Civil and Environmental Engineering
Summer 2010

They’re Ready To Work, Day 1:
» Getting the Big Picture on Environmental Challenges
» Building Sustainability into the Curriculum
» Tutors: Refreshing Skills, Helping Peers
» PLUS: Remembering Professor Leon Luck
Greetings alumni and friends,

I hope you enjoy this edition of our newsletter, which is focused on engineering education. We’re working harder than ever to produce engineers who graduate “work ready, day one” and who can tackle pressing 21st century challenges in energy, the environment, and health. Please read about our innovative educational efforts:

• Brian Lamb is leading a prestigious National Science Foundation graduate training program (IGERT), which helps promising graduate students get a multidisciplinary, hands-on understanding of the important topic of the nitrogen cycle (page 2). The National Academy of Engineering views management of the nitrogen cycle as one of the 21st century’s greatest challenges. In addition to offering students excellent scientific training on this important issue, the program is also unique in offering a policy component. It is a huge accomplishment for Lamb and his colleagues to receive the IGERT grant, only the fourth in WSU’s history.

• With generous support originally from the Berry family and from the Weyerhaeuser Foundation, Mike Wolcott is building the strength and reputation of our program in sustainable design (page 4). He has developed a unique year-long course that brings engineering, architecture, and construction management students together to come up with sustainable design solutions. I can’t think of anything that better prepares our students for the workforce they’re soon going to enter. He is working to develop and test the curricula so that it can become a model for sustainable design at universities across the country.

• Shane Brown is teaching an innovative new course to help engineers become better teachers (page 6). Brown, along with Cara Poor, is also continuing a number of educational efforts, such as peer tutoring, to help our students find success in the classroom.

Our efforts are paying off with strong growth in our program. This year, we had 533 undergraduate and 120 graduate students—a record number of students and an incredible 100 percent increase in just five years. We are having significant success in attracting women and underrepresented minorities. In fact, more than half of the women studying engineering at WSU are in our program. We are now the 15th largest civil engineering program in the country. Our faculty is doing a great job of generating interest in our program and, particularly, in retaining students once they get here.

Our faculty is also bringing in increasing external support in the form of research dollars—close to $6 million this year. Two of our faculty members, Marc Beutel and Tim VanReken, received early career awards, a prestigious grant award for faculty members beginning their careers (page 9). Professor Muhunthan became an ASCE fellow, and several other faculty members received significant awards (page 14).

Our students continue having significant successes as well. I am most proud of our student chapter of ASCE. This year, they hosted the regional conference of ASCE (page 11), which included about 300 participants from 18 schools throughout the Northwest. The students did an amazing job of raising the $50,000 needed to support the conference. Thank you to those of you who donated! I’m proud to report that our students very carefully managed their budgets and organized a terrific event.

It is amazing to look at these significant successes despite the very difficult and unprecedented budgetary challenges we have faced. We lost faculty and staff last year, and we will lose more this year. As state support decreases and student costs continue to rise, I want to thank each of you for your support. Your generosity enables us to better prepare our graduates for success and to become tomorrow’s leaders in the civil and environmental engineering fields. You are truly making a difference.

When you are on campus, please feel free to drop by and find out more about what we’re doing. I look forward to hearing from you soon.

Dave McLean
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On the cover: Chelsea Rosenkrance participates in a Research Experience for Undergraduates.

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The *Civil and Environmental Engineering Newsletter* is also available in electronic format. If you would like to receive e-publications from us, please send a note to Tina Hilding at thilding@wsu.edu.

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Solving the complex environmental problems of the 21st century requires knowing more than just science or just one science discipline.

So a group of atmospheric science and environmental engineering students are learning about crops, soils, and water quality, and soils students are learning about atmospheric sciences. Just as importantly, all the students are learning about the broader political and policy implications that come out of their science.

Two new graduate training programs are providing a unique approach to the study of complex environmental problems.

Through a grant from the Washington State University Graduate School and an anonymous private donor, the Atmospheric Policy Trajectory (APT) program provides an enhanced graduate program with specific training in environmental public policy. Researchers received approximately $500,000 over five years to provide a graduate experience that, in addition to studies in atmospheric sciences, provides training in government, policy, and communications with workshops, internships with policy groups, and courses in public policy.

Meanwhile, through the prestigious National Science Foundation’s Integrative Graduate Education and Research Training (IGERT) program, researchers received $3 million to train approximately 30 new doctoral students over the next five years. The students are studying and conducting research related to nitrogen in the environment while also receiving training in policy studies as part of their doctoral training.

Meet Farren Herron-Thorpe

Intended Degree: Doctorate in Engineering Science, with a certificate from the Atmospheric Policy Trajectory (APT) program.

Benefits of APT: My professors explained that APT is a great chance to learn how policy makers and scientists can work together. The program puts people involved in policy directly in contact with graduate students. When the program brings in speakers, graduate students get to spend an extra hour in an open discussion to learn how the speaker connects policy and science in their life.

Why learn about policy? It’s all about perspective. Learning about environmental science is important, but science understanding isn’t necessarily getting out to the community. Instead of focusing on research, scientists can get involved with decisions that affect the community in positive ways. As environmental scientists it is important to learn the connection between science and policy, so that humans and ecosystems can thrive.

Most Exciting Aspect of APT: An Environmental Systems Dynamics class with Andy Ford. It was an eye opener. We learned about how to model dynamic systems and include policy options within the model. Using modeling and GIS, I want to forecast the success of high emitter detection policies and FeeBate programs, which aim to promote fuel efficiency in cars.

How APT improved my education: The APT program taught me how to model policy in dynamic systems and gave me an internship opportunity in a science and policy-related area. I learned about policy, how it is related to environmental science, and how policy is created. The second round of the APT program is going further in depth with political science. I have learned how difficult it is to make environmental policy. I feel that it’s important that our government find a way to put implicit value on the environment, because there are many complex systems that have indirect effects on the environment and will ultimately affect all humans.

Internship: I may be working with EPA Region 10 (Pacific Northwest) in Seattle working with emissions analysis and determining if policy recommendations should be made to regulate precursors to nitrogen oxides.

After graduation: Possibly teaching as a professor, but I am waiting to see what doors my internship opens.

Herron-Thorpe was selected to participate in the National Science Foundation’s AMS Summer Policy Colloquium in Washington, D.C., in June.
Nitrogen plays an important role in a number of current environmental topics, including climate change, air and water quality, and ecosystem health, says Brian Lamb, primary investigator on the grant and Regents Professor in the Department of Civil and Environmental Engineering. Although the issue of nitrogen cycle management is not well known outside scientific circles, it is listed as one of the most critical 21st century “grand challenges” by the National Academy of Engineering. The amount of nitrogen in the environment has risen by an astounding 120 percent in the past 40 years, thanks largely to the use of synthetic fertilizers. While fertilizers have increased affluence of societies around the world and fed growing populations, changes to the nitrogen cycle are having dramatic and poorly understood impacts around the world.

As part of the IGERT grant, the first five IGERT students, along with seven other graduate students, are taking a new course, Nitrogen Cycling in the Environment. In the course, designed to give a baseline understanding of nitrogen’s role in the environment, the students have learned about the important biological and physical processes that occur and how they are all linked together in the nitrogen cycle. Taught by faculty from three colleges, the wide-ranging lectures have attracted many faculty members in addition to the students.

“The faculty has really bought into this, and we have all really learned a lot,” says Lamb.

In the second part of the program in a unique policy studio course, the science and engineering students are immersed for a semester in the basics of policy and government regulations as well as more specific environmental policies related to nitrogen, such as the Clean Air Act and the Clean Water Act. As part of the studio course, the students

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A Focus on Education

Grant Brings Sustainability to University Curricula

These days, sustainability is the hottest topic in the building and construction industry. Everyone wants to have a sustainable future and more than 90 percent of engineering and architecture firms expect to be building green in the next five years.

A group of WSU researchers has received a National Science Foundation grant to develop a model for learning about sustainability that will help to better prepare students for the seismic change in building design practices and goals that they will encounter as they graduate.

Led by Mike Wolcott, director of the Institute for Sustainable Design and professor in the Department of Civil and Environmental Engineering, the project aims to establish a model that faculty from other universities can use in the future to understand and teach best practices in sustainable design and to engage students in sustainable engineering.

“The greater goal,” says Wolcott, “is to move our profession and nation into a new era of sustainable solutions for the built environment.”

In particular, the researchers have designed a yearlong Integrated Design Experience (IDeX) that brings together industry professionals in sustainability with faculty mentors who guide groups of students as they tackle design projects focused on sustainability. Students come from a variety of disciplines, including civil engineering, architecture, and construction management.

Efforts to have sustainability comprehensively incorporated into the design studies have often been hindered by faculty members’ lack of knowledge about sustainable practices, says Wolcott. At the same time, the practices that are used in the industry often haven’t been backed up by careful research. Furthermore, although some colleges and universities have some engineering courses on sustainability, there is no comprehensive incorporation of sustainability into the curricula.

“There has been no model for how our current programs, nationwide, can transition sustainable design concepts into

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Students Work to Develop WSU SmartFARM

Hoping to gain experience in what promises to be the wave of the future, a group of students is working to come up with a sustainable design for WSU’s organic farm.

The project, called SmartFARM, is part of a recent National Science Foundation grant to incorporate sustainability into university curricula (see sidebar).

As part of a yearlong course in sustainable design, about 30 students from a variety of disciplines, including architecture, construction management, electrical engineering, crop and soil sciences, and civil and environmental engineering, will work together and with faculty and industry mentors to develop an integrated concept for a sustainable farm that increases energy efficiency and lessens dependence on resources. The course includes both undergraduate and graduate students.

WSU’s organic farm, located about 1.5 miles from the main Pullman campus and operated through the Department of Crop and Soil Sciences, got underway in 2003, becoming a certified organic farm in 2004. In 2006, WSU began offering the first organic agriculture major in the United States.

“The SmartFARM project, as well as the grant, is part of an effort to better prepare students for the workforce they will soon encounter and encourage faculty knowledge in the area of sustainability,” says Mike Wolcott, primary investigator on the project and director of the Insti-
“What better place to begin our efforts to design, teach, research, and learn practices in sustainable design than at WSU’s organic farm?”

—Mike Wolcott

Your Gifts in Action

Berrys Provide Gift for a Lifetime of Students

From their years at Washington State University, George and Joan Berry remember how their favorite faculty members changed and positively impacted their lives. They wanted to ensure that future students have the same chance.

“If you can help to attract and retain quality instructors, you’re going to impact all the students who walk into the classroom,” says Joan. And that is a lot of students.

Wanting to provide the best experience for as many students as they could, the couple is providing support for the Berry Family Directorship for the Institute for Sustainable Design.

During his time at WSU, George enjoyed his studies in mechanical engineering, especially quality professors such as Clayton Crowe who enlivened the classroom.

“They had an excellent faculty and small classes,” he says. “It was a good environment in which to learn.”

At WSU, he learned to seek solutions to problems on his own. “In high school, you are force fed information,” he says, “At the university, I would be given some information, but I had to get most of it myself. Then, I could do as much as I wanted to with it.”

Later, when he began his career, he was working on underwater design. “It was all a logical spin-off of what we did at WSU,” he says. “WSU really provided a good start for me.”

“WSU provided an excellent foundation,” Joan says. “We learned how to think and apply the information that we were taught.”

After graduation, George eventually began an architectural and engineering design firm and later moved into real estate development. He says that while he ended up using little of his actual mechanical engineering training, he did use many of the problem-solving skills that he had learned during his time at WSU.

“I often had no preparation for problems I encountered,” he says. “But I was able to pick up what was needed. It was often a ‘winging-it’ type of process.”

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**GIVING ENGINEERING PROFESSORS THE TOOLS TO SUCCEED IN THE CLASSROOM**  
*By Trina Jones, CEA Intern*

The first day of teaching for many professors is like jumping into the deep end of the pool—without swim lessons. University professors are not required to, and often do not, have training in education.

Civil Engineering Professor Shane Brown is working to improve teaching methods in engineering classes. Now, he is preparing students to do the same by teaching a class tailored to engineering education.

The sciences, and particularly engineering, have significant recruitment and retention problems. At the same time, there is a dramatic need for engineers and, therefore, engineering educators to keep the United States a leader in technology, Brown said.

“Research on retention shows that teachers have a major role in students staying,” Brown said.

In his Engineering Teaching and Learning class, offered for the first time in spring 2010, Brown trains his students to become educators who will help students learn and stay in engineering programs.

"The only educational intervention that has ever resulted in a two-standard deviation effect on learning is one-on-one tutoring. If you want students to learn more, tutor them.”

—Shane Brown

This teaching course is not Brown’s only foray into engineering education. He has worked on an in-class peer tutoring program, in which students who have already taken a course come into the classroom once a week to assist students in active learning exercises.

“There are piles of research showing tutoring effectiveness,” Brown said.

“Having social resources in the class that have been trained in the material gives students the opportunity to ask questions and be successful.”

Brown and others are currently working on a study of university classrooms with peer tutoring to see the effects on learning, self-efficacy, and classroom environment. Preliminary findings show that 85 percent of students want peer tutoring in their other classes.

He also works on a three-year grant program that provides for an “engineering math boot camp” for incoming freshman in the weeks before their first semester. The four-week course is only in its first year but is already showing dramatic results in improving self-efficacy, a determining factor in future success, Brown said.

A large part of Brown’s research includes understanding student misconceptions and their impacts. His studies show persistent misconceptions that mechanical and materials engineering students have about engineering concepts, such as stress and load. The students have difficulty reconciling their observations with the instruction, which impacts their understanding, Brown said. He wants to continue the study into the workplace to see what the impact is after college.
work with faculty from political science to map out the policy aspects of their research topic. As they write their dissertation, one chapter is required to relate to the policy implications of their research.

“It's pretty unique,” says Lamb. “There are a small number of programs that include policy issues, but this is the only one focused on nitrogen issues.”

A number of policy issues swirl around the nitrogen cycle, such as the regulation of nitrates that may cause pollution in groundwater or emissions of nitrous oxide, a potent greenhouse gas that contributes to climate change.

“Everywhere you turn, there are calls for scientists to be better communicators, to take a more active role, and to have more involvement in policy,” he added.

This spring, students participating in the course traveled to Washington, D.C., where they spent time meeting with congressional staffers and staff at regulatory agencies. In addition to receiving a primer on policy issues, the visit also set the groundwork for future internships.

As part of the IGERT and APT programs, students also participate in internships. They may end up in a national lab or working for a regulatory agency, such as the EPA.

“These agencies really need help. The students will not just be doing busy work,” says Lamb.

This fall, five or six additional students will join the IGERT program. Meanwhile, some of the students in the APT program are participating in the program’s first internships this summer.

“Our expectation is that these students won’t necessarily become policy experts, but that they will be better scientists and engineers who have an understanding of policy and its importance,” says Lamb.

The Berrys are providing support for faculty excellence in the areas where they received their educations, specifically in liberal arts, education, and the College of Engineering and Architecture. Through their gifts, they are working to ensure that future students will have similar valuable learning experiences to what they had and access to the highest quality educators.

Support from the Berrys provided an initial seed for the Institute for Sustainable Design and supports the program’s directorship. The institute, which was officially launched in October 2008 with a Weyerhaeuser Foundation grant, aims to be a catalyst for sustainable design, leading changes in design and construction through an interdisciplinary approach. The new institute serves as a global technical and design resource for sustainable architecture and construction and will form strategic alliances with industry to advance research and education about resource efficiency and affordability. It builds on existing strengths in renewable building materials and sustainable design, particularly through the work of the Composite Materials and Engineering Center.

Chelsea Rosenkrance was a participant in the Laboratory for Atmospheric Research’s Research Experience for Undergraduates program. Working with researchers Tim VanReken, Brian Lamb, Tom Jobson, and Shelley Pressley, she helped conduct a field study at the University of Michigan Biological Station in Pellston, Michigan. “These students had a unique opportunity to be involved in a large scale atmospheric chemistry campaign that involved maintaining instruments in the field, which I am certain that they discovered isn’t as easy as they thought it would be,” said Pressley.
Grant, Continued from page 4

the curriculum,” he says. “If uncorrected, this lack of a comprehensive implementation model will lead to sparse and disparate efforts to integrate sustainability.”

The design experience allows faculty to become more exposed to sustainable design practices while developing techniques to assess them.

Because WSU uniquely contains engineering, architecture, and construction management programs within one college, the college is able to provide a multidisciplinary approach to the sustainable design projects, says Wolcott.

The group’s first project is the SmartFARM, in which students are working to develop a sustainable solution for an expansion of the WSU organic farm (see SmartFARM, page 4). About 30 undergraduate and graduate students have been involved, including those from architecture, construction management, electrical engineering, civil and environmental engineering, and crop and soil sciences.

“It’s how sustainable design is done in the real world,” says Wolcott. “It’s integrated, and the various disciplines get together right from the start.”

As they develop curricula and learning tools in sustainability, the researchers plan to test them so they can be implemented at colleges across the United States.

“We are not just adding sustainability to course offerings,” says Wolcott. “Rather, we are integrating the students, faculty, and the design community into an interactive community.”

The researchers are using social networking tools, including a Facebook page (idexstudio) and a blog (www.IDeXstudio.org). More information on the project is also available at www.isd.wsu.edu.

TUTORS: REFRESHING SKILLS, HELPING PEERS
By Trina Jones, CEA Intern

Every day in Dana Hall, students pack in and out of the tutoring center in waves. They are taking advantage of a college-sponsored peer-tutoring program. Almost every engineering discipline has a tutor. Even non-engineering students occasionally come to the center for math tutoring. The tutoring program helps freshmen through their first year of math and other classes, which is often when engineering loses most students, says Helen Thompson, tutoring coordinator. The room is open from 8:00 a.m. to 7:00 p.m. every weekday except Friday, which has shorter hours. There is always a tutor in the room. Supported partially by donations, tutoring is free for the students with free coffee, lockers, and a microwave also available. The tutors are work study students. “Tutoring helps tutors as much as the students,” Thompson said. “It keeps the fundamentals alive for them.”

Will Cyrier
Year: Senior
Post-grad plans: Graduate school then structural engineering in Tacoma
When he began tutoring: Fall 2008
How often: 6 hours per week
Why he has stayed: I know there is a need. It helps keep me sharp. I like helping people with problems.
What he likes most: It’s a very valuable resource for students. I like when you can tell they are getting the concept.

Anthony Timm
Year: Senior
Post-grad plans: Graduate school in either civil engineering or law
When he began tutoring: Spring 2010
How often: 9 hours per week
Why he started: A lot of kids need help with math, and it refreshes my memory on certain classes.
What he likes most: People can get help for free and without going to office hours. It’s open 11 hours a day so people can always get help.
Donald Bender, Weyerhaeuser Professor in the Department of Civil and Environmental Engineering, was one of the recipients of a national outstanding paper award for his research on improving residential decks.

Bender was one of the recipients of the Markwardt Wood Engineering Award for the article “Development of Design Capacities for Residential Deck Ledger Connections” with coauthors David Carradine, Frank Woeste, and Joe Loferski, published in Forest Products Journal. According to the Forest Products Society website, the Markwardt award is given for the most outstanding research paper published in the wood engineering field in its two most prominent journals.

Working with colleagues at Virginia Tech University and WSU’s Composite Materials and Engineering Center, Bender has conducted extensive research and developed design guidelines for making residential decks safer. Except for hurricanes and tornadoes, more injuries may be connected to deck failures than all other wood building components and loading cases combined.

The award was presented at the Forest Products Society’s Annual Meeting in Boise, Idaho.
Researchers assess earthquake damage to the Chilean infrastructure.

A Chilean flag attached to a window shows how high the tsunami was and shows symbolically a feeling of support, says Montalva.

**WSU Engineers Travel to Chile for Earthquake Reconnaissance**  
*By Trina Jones, CEA Intern*

Careful scientific observation and measurements may not sound like a critical need after a disaster such as the Chile earthquake.

But they can mean the difference in the future between a building that stands and one that doesn’t, or between an earthquake that kills and one that doesn’t.

Dan Dolan, a civil engineering professor, and Gonzalo Montalva, a graduate student, were part of several research teams that went to Chile to assess the damage from the 8.8 magnitude earthquake that hit the country in February. The earthquake had the fifth largest magnitude ever recorded, but is the largest earthquake engineers have structural measurements and data for.

WSU is already very connected to Chile through a relationship with the University of Concepción (UDC). The two universities collaborate on programs and frequently exchange faculty; Dolan has traveled to Chile before, and Montalva, originally from Chile, is an associate professor at UDC. He will be back in Concepción this fall to continue post-earthquake learning and reconstruction work.

He was part of the first team, a part of Geo-engineering Extreme Events Reconnaissance (GEER) and sponsored by the National Science Foundation, which left within a week of the quake for an eight day trip. The goals of the group were to study natural and man-made structural responses to the earthquake. The team studied soil impacts as well as bridges, highways, and building foundations.

The team focused on soils and the mutual impact between soils and structures during an earthquake. They studied liquefaction, subsidence, and amplification of waves through the soil. Known as site effects, this variation in amplification means that different areas can experience the same shaking with different impacts.

Typically, researchers think soil failure causes structures to fail. However, Montalva said the team saw evidence that the buildings impact the soil, softening it, which then impacts the structures.

“We as an organization go to all these types of events, hurricanes as well, to learn how our structures perform and how we can learn from them,” Montalva said.

Chile is a very modern country, with a seismic building code similar to the western United States. Montalva’s team of about 20 studied the approximately 3 percent of buildings in Chile that failed. Their goal was to learn what revisions could be made to the geotechnical part of building codes. Bridge failures were also documented and will continue to be studied.

“We see a lot of reinforced concrete structures that behaved really well and some that didn’t,” he said.

Dolan went with an American Society of Civil Engineers (ASCE) team to Chile on a weeklong trip in April. Dolan’s team was one of three sent by ASCE in April to gather data on infrastructure response to natural disasters. These teams will be applying their findings to current U.S. situations and Chilean rebuilding efforts.
Approximately 300 civil engineering students from throughout the Northwest came to WSU to race concrete canoes, build steel bridges, and participate in the annual Pacific Northwest Regional American Society of Civil Engineers student conference. The April event drew students from Washington, Oregon, Idaho, Montana, Alaska, and British Columbia.

WSU’s Steel Bridge team took first in the competition and was invited to participate in the national steel bridge competition in May at Purdue University in Indiana. The WSU steel bridge team took ninth in the nation.

Each university team includes approximately 15 to 20 students who prepare for months to construct their designs. The teams have new specifications to meet each year, and at the end of the allotted time, the bridge and canoe designs judged to be the best win.

“The students get all the business skills but a lot of good engineering design skills as well,” said Shane Brown, assistant professor in the Department of Civil and Environmental Engineering and ASCE advisor. “It’s neat. They are really challenging problems.”

In addition to the two main competitions, WSU hosted an old-fashioned surveying competition, a concrete horseshoe competition, and an environmental competition that required students to design pervious concrete samples. The weekend also included a student-coordinated awards banquet at the Schweitzer Event Center.

Brown emphasized that the weekend was entirely organized by the students and that competitors and coordinators alike put in hundreds of hours to prepare and create a successful event.

“They get personal skills, good engineering skills, and they contribute a ton to the department,” Brown said.

It was a fun weekend that required hours of planning and preparation. However, the competitors have excellent design experience under their belts, and the coordinators learned management, organization, and communication skills.

“We tried to create a good, enjoyable experience for everyone, and being a part of it was exciting,” said Marcus Miller, co-chair of the conference.

Thank You! Your Gifts in Action

The ASCE students organized fundraising and judging for the ASCE conference. Many other schools have high-budget events, but WSU students raise all the funds themselves, which was particularly challenging in tough economic times.

“The donors really stepped up, and we raised as much as we needed,” said Marcus Miller, co-chair of the conference. “Everyone wanted to help.”

Special thanks to the following donors:

- Anderson-Peyton Structural Engineers
- BergerABAM
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- Cary Kopczynski and Company
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- Cinda Guenther
- David Kuhns
- Douglas Knapp
- Esvelt Environmental Engineering
- Gerald & Linda Smith
- Inland Empire Section of ASCE
- INTEGRUS Architecture
- Jon Mjelde
- J-U-B Engineers
- Kiewit Companies Foundation
- Marcus Miller
- PBS Engineering + Environmental
- Rafik & Marysue Itani
- Robert & Karrie Turner
- Stacy and Witbeck Incorporated
- Structural Designs PLLC
- Turners Construction Company

The ASCE students also approached professional engineers in the community to be judges at the event. “It’s a neat way to bring students and practicing engineers together for a fun weekend,” said Shane Brown, faculty advisor for ASCE.
Melissa Johns, a junior civil and environmental engineering major, was accepted into the National Center for Atmospheric Research (NCAR) summer Undergraduate Leadership Conference. Each of the approximately 100 universities in the University Corporation for Atmospheric Research (UCAR) can nominate one student to the program, which then invites up to 20 students to the University of Colorado campus every June.

The conference helps students explore career and graduate school options as well as learn about research and view labs and their projects. The five-day conference, which consists of lectures, tours, workshops, and discussions, also aims to train students in leadership skills.

Johns was excited to take advantage of all the opportunities the program has to offer from guidance for future graduate programs and careers to seeing highly specialized equipment unique to the NCAR labs. She will bring what she learned back to benefit WSU’s program.

“If the school is going to put in the effort of sending me, then I am sure they will want me to use the skills when I come back into the program,” she said.

Johns is working this summer for WSU’s Lab for Atmospheric Research. She also plans to use some of the leadership skills to educate younger students about the benefits and possibilities of the CEE program.

“It’s great we are part of such a cool national program,” Johns said. “People may not see a prestigious laboratory looking in, but that’s what we are.”

Johns plans to attend graduate school for environmental engineering, possibly specializing in atmospheric science. After school she wants to be a consultant for a private company.

Colleges of Engineering and Architecture Awards

Chad Drake and Julian Reyes were named the College of Engineering and Architecture’s outstanding sophomore and outstanding senior for 2010.

Drake, a civil engineering major from East Wenatchee, Washington, is a member of the WSU chapter of the American Society of Civil Engineers, the WSU Steel Bridge Team, the WSU Concrete Canoe Team, various intramural sports, and the WSU Horticulture Club. He is a recipient of the General Education Academic Award and was named WSU Mortar Board Outstanding Freshman Scholar. He is a member of the National Society of Collegiate Scholars and the Association for Iron and Steel Technology. He was also named the WSU General Chemistry Student of the Year. He holds a 3.9 GPA.

Originally from Kent, Washington, Julian Reyes is an Honors student with a 3.9 GPA. He is a civil engineering major, with minors in math and German. Reyes is a member of the American Society of Civil Engineers, the Honors Student Advisory council, Tau Beta Pi, Honors Hall government, ASWSU Senate, Students Book Corporation (Bookie Board), and marching band. He has received the President’s Award and last year was named Outstanding Junior in Civil Engineering. He is a Boeing Scholar, WSU Distinguished Regents Scholar, a Washington Scholar, and was chosen by the Daily Evergreen as one of the “25 Most Influential Students.” He has worked as a peer tutor and as an honors mentor, a research assistant at the University of Kassel, Germany, and last summer as an engineering intern at the Cherry Point Refinery in Blaine, Washington. His nominator noted that he is the prototype of a top Honors student, with multiple talents, a variety of interests, dedication, and wisdom and who is willing to work the extra mile so he can make a difference in the community he lives in. Washington State University is privileged to have a student of Julian’s caliber.
Leon Luck, civil engineering professor from 1947 to 1983, passed away in September.

The department has lost a true guiding light in Luck, but his legacy reaches into every aspect of the department today, and his influence can still be clearly seen, friends and colleagues say.

“We have a tremendous program today, and that reflects back to Leon Luck,” Professor Rafik Itani said.

Luck received his bachelor’s degree in civil engineering from WSU in 1943. He went on to a master’s degree at the University of Minnesota, a doctorate at Stanford University, and a successful professional career. Throughout his life, he and his wife Bee were active in their community as well.

“He was known not just in academia; he was held in high regard by the professional community,” Department Chair David McLean said.

However, he was always loyal to WSU and came back to teach in 1947, eventually becoming department chair from 1972 to 1976. In all he did Luck received respect for his excellence and organization and also for his friendliness.

“Leon Luck had that kind of personal touch with people,” Itani says.

Luck led the White Pass surveying camp for several years. An active outdoorsman, he and other faculty would take students to the camp for six weeks in the summer to teach surveying. After attending the camp as an undergraduate, and leading it as a professor, he also had the sad duty of closing it in 1973.

Luck was an excellent teacher on campus as well. “He emphasized good teaching. He had a sincere desire to work with students, and he took an interest in each student,” Itani said.

Through his individual focus, he was able to make lasting impacts. Itani recounts the story of Luck working with a student who was about to drop out of school—one class away from graduation. The alumnus has now developed a multinational business and is one of the biggest supporters of the department, Itani said.

“He pushed students, and in doing so made them better engineers,” McLean said. “Thousands of civil engineering graduates have been impacted by Leon and have gone on to successful careers.”

“He is the teacher of teachers. He is a super teacher.”

—Rafik Itani, hired by Luck in 1975

Many alumni fondly recall Luck and their experiences in his classes. “Several alumni have told me that Leon gave the perfect lecture. He was totally organized. He had perfect writing on the board. When he would finish, he would write a period at the end of his lecture, and the bell would ring within ten seconds,” McLean said.

Alumni were responsible for the Leon Luck Faculty Achievement Award, established after Luck retired in 1983. The award is given for faculty excellence in the department.

“He strived for excellence in what he did. He demanded it of faculty colleagues and students, and, because of that, we were all better for it. That is his legacy to our department and graduates,” McLean said.

Luck also positively affected the civil engineering program and its reputation, Itani said.

“His lasting legacy is that WSU is known for the strength of its program. It has always been a strong program and we put a lot of effort there,” he said. “He was dedicated to being a quality teacher and putting the name of WSU as a quality program throughout Washington.”

More than just the ways in which he made the program better, Luck will be remembered for his personal influence on those around him.

“He made me want to come to WSU. He was friendly and sincere, and I accepted on the phone without even seeing WSU,” Itani said of Luck’s job offer. “He took me in. He made a point to come to my office and assure me that I was going to do well at WSU.”

Luck’s influence on the program is not one that will pass with him, colleagues are sure. His personal touch with faculty, his academic and professional excellence, and his loyalty in promoting the department throughout the state still resonate today. However, Itani says, Luck’s emphasis was undergraduates and that, more than anything, was his most important work.

“Students are ready to go out and practice engineering, and that is an achievement that lives on today,” he said.
Muhunthan Named ASCE Fellow

Balasingam Muhunthan, professor of civil and environmental engineering, has been named a fellow of the American Society of Civil Engineers.

The fellow designation is considered one of the most esteemed honors that civil engineers can receive from their peers, with less than 6 percent of ASCE members holding the title.

A professor at WSU since 1991, Muhunthan was recognized for his research in geomechanics and geotechnical engineering. His research interests include work in soil mechanics, instabilities in geomaterials, thermomechanics, microstructure characterization, and micromechanics of geomaterials. Working with geotechnical engineer V.S. Pillai, Muhunthan uncovered the longstanding mystery of the 1976 Teton dam failure, which resulted in 11 deaths in southern Idaho. The researchers determined that the highly compacted soils of the earthen dam had resulted in vertical internal cracks in the upper portion of the dam, which led to its failure.

Muhunthan has received numerous awards, including several departmental teaching awards as well as the outstanding teaching award for the College of Engineering and Architecture. He was a recipient of the Crampton Prize from the Institution of Civil Engineers, United Kingdom, in 2004. He holds a doctorate in civil engineering from Purdue University and a bachelor’s degree with first class honors from the University of Peradeniya in Sri Lanka.

Dolan Receives National Honor for Development of Earthquake Guide

J. Daniel Dolan, professor of civil and environmental engineering, received the Building Seismic Safety Council’s (BSSC) Honor Award. In receiving the award, Dolan was recognized for his “passion, energy, and unselfish contribution of expertise and leadership” in advancing the purpose and goal of the BSSC and National Institute of Building Sciences. Dolan was also honored for his commitment and pivotal role in the development of the 2006 edition of the Homebuilders’ Guide to Earthquake-Resistant Design and Construction.

Dolan has extensively pursued efforts to improve building codes to make the built environment safer from earthquakes and hurricanes. In addition to his work on the guide for earthquake-resistant design, he was involved in another FEMA publication, Home Builders’ Guide to Coastal Construction. He also served as chair of the International Code Council committee to address the wall sheathing requirements of the International Residential Code (IRC). This committee’s work helps to define the safety level of all single-family houses in the United States. He was a member of the International Code Council IRC Building and Energy Committee, which evaluates all proposals for the IRC pertaining to structural performance and energy conservation to determine if the change is beneficial to the public’s safety. He has also served on the International Building Code Technical Update Committee to evaluate changes proposed for the structural safety portion of the building code governing large buildings.

As part of the award, Dolan was also recognized for his service as a member of the Code Resource Support Committee and his efforts as a member of the Provisions Update Committee during the development of the 1997, 2000, 2003, and 2009 editions of the national recommended seismic provisions, the precursor to the building code, and ASCE 7, the load standard for all building design.

He has been at Washington State University since 2002 and is a recipient of WSU’s Sahlin Faculty Excellence Award for Public Service.

Honored Thesis Inspires Changes in Industry

Courtney Lynn Davis received the Masonry Society’s Award for Best Master’s Thesis. Conclusions and recommendations made in her thesis inspired several significant changes to the Masonry Standards Joint Committee Building Code for masonry structures.

The Masonry Society is an international professional, technical, and educational association dedicated to the advancement of knowledge about masonry.

A Portland, Oregon, native, Davis graduated from WSU in 2007 with a bachelor’s degree in civil engineering. As an undergraduate, she worked on two research projects building concrete forms and foundations. As a WSU graduate student, she received a research assistantship to explore the performance of shear design standards for masonry. In December 2008, Davis completed her award-winning thesis, “Evaluation of Design Provisions for In-Plane Shear in Masonry Walls,” and earned her master’s degree in civil engineering with a structural emphasis. Davis’ thesis advisor was Professor David McLean.

Davis now works in New Orleans, Louisiana, on a hurricane protection system with INCA Engineers, a company headquartered in Bellevue, Washington.
ADVISORY BOARD MEMBER DON SENN RETIRES

Degrees: ’66 B.S. CE, ’74 M.S. in traffic at UW
Career: Worked for the DOT for 42 years, eventually becoming the north central region director. Served on the CE advisory board from 1995 to 2009.
Favorite CEA class: Summer camp at Clear Lake doing surveying and field experience.
Favorite CEA professors: Emmett Moore and Leon Luck
Fondest WSU memory: My whole family bleeds Crimson and Gray, but I met my wife at WSU, and that is my fondest memory.
What does it mean to be a Coug? It means a community of people who care a lot about each other. It means you are there for academics, because it is an academic community.
Engineering hero: Paul Hooper ’53 CE, my brother-in-law, who encouraged me to be in engineering and work for the DOT, also George Andrews ’41 B.S. CE.

Source of inspiration: My family. Everyone around me, my wife, my parents, stressed giving back to the community. I always liked that working for the DOT. I knew I was helping the community.
Motivation for serving on the advisory board: It was a good way to give back to the college that meant so much to me, and I really, really enjoyed doing it. It kept me active in the school. It was very rewarding how the board was able to influence and get things changed to get soon-to-be graduates more used to working together, and helping the instructors to grow. The other board members are great to work with. They have a wealth of knowledge and information that they were able to give back to the kids and professors. I was the chair of the board for several years but the chair is only as good as the people on the board and the CE staff.
Why he left: The only reason I left was so someone else could gain the experience of being on the board. Also, now that I am retired, I couldn’t help students as much. My wife and I are retired in Lake Chelan and Palm Desert, spending our time enjoying the outdoors and visiting our kids.

DON AND DIANE SENN WITH SON, KEVIN, WHO RECEIVED A MASTER’S DEGREE IN CIVIL ENGINEERING FROM WSU IN 1995, AT DON’S RETIREMENT PARTY. THEIR OTHER SON JARED IS NOT PICTURED.

UNEXPECTED CAREER CHANGE

When Heather Faught graduated from Asotin High School in 1994, she never dreamed of being an engineer.

Considering nursing, she began college, but when that didn’t pan out, she got a temporary job as a secretary at Thomas Dean & Hoskins Inc. (TD & H) Engineering in Lewiston. Who would have thought that 15 years later and with significant help and support from the company, Faught would graduate with a bachelor’s degree in civil engineering?

When she first arrived at TD & H, Faught remembers feeling overwhelmed.

Engineering was completely foreign to her. At the same time, she quickly came to enjoy the many learning challenges that she encountered and wanted to learn more. She realized that she liked the creative problem-solving and brainstorming that she often sees the engineers do in the office.

She first began considering engineering as a possible career after she was promoted from a secretary to drafter at the company.

“I stumbled into the engineering field by accident and discovered that this is where I want to be,” she says.

continued on next page
Last year, Drew Polley was keeping a busy schedule—engineering classes, research work, and captain of the WSU cross country team. This year, he runs, eats, sleeps, and runs.

Polley’s life took an unexpected turn last November when he ran his first-ever marathon—and took first place among Americans. His time of 2:20:59 in hot and humid conditions was nearly good enough for an Olympic trials qualifying time of 2:19.

Shortly after the race, he was approached by recruiters for the Hansons-Brooks Distance Project, which trains elite U.S. runners. They asked him to join their group. Polley left WSU in December and is now living in Michigan, where he works at the Hansons running store part-time while training with the group of full-time runners. The runners live and train together—like college, but without books or homework.

In April, Polley competed as a member of the Hansons-Brooks team when he ran in the Boston Marathon. He took 5th place out of the Americans, 16th overall, and qualified for the U.S. Olympic trials with a time of 2:16:36.

“I never thought something like this would happen,” he said. “I feel like I’m living a dream.”

Deciding to leave WSU was not an easy decision, he said. Originally from Port Orchard, Washington, Polley received his bachelor's degree in civil engineering in 2009, graduating magna cum laude. While at WSU, he was one of a few students nationwide to participate in a prestigious undergraduate leadership workshop sponsored by the National Center for Atmospheric Research. Polley also worked for the Laboratory for Atmospheric Research, where he did computer modeling of pollutant dispersion. He was excited to have recently started a master’s degree when he was recruited by Brooks and the Distance Project.

He decided to run. “If I didn’t pounce on this chance, I might regret it for the rest of my life,” he said. “Once I get this out of my system, I’ll be able to focus on engineering.”

As he came to his decision, Polley worried the most about letting down his professors, who had invested in him. Instead, he said, they supported his decision and toasted his success.

“I must be one of the very few graduate students who has dropped my studies and managed to receive praise,” he says. These days, Polley lives what he calls a dream life—although he says, laughing, that it might not be for everyone. At the most intensive point in his training schedule, he was running twice a day and about 130 miles a week—eighteen miles a day. They don’t take days off for wintry weather conditions. “We just have to tough it out,” he says.

Someday—after he sees just how fast he can go—he plans on returning “to reality.” He would like to return to school or work as an engineer.

“I had a great time at WSU, and it was tough to leave,” he says. “I’m holding onto the hope that someday I’ll return.”

The Olympic Marathon trials will be held in January 2012.

Career Change, Continued from page 15

She began taking classes on a part-time basis while working full-time at the company. Company managers were entirely supportive of her education efforts, she says, from paying for tuition and books to letting her have a flexible schedule. While attending WSU as a full-time student, she continued working on a part-time basis in Lewiston. In spite of her challenging schedule, she thrived in her classes and unexpectedly gained new interests in topics such as environmental engineering and sustainability. Many of her classes were difficult, she says, but she received significant support from her family, her boyfriend, and TD & H when she was struggling, she says. Sometimes the classes where she struggled the most, such as in geotechnical engineering, she later found to be the most interesting.

After graduation, Faught was promoted to engineer at TD & H.

“Heather is one of the most motivated students I have had,” said Cara Poor, clinical assistant professor in the Department of Civil and Environmental Engineering.

“She...shows a genuine interest in engineering. This is likely from her experience at TD & H Engineering, where she has seen firsthand how the things she learns here will be applied.”

“She will be a great engineer,” she added.
Engineering is all about Making a Difference

As you know, the Department of Civil and Environmental Engineering brings together a creative community of faculty and students with a broad range of interests and expertise in innovative structural design, computer technology, and ecological responsibility.

We’re living in an era where higher education administration has to make critical decisions about resource allocation. In the Department of Civil and Environmental Engineering, we are working toward creating an environment to maintain excellence in education. It’s no secret that the strength and vitality of higher education depends on a mixture of public and private support. Over the next several years we hope to attain the resources to create an endowed chair, fully fund the Institute for Sustainable Design, and create a comprehensive curriculum centered on sustainable solutions.

The support from alumni such as you will not only help us reach these goals on a deeper level but it creates engaged and motivated students who are challenged and inspired. Your continued response to the needs of this institution is especially gratifying to all of us. We know you have many options when it comes to your philanthropy and we want to thank those of you that have continually answered our call to action. I hope to find the opportunity to meet with you to find a match between the Department of Civil and Environmental Engineering priorities and your interests that will be worthy of your support.

If you want to find out more about how you can make a difference, please feel free to contact me at 509-335-0144 or pilcher@wsu.edu. Thank you again for your commitment to the future of the Department of Civil and Environmental Engineering at Washington State University.

Bridget Pilcher
Associate Director of Advancement

Your Gifts in Action:
A look at how your gifts made a difference this year in the Department of Civil and Environmental Engineering:

- 80 undergraduates received $80,000 in scholarships
- 15 graduate students received $50,000 in stipends and fellowships
- We invested $50,000 in lab equipment upgrades and computer software
- Our endowments for ASCE total over $100,000, which generated support for the student club of nearly $5,000 each year.
- An additional $25,000 in support helped the ASCE to host the regional ASCE competition in Pullman (see story on page 11).

Thank you for your support!

Civil and Environmental Engineering Honor Roll of Donors

Thank you for your gift to the department from July 1, 2009 to June 30, 2010. We are proud to recognize alumni, friends, and corporate and foundation partners whose generosity ensures that the department will maintain excellence in our undergraduate education and graduate research programs. Please visit www.ce.wsu.edu/thankyou.pdf.
BACK IN TIME

Do you know the names of any of the people shown in this photo? Do you know what year it was? What is your favorite memory about the WSU Survey Camp? Please send a note to Vicki Ruddick at vruddick@wsu.edu and tell us about it. If you do, we’ll enter your name in a drawing for a gift. We hope to hear from you soon!