

CONNECTIONS

DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING

Environmental Engineering Bachelor's Degree: A Major Step Forward for CEE Department

When Kelly McElroy walked across the commencement stage on December 10, 2011, she became the first MSU engineering student to earn a bachelor of science degree in environmental engineering. This marks a major step forward for the Department of Civil and Environmental Engineering (CEE) and the beginning of new opportunities for CEE students and faculty.

"We first proposed a BS in environmental engineering nearly 20 years ago," says CEE professor Susan Masten, who spearheaded efforts to get the degree in place. "At the time we did not have the staffing."

However, she points out that the department did have a bachelor's degree in sanitary engi-

neering more than 40 years ago. The sanitary engineering degree focused on the public health sector. As times changed, sanitary engineering morphed into a broader definition that now includes impacts of pollution both on human and ecological health; and since the 1990s, CEE students have been able to choose an environmental engineering concentration as part of the civil engineering degree program. That program allowed student to focus their studies

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Spartan congratulations Kelly McElroy (left) and professor Susan Masten.

Multi-Functional Device Offers Low-Cost Opportunities for Detecting Diseases

Using new technology and innovative research, Syed Hashsham and his research team have developed a hand-held, low-cost device that can perform genetic analysis. Hashsham, a professor in the Department of Civil and Environmental Engineering, worked with other researchers as well as a team of students to develop the Gene-Z, which can be used for everything from detecting cancer to instantly identifying diseases attacking crops and plants.

The Gene-Z device is operated using smartphone technology and performs genetic analysis on microRNAs and other genetic

markers. Hashsham recently demonstrated the potential of the Gene-Z at the National Institutes of Health's Cancer Detection and Diagnostics Technologies for Global Health Conference and again at the National Plant Diagnostic Network's (NPDN) conference.

"Gene-Z has the capability to screen for established markers of cancer at extremely low costs in the field," Hashsham says. "Because it is a hand-held device operated by a battery and chargeable by solar energy, it is extremely useful in limited-resource settings."

Hashsham is working with Reza Nassiri, director of MSU's Institute of International Health and assistant dean in the College of Osteopathic Medicine, on the medical capabilities for the device and establishing connections with physicians worldwide.

Since cancer diagnostics and rapid screening methods currently are not suitable for low-income and resource-limited countries, Nassiri says

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Photo by G.L. Kohuth



After being in the faculty ranks for 15 years at Michigan State University, I find myself as the department's interim chairperson. The transition has been smooth; and rest assured that the upward growth and strategic vision of the department will not be compromised under my watch. In fact, I am proud to report that our research expenditures have grown by 35 percent since 2006, and our undergraduate and graduate enrollments have been on the rise. In addition, a bachelor's degree in environmental engineering (ENE) became a reality in fall 2011, and Kelly McElroy became the first MSU engineering student to earn a degree in that program. This marks a major step forward for the Department of Civil and Environmental Engineering (CEE) and the

beginning of new opportunities for CEE students and faculty.

The spring 2012 newsletter celebrates the successes of our students and faculty and I would like to share some examples with you in my message. At the first Engineering Graduate Research Symposium the department was well represented with more than 40 posters on display. Based on internal judging of the posters, the department's graduate studies committee selected the top three posters in the CE and ENE categories. CEE undergraduate students Jake Formanczyk and Samer Naser spent seven weeks at the Indian Institute of Technology Madras working on non-destructive evaluation (NDE)-related projects as part of the National Science Foundation's International Research Experiences for Students (IRES) program during the summer of 2011. By all accounts, Jake and Samer enjoyed the experience. James Rice and Gerrit Littrup, both CEE undergraduates, took hydrology and statics during the summer of 2011 at Anadolu University in Eskişehir, Turkey, as part of the department's first summer study abroad program in Turkey.

Assistant professor Alison Cupples was selected as a Lilly Fellow for the 2011-12 academic year.

Over the past 20 years the department has had seven Lilly Fellows. Professor Venkatesh Kodur was elected to the Indian National Academy of Engineering in recognition for his contributions to structural fire engineering and high-performing construction materials. Associate professor Volodymyr Tarabara received the prestigious Paul L. Busch Award from the Water Environmental Research Foundation for his work on membrane separation processes and advanced materials for water treatment and reuse applications. Professor Syed Hashsham and his research team have made genetic analysis possible with the "push of a button." The Gene-Z device can be used for everything from detecting cancer to instantly identifying diseases attacking crops and plants.

As long as we believe in our mission of teaching, research, and service, the state of our department will always be strong. I would like to thank Ron Harichandran for his dedication, leadership, and service to the department. As always, I urge you to stay connected with your alma mater! 🌱

Detecting Diseases (continued from page 1)

a concentrated effort should be made to develop more appropriate and cost-effective technologies such as the one developed by Hashsham for widespread global use.

To use the Gene-Z device to find pathogens that may be attacking plants, farmers and field scientists take a swab for pathogens and transfer the sample to a microfluidic chip, which is inserted into the device. Used with an iPod Touch or Android-based tablet, Gene-Z can identify the pathogen, its genotype, and its amount in 10 to 30 minutes. The traditional approach to identifying plant pathogens involves collecting field samples, sending them to a laboratory, and awaiting the results.

"This is exactly the kind of new information that we like to share with our members during our conferences," says Ray Hammerschmidt, chairperson of MSU's plant pathology department and NPDN regional director. "Our goal is to stay ahead of the multitude of plant pathogens and pests that threaten the world's food supply. So when we learned of Gene-Z's potential, we were excited about having its first public plant pathogen demonstration at our conference."

In addition to detecting cancer and plant pathogens, the Gene-Z device can be used to screen for dozens of pathogens in food, animals, and humans and is also being developed to diagnose routine tuberculosis and drug-resistant TB, determine HIV virus levels during treatment, and monitor overall antibiotic resistance.

"Demonstrating the performance of Gene-Z in the field and in clinical settings is the critical next step," says Hashsham. He is establishing key collaborations with a number of organizations and experts to demonstrate the usefulness of the device. The goal is to meet most of the requirements dictated by ASSURED criteria (affordable; sensitive; specific; user-friendly, i.e., simple to perform in a few steps with minimal training; robust and rapid; equipment free; and deliverable to those who need the test). Gene-Z is ready to be manufactured, and Hashsham is working with MSU Technologies to bring the product to market.

The device was developed using a grant from the Michigan Economic Development Corporation to MSU and AquaBioChip, a startup company. Hashsham was the lead investigator. Co-PIs were James Tiedje, University Distinguished Professor in MSU's Department of Microbiology and Molecular Genetics; and Erdogan Gulari, professor of chemical engineering at the University of Michigan.

Working with Hashsham in the development of the Gene-Z device was a team of graduate students from MSU's Department of Civil and Environmental Engineering. Robert Stedtfeld, now a post-doc, was the development team leader. Other team members were Farhan Ahmad and Greg Seyrig, who are currently completing their PhDs; and Dieter Tourlousse, who recently completed his PhD degree. The cancer marker work related to microRNA for Gene-Z was done by Maggie Kronlein, an undergraduate researcher. 🌱

– Jane L. DePriest

Environmental Engineering Bachelor's Degree (continued from page 1)

on environmental engineering. In addition, the department offers both master's and doctorate degrees in environmental engineering.

The increasing importance of environmental issues, such as the emerging contaminants in water, climate change, the design and management of landfills, soil remediation, and ecosystems restoration has been the impetus for establishing the bachelor's program. According to the U.S. Bureau of Labor Statistics, environmental engineering is one of only two engineering disciplines that is predicted to experience much faster than average growth over the next 10 years, with a projected growth of 25 percent by 2016.

"By 2009 the environmental engineering staff in the department had doubled and that allowed us the opportunity to work on the creation of a separate BS program," explains Masten. A series of surveys and interviews with alumni and employers helped to add perspective to what was needed in the degree program and to gauge interest among potential employers, such as Dow Chemical Company, Ford, General Motors, Whirlpool, governmental agencies, and consulting firms. In addition, Thomas Voice, CEE professor, Ron Harichandran, former chair of the CEE department, and Ron Rosenberg, associate dean emeritus of the MSU College of Engineering, as well as the environmental engineering faculty, gave input on the potential for a program and how it should be administered.

Masten also discussed the possibilities with representatives of Michigan Technological University, the only other university in the state offering a bachelor's degree in environmental engineering. "They also observed the increasing demand for environmental engineers," says Masten.

The environmental engineering (ENE) bachelor's degree has required courses in mathematics, biology, chemistry, and physics, as well as appropriate courses in humanities and social sciences. Once students have established a broad background, they can select one of two major tracks—geoenvironmental or water resources—within environmental engineering. Alternatively, students can select a general track and design their own specialization based on

personal interest and approval by the department.

The geoenvironmental track is designed for students who wish to extend their core training in the design of treatment and remediation processes to include landfill design, soil remediation, and solid waste management.

The water resources track is designed for students who are interested in enhancing their understanding of natural earth processes to prepare for work on water supply, management of surface and groundwater resources, and water pollution.

McElroy was in a unique position to obtain the first bachelor's degree because she had completed all of the foundational courses and had been pursuing the environmental engineering option. Fourteen freshmen signed up for the ENE bachelor's degree in the fall of 2011 and other students are expected to graduate with a BS in

ENE by May 2013. The department is preparing for its first accreditation visit for this program by the Engineering Accreditation Commission/Accreditation Board for Engineering and Technology (EAC/ABET).

"We are clearly at a point in time when there is renewed interest in environmental issues," says Neeraj Buch, professor and interim chair of the CEE department. "There seems to be widespread agreement, as evidenced by the National Academy of Engineering's Grand Challenges for Engineering in the 21st century, that we must address global problems, such as climate change, access to safe drinking water and proper sanitation, urban air quality, and the environmental implications of new and existing sources of energy. All of those are issues that environmental engineers can address." 🌱

– Jane L. DePriest

Kelly McElroy First to Receive BS in Environmental Engineering

The civil and environmental engineering department's first graduate with a bachelor of science degree in environmental engineering, Kelly McElroy, is now an engineer at the Donald C. Cook Nuclear Plant just north of the city of Bridgman, Mich., in Berrien County.

At MSU, McElroy was president of the MSU Environmental Engineering Student Society, was a rower on the concrete canoe team, participated in the civil and environmental engineering undergraduate curriculum committee, and received a 2011 Distinguished Service Award from the College of Engineering.

"Getting a bachelor's degree in environmental engineering is very beneficial, because more and more companies are becoming environmentally conscious and they need environmental engineers to assist them in making sure that they are complying with all environmental laws and regulations," says McElroy, who is from Farmington, Mich., and is the daughter of Carol and Patrick McElroy. "In addition, there are many directions you can go

with an environmental engineering degree. You can go into water treatment, air quality control, policy, and much more. Simply put, a degree in environmental engineering provides many opportunities."

Last summer McElroy had an internship with Dow Chemical Co., which allowed her to get involved with many different types of civil and environmental engineering projects. "It was exciting to see concepts that I learned in class applied in a real-world setting."

She believes that even though the environmental engineering bachelor's degree is brand new, it will quickly become a popular program at MSU. "There are many environmental groups and initiatives on campus, such as the 'Go Spartan Green' campaign, making the ENE degree more appealing," says McElroy. "Plus, the professors within the program are all very passionate not only about their research, but also about helping their students to fully understand the material." 🌱

Faculty and Staff Connections

Lilly Teaching Fellows Program



Assistant professor **Alison Cupples** was selected to participate in MSU's prestigious Lilly Teaching Fellows Program for 2011-2012. For this, she has developed in-class,

formative assessment approaches, based on active learning, to better address ABET course learning objectives in a large undergraduate class (CE 280 – Principles of Environmental Engineering and Science). The Lilly Teaching Fellows Program is highly competitive with only seven faculty members across the university selected each year.

The program focuses on teaching and learning practices and has a reputation for mentoring faculty and grooming them for leadership roles. The program includes a scholarship for a teaching and learning project, interactions with a Lilly mentor, off-campus retreats, discussion groups, and seminars.

Cupples also recently received an Excellence in Review Award from the editors of *Environmental Science and Technology*, a top journal on environmental engineering research. This award honors reviewers who have consistently provided both scholarly and timely reviews.

Indian National Academy of Engineering



Professor **Venkatesh K. R. Kodur**, director of the MSU Center for Structural Fire Engineering and Diagnostics, has been elected to the Indian National Academy of Engineering

(INAE), which includes India's most distinguished engineers, engineer-scientists, and technologists. The academy honors both Indian and foreign nationals who are elected by "peer" committees in recognition of their personal achievements in engineering that are of exceptional merit and distinctive eminence in new and developing fields of technology. Election to the academy is only by nomination from fellows of INAE.

Kodur is internationally recognized for his contributions to structural fire engineering and

high-performing construction materials. He has developed fundamental understandings on the behavior of materials and structural systems under extreme fire conditions.

Among his major contributions are solutions for enhancing the fire performance of such high-performing materials as composite construction, high-strength concrete, and fiber-reinforced polymers. The techniques and methodologies resulting from his research have been instrumental in minimizing the destructive impact of fire in building infrastructure.

Kodur's research program is funded by major grants from the U.S. Department of Commerce, the National Science Foundation, and the construction industry. He has chaired numerous international technical committees, organized workshops and international conferences, and is a member of the editorial boards of several scientific journals. He has also received a NATO award for collaborative research, an American Institute of Steel Construction Faculty Fellowship award, and a National Research Council Canada Outstanding Public Awareness Award. Kodur was elected a fellow of the American Society of Civil Engineers, the American Concrete Institute, and the Canadian Academy of Engineering. He received MSU's Distinguished Faculty Award in 2011.

The Center for Structural Fire Engineering and Diagnostics on the MSU campus was dedicated in June 2007 and is the first such facility in a U.S. university setting. The center, which is part of the College of Engineering's Department of Civil and Environmental Engineering, addresses fire issues related to infrastructure in the civil, mechanical, and transportation sectors. It has state-of-the-art equipment for undertaking fire experiments on materials and structural systems, critical for research in this interdisciplinary area. This includes a structural fire testing furnace and various material characterization instruments for measuring high temperature properties.

Kodur recently gave the keynote presentation at Integration, Partnership, and Innovations in Construction Sciences and Education, an international conference dedicated to the 90th anniversary of the National Research University

Moscow State University of Civil Engineering in Russia.

Paul L. Bush Award



Volodymyr Tarabara, associate professor in the Department of Civil and Environmental Engineering, received the Paul L. Busch Award from the Water Environmental

Research Foundation (WERF) at its annual Subscriber Luncheon in Los Angeles, Calif., in October. This prestigious award honors Busch, who led private and public development of water quality technology for more than 40 years as an environmental engineer. The award carries with it a \$100,000 grant and recognizes an outstanding individual or a team of individuals who are conducting groundbreaking research that will lead to practical solutions to water quality problems.

A panel of nine WERF volunteers selected Tarabara from a field of 28 nominees. The selection committee represents some of the industry's most respected experts—including former Paul L. Busch Award winners.

Tarabara has distinguished himself in the membrane field, which is full of many outstanding scientists. He also has a strong publication record associated with his work on membrane separation processes and advanced materials for water treatment and reuse applications. Another area that Tarabara studies is the environmental impact of nanotechnologies.

Tarabara will use this award to validate innovative concepts that could lead to the widespread use of multifunctional membranes for a range of processes including the reduction or removal of halogens, nitrogen compounds, and salt.

"This work is on the design of membranes that not only serve as separation barriers but perform other useful functions as well," says Tarabara. "The main idea is to use functional nanoparticles and embed them into membrane materials in the form of hierarchical architectures. We believe we can control membrane structure and additional functions through manipulations at different levels in the hierarchy."

Tarabara often speaks of new directions in materials, addressing alternative applications of membranes to enhance water quality protection and recycling; and of using new social media approaches to continue collaborations and to teach.

WERF, a nonprofit organization formed in 1989, is America's leading independent scientific research organization dedicated to wastewater and storm water issues.

Withrow Awards



Professor **Susan J. Masten** was honored with a **Withrow Teaching Excellence Award** at the college's annual awards luncheon in March.

Masten is a passionate teacher who cares about student learning and strives to relate real-life environmental engineering to classroom instruction. She believes that discovery and application are fruitless unless knowledge transfer occurs; thus, she investigates novel ways to better engage students and

improve their learning. Masten has significant interaction with students and is always willing to help—inside and outside of the classroom. Masten spearheaded efforts to make a bachelor's degree in environmental engineering a reality.

Keynote Speaker



Professor **Gilbert Baladi** was the keynote speaker at the 7th International Conference on Road and Airfield Pavement Technology at the organization's annual

conference in 2011 in Bangkok, Thailand.

Baladi's research interests are in building foundations, geotechnical and pavement engineering, engineering management of transportation infrastructure, the development of pavement performance prediction models, characterization of composite engineering materials used in transportation networks, and back calculation of the engineering properties of layered systems. His research focuses on the optimization of and maximizing the benefits of

pavement management data collection; behavior of roadbed soils, unbound materials, and asphalt pavements under heavy vehicular loads; and recycling of asphalt pavements.

Research Project in the Balkans



Professor **Thomas Voice** is co-director, along with David Long, professor of geological sciences, on a project funded by the National Institutes of Health (NIH) coordinated

under the Institute of International Health at MSU. Researchers are working with physicians and biomedical researchers in Bulgaria, Serbia, Romania, Croatia, Macedonia, and Montenegro to investigate specific environmental health problems. One study focuses on identifying the causative agents and exposure pathways for the environmental disease Balkan endemic nephropathy.

Voice also was recently elected to the board of directors of *Consumer Reports*. ❁

MSU Distinguished Faculty Award



Lou Anna K. Simon, MSU president, congratulates professor Syed Hashsham on receiving the Distinguished Faculty Award.

Syed Anwar Hashsham, a professor in the Department of Civil and Environmental Engineering, was among 10 Michigan State University faculty members to receive a Distinguished Faculty Award at the annual MSU Awards Convocation in February. The award recognizes a comprehensive and sustained record of scholarly excellence in

research and/or creative activities, instruction, and outreach. The award was presented to Hashsham by MSU President Lou Anna K. Simon.

The new honorees bring the number of faculty honored since the award was established in 1952 to 491. The Distinguished Faculty Award winners and 19 other recipients of all-university awards were recognized during a convocation at Wharton Center's Pasant Theatre.

Hashsham is internationally known for integrating genomics and microfluidics with consumer electronics to solve issues related to human health and environmental biotechnology. His research includes the development

of DNA chips to fast test for the Superbug MRSA, the development of a hand-held platform for genetic analysis, and environmental biotechnology. His early work on how microbial communities behave when faced with stress is seminal for environmental engineers working to describe community behavior in quantitative terms.

Hashsham, who has a keen eye for students' educational needs, is an excellent teacher and inspires the best in his students. "Always available" is one of the standard comments made by students when describing him. As an adviser, he encourages students to be self-learners, innovators, and team players.

He collaborates with researchers from a number of disciplines—from ecology to infectious diseases to microfluidics and electronics. His work has been published in leading journals, including *Applied and Environmental Microbiology*, *Biomedical Microdevices*, *Science* and *Environmental Science & Technology*. Hashsham's work is considered novel and highly significant by his peers because it often has a direct application to environmental health for the poorest people on the planet. For example, Hashsham recently developed a highly innovative device, Gene-Z. (See article on page 1.)

Hashsham has been a principal investigator or co-principal investigator on funded grants that total more than \$13 million. His research projects are supported by NIH, EPA, DHS, NSF, and the Michigan Economic Development Corporation. ❁

Alumni Connections

New York Architect

Ryan Donaghy (BS '08) is using his background in civil engineering to create a career in architecture in New York City. Donaghy grew up drawing and running cross-country in rural west Michigan. He graduated from MSU with a focus in structural analysis and design, including assisting in the construction and instrumentation of reinforced, high-strength concrete shear walls for simulated seismic testing.

He went on to get a master's degree in architecture from the University of Michigan in 2011. While at the University of Michigan, he taught architectural structures courses to undergraduate and graduate students and participated in summer travel studies in the Netherlands and Taiwan. He was awarded a Graduate Thesis Prize

for "Co-Opting the Cloud: An Architectural Hack of Data Infrastructure."

Since moving to New York, Donaghy has performed competition and schematic design work for Leeser Architecture, including a proposal to renovate the Moscow Polytechnic Museum. His current interests in architecture and design pertain to advanced fabrication and assembly techniques as well as the potential architectural overlaps between invasive computing technologies and the physical environment.

In Memoriam

Alger "Al" Colthorp (BS '56, MS '59) of Lake St. Louis, Mo., died October 18, 2011, at the age of 77. A registered professional engineer, Colthorp volunteered for the Dardenne Creek Stream Rehabilitation and served on the engineering committee for Lake St. Louis Community Association. He enjoyed golfing, sailing, boating, gardening, landscaping, skiing, ice skating, and being an outdoorsman.

Richard DeGay Ernst (BS '48) died January 17, 2012. He was born in Grand Rapids, Michigan, to DeGay and Esther Ernst on October 12, 1923.

After graduation, Ernst joined the Terryberry Company, manufacturers of emblematic jewelry, and retired as a general partner in June 1992.

He was active in the MSU Alumni Association; he was president of the Oakland Hills County Alumni Club, a member of the Executive Board of the Alumni Association, and served as the alumni representative on the Atlantic Counsel.

For many years, he was one of the best-known starters of track and field meets. He worked the Drake, Texas, and Kansas relays as well as the Big Ten, Big Eight, and 25 NCAA championships

Charles R. Foyle (BS '49), a longtime resident of Royal Oak, Mich., died December 2, 2011, at age 87. Foyle enlisted in the U.S. Army Air Corps and was the first student to graduate in uniform from Lincoln High School in January 1943. He attended Amherst College in Massachusetts during basic training and was part of the CBI Theater during World War II.

Foyle enrolled at MSU under the GI Bill. During his career as a general superintendent for various construction companies he was involved in many projects including Fisher Theatre, Cobo

Hall, Pontiac Motors Administration Building, and Somerset Mall. He enjoyed PBS television and was an avid Spartan fan and longtime football season ticket holder.

George LaForest Robbins (BS '50), 86, of New Harbor, Maine, died January 30, 2012. He was born in Newton Center, Mass., the son of Donald and Mildred Moody Robbins. He attended schools in both Massachusetts and Detroit, Mich.

After graduation he joined the U.S. Army Air Corps and served from 1943 to 1946. After leaving active duty, he remained in the reserves as he went on to MSU. While in college he started and was the first commodore of the Michigan State University Sailing Club, and was a member of the Midwest Collegiate Sailing Association, which organized intercollegiate dinghy racing in the Midwest. He was also vice president of the college skiing club.

After graduation he began his career by working as a resident engineer for the town of Milwaukee, Wis., for a year before moving to U.S. Steel where he worked in a variety of positions including chief engineer of U.S. Steel's Limestone Operations in Rogers City, Mich. When he retired in 1982, he was working as manager of mineral properties at U.S. Steel headquarters in Pittsburgh, Pa.

Upon retirement he was able to fulfill a lifetime dream of sailing with his wife, Lee, aboard their 35-foot sloop, the *Talisman III*. The couple enjoyed a year at sea, sailing to the Caribbean and other islands before returning home. After his return from sea he went back into the workforce as a project manager for ORBA/Litwin and then eventually started his own consulting firm, G. L. Robbins & Associates.

Murl H. Webster (BS '58, MS '59) of Warsaw, Ind., died Jan. 8, 2012, at age 77. While at MSU he was a member of the Chi Epsilon Civil Engineering Honor Society and was a student member of the American Society of Civil Engineers. After graduation, Webster worked on civil engineering and construction projects in Michigan, New York, and the U.S. Virgin Islands for more than 45 years. 🌸

To read complete obituaries, visit www.egr.msu.edu/alumni/class-notes-obits.



from the
Alumni Advisory
Board Chairman

JOE ALBERTS

This column, from the chair of the program's Alumni Advisory Board, updates alumni on board activities and encourages suggestions and comments.

The advisory board has continued to hold regular meetings reviewing the civil and environmental engineering department activities. Our main activity has been conducting the Professional Lecture Series for the CE 495 Senior Design class. Dan Fredendall, with Orchard, Hiltz & McCliment, Inc. (OHM), has been organizing the presentations, which consist of five (one-hour) presentations covering important topics that are required by ABET for accreditation of the civil engineering program. Topics include engineering contracts, design build, building information and modeling, project management, and leadership. There is an open forum at the end of each presentation where students can ask questions and get to know practicing engineers.

CEE alumni who are interested in participating in the lecture series, or have comments about board activities, please do not hesitate to contact me at jalberts@nthconsultants.com. 🌸

Student Connections



Matt Gammans, Gerrit Littrup, and James Rice enjoyed a break in their summer study abroad program in Turkey with a visit to Lake Tuz, the largest salt lake in Turkey.

Summer Study Abroad in Turkey

CEE junior **James Rice** calls it a “fantastic, eye-opening experience.” Rice and two other students spent seven weeks in Turkey last summer as part of the College of Engineering’s first summer study abroad program in Turkey.

CEE assistant professor **M. Emin Kutay** led the program and now is recruiting students for the second summer study abroad in Turkey.

The program is held at Anadolu University in Eskişehir, Turkey. Anadolu is a public university that is the fourth largest in the world in enrollment.

“Anadolu is a great opportunity for MSU and a study abroad program,” says Kutay. “The university has experience with study abroad programs with many European countries and has a staff specifically dedicated to study abroad.” In addition, the price of \$6,500 including tuition, transportation, accommodations, most meals, and planned excursions is very reasonable compared to other study abroad programs.

The classes themselves are only \$50. Rice took a course in engineering hydrology as did CEE senior **Gerrit Littrup**. **Matt Gammans**, a biosystems engineering sophomore, took hydrology and statics. All of the courses offered are transferrable to MSU, so students have an interesting experience and earn credit toward their degrees. Other classes offered are differential equations, transportation engineering, and highway design.

“There are not that many study abroad programs that offer experiences for civil engineering students,” says Rice. “Also, the university and the city are very westernized. The people are friendly and most understand English.” He says he felt very safe—something that Kutay also points out.

Rice is thinking ahead about another advantage of the program. “It’s a great way to add to your resume. You immerse yourself in another culture and that can make you stand out. With so many companies having international offices, an international experience on your resume could help in the job search.”

More information on the program is available at <http://tinyurl.com/7mteeyt>.

Graduate Research Symposium

The first Engineering Graduate Research Symposium was held November 3, 2011, at the MSU Union. Satish Udpa, dean of the College of Engineering, provided opening remarks as more than 270 graduate students from across the college presented posters to faculty and peers. Department-level poster

competitions were held with each department identifying their top posters.

The top three civil engineering posters were:

Purushotham Pakala, “Behavior of Steel Angle Connections under Fire;” thesis adviser is Venkatesh Kodur; supported by the National Science Foundation.

Lauren Fedak, “Evaluation of Analysis Methods in Predicting Limit States for Performance-Based Seismic Design;” thesis adviser is Rigoberto Burgueño; supported by the National Science Foundation.

Prasana Sampath, “Understanding Prairie Fen Hydrology—a Hierarchical Multi-Scale Groundwater Modeling Approach;” thesis adviser is Shu-Guang Li; supported by the U.S. Fish and Wildlife Service.

The top three environmental engineering posters were:

Indumathy Jayamani, “The Effect of the Gasoline Additive Isobutanol on the Biodegradation of Toluene in Laboratory Microcosms;” thesis adviser is Alison Cupples; supported by the National Science Foundation.

Chris Crock, “Polymer Nanocomposite Materials with Hierarchical Fillers as a Conceptual Framework for the Design of Multifunctional Membranes;” thesis adviser is Volodymyr Tarabara; supported by the National Science Foundation Partnership for International Education and Research.

Elodie Pasco, “Polyelectrolyte Multilayer Films as Anti-Adhesive Membrane Coatings: A Novel Concept for Virus Recovery by Ultrafiltration;” thesis adviser is Volodymyr Tarabara; supported by the National Science Foundation Partnerships for International Education and Research, the Environmental Protection Agency’s Science to Achieve Results, and the MSU Foundation Strategic Partnership.

Fitch H. Beach Awards

Farhan Ahmad, a doctoral student, received honorable mention in the Fitch H. Beach Award competition; thesis adviser is Syed Hashsham. This endowed award annually recognizes the most outstanding graduate researchers within the College of Engineering.

Research Experience Promotes Global Engagement

CEE undergraduate students **Jake Formanczyk** and **Samer Naser** and four other students from the MSU College of Engineering spent part of summer 2011 at the Indian Institute of Technology Madras as participants in the National Science Foundation’s International Research Experiences for Students (IRES) program.

The IRES grant offers research internships to U.S. undergraduate or graduate students conducting research abroad in collaboration with foreign investigators. The MSU students spent seven weeks working on non-destructive evaluation (NDE)–related projects.

“We worked with Ground-Penetrating Radar (GPR),” says Naser, now a CEE senior. “GPR uses electromagnetic (EM) waves that penetrate into concrete structures, slabs, pavements, and soils to analyze the subsurface layers.”

The goal was to determine the depth, location, and diameter of rebar buried in the concrete. “Using the GPR images, finding the depth and location of the steel was pretty easy,” says Formanczyk, also a CEE senior. “However, methods for calculating the diameter of the rebar are still under a lot of research and therefore not so accurate. We were doing our research directly

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KEEPING IN TOUCH

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Research Experience (continued from page 7)

under a senior PhD scholar at the institute who was very helpful in getting us acquainted with the equipment that we had never even heard of, let alone worked with before.”

“The internship provides an opportunity for U.S. students to travel to a new country and conduct research, immersed in the international research environment, in collaboration with a leading Indian research group,” says Lalita Udpa, professor of electrical and computer engineering, who organized the program for the students. “The global experience will certainly add to their problem-solving skills.”

Naser says it was a worthwhile experience. “We learned a lot of technical things as well as enjoyed learning about the culture and sightseeing.”

“I was quite impressed with what the students accomplished in the provided time—in a totally foreign environment and culture and in a new multi-disciplinary research area,” says Udpa.

The other students involved in the program were Pavel Roy Paladhi and Eric Tarkleson, electrical and computer engineering graduate students; Cori Roth, chemical engineering and materials science senior; and Nicholas Wilson, mechanical engineering senior. 🌱



Enjoying a break from their internship in India with a visit to the Taj Mahal in Agra, India, are (left to right) Samer Naser, Nick Wilson, Cori Roth, Eric Tarkleson, Pavel Roy Paladhi, and Jake Formanczyk.