013. Dr. Wells and Dr. Berger have been with PSU for 25 and 20 years, respectively.

Thank you both for your service to PSU and to the Department!
The PSU student chapter of Bridges2Prosperity (B2P) completed their first bridge project this summer in Nicaragua. B2P faculty adviser Evan Kristof joined five PSU students (three CEE majors, an international development major, and a sociology major) on the project site in El Trentino, approximately 2-3 kilometers southeast of the town of Matagalpa, in the north-central highlands of Nicaragua. CEE students Jake Coppola and Devin Connell accomplished most of the bridge design as the project for their senior capstone. The bridge that the students designed is a 30m long cable-suspended bridge, with a 1m wide deck -- big enough for pedestrians, motorcycles, and cows, but not cars. The bridge will provide access to school, healthcare, and markets for approximately 300 villagers who are isolated during the rainy season.

Kristof and the PSU students worked closely with the national B2P organization which has an in-country coordinator, along with local landowners in the community. Most of the engineering tasks were accomplished at home; on site their work consisted of collecting large rocks and building forms for the foundation, mixing and placing mortar, and excavation. Kristof noted the strenuousness of the build: “It was really difficult, physical work – there were almost no power tools, which are something we take for granted here.” Despite their effort, the team was not able to finish the project while they were in country due to a lack of suitable rocks. The in-country coordinator and some professional masons have since completed the bridge. The grand opening ceremony was attended by the Vice President of Nicaragua, who donated some of the trees that were used to build the bridge deck.

The B2P student chapter will return to the same general area in Nicaragua for another project in 2014. “We have over 25 active members this year,” notes Kristof, “and are looking forward to a productive fundraising, design, and construction effort.”

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**PLEASE CONSIDER MAKING A GIFT TO SUPPORT THE DEPARTMENT**

Support student groups that are making a difference across the globe

Donations to PSU’s Bridges2Prosperity (B2P) and Engineers Without Borders (EWB) student groups allow students to help communities around the world. Gifts can be made online via the PSU Foundation: https://www.foundation.pdx.edu/publicgift/. When designating your gift on the Foundation website, select “Other” and enter “Bridges2Prosperity Student Project Support” or “Engineers Without Borders.”

Support the ASCE student chapter in hosting the 2014 Regional Conference

PSU’s ASCE student chapter will be hosting the 2014 Pacific Northwest Regional Conference April 25-26, 2014. Help them reach their fundraising goal of $30,000, which reduces the student participation cost to less than $100. For more information about sponsorship opportunities, please contact the ASCE PSU Student Chapter faculty adviser, Tom Szymoniak, at szymon@pdx.edu or 503-725-2202.

Support scholarships for CEE students (and double the impact of your gift!)

CEE’s Dr. Franz Rad recently pledged over $75,000 to sponsor a total of 53 scholarships (over ten years) to be known as the Franz and Leecia Rad Scholarships for Undergraduate Students in Civil and Environmental Engineering. Dr. Rad is “challenging” others to make additional donations toward scholarship or fellowships to the College, with a goal of sponsoring 200 scholarships and fellowships for MCECS students. In addition, Dr. Fariborz Maseeh has pledged to match additional gifts toward scholarships, up to $25,000 total. This doubles the impact of your gift! Gifts can be made online via the PSU Foundation: https://www.foundation.pdx.edu/publicgift/. When designating your gift on the Foundation website, select “Other” and enter “Civil and Environmental Engineering Department Scholarship.” If you would prefer to give via check, please contact Denise Banh, MCECS External Relations Coordinator, at dbanh@pdx.edu.