The Ole Miss Engineer

Volume 53
Number 0 *Ole Miss Engineer 2013-2014*

Article 1

12-2013

Ole Miss Engineer 2013-2014


OLE MISS
ENGINEER
2013-14
ENGINEERING
SUPER
CAREERS

In this issue:

Ole Miss Engineering Illustrated:

BEHIND THE MAGAZINE COVER

Since 2011, the cover of the Ole Miss Engineer magazine has changed to reflect the theme of each issue. While concepts have varied, the logic behind them and the creative illustrator who designs them have remained the same.

"For more than 110 years, the Ole Miss School of Engineering has continued to produce graduates who excel in their fields," said Dean Alex Cheng. "We wanted each cover to represent the evolutions in the field of engineering, depicting how the traits and technology have morphed across the decades."

Eric Summers, graphic designer in University Communications, has been the thread weaving each cover to the other. Given the concept and parameters, he has drawn and colored images addressing "100 Years of Ole Miss Engineering," "Engineers in the 21st Century" and this issue's "Engineering Super Careers."

SCHOOL OF
ENGINEERING
UNIVERSITY OF MISSISSIPPI | 1900

227 Brevard Hall
University, MS 38677
(662) 915-7407
engineer@olemiss.edu
www.engineering.olemiss.edu

DEAR ALUMNI AND FRIENDS OF OLE MISS ENGINEERING:

It is my privilege and pleasure to write you about the growth and development of the School. This fall we saw our undergraduate enrollment increased by another 21%. So we have doubled our size in about five years. Even more exciting about the growth is, the quality of entering freshmen, in terms of ACT score and High School GPA, continues to improve. We also see a sharp increase in Honors College enrollment of Engineering students, and the National Merit Scholars. So we are moving toward our goal to become an elite professional school in a great public, flagship, liberal arts university, the University of Mississippi.

To be true to the 113 years of root of the School of Engineering (founded 1900), we continue to educate our students to have a solid foundation not only in engineering, but also in liberal arts, service, and leadership. The history has shown that our graduates were trained not only for the traditional engineering careers, but also for "Engineering Super Careers". They became lawyers, medical doctors, managers, businessmen, chancellor of university, director of national lab, head of governmental agencies, and of course, engineers, wherever their interest led them or they were needed.

To serve our students to meet their ambitious goals, the school has a number of high quality, and even unique, programs. The Center for Manufacturing Excellence (CME) program provides engineering students with "on the floor" manufacturing experiences. The Geological Engineering program is one of only a dozen accredited programs in the nation, and is the largest. The Bachelor of Engineering program provides a pathway to law with a 3+3 accelerated law degree program: students earn a B.E. and a J.D. degree in 6 years. To meet the needs of society, we are starting Biomedical Engineering Emphases in the school.

To provide students with leadership opportunities, the Engineering Service Corps sponsors a number of service projects, such as Engineers Without Borders building a school house in Togo, Africa, the TREE project that refurbishes computers for donation to Mississippi Delta schools, and the LIFE project that builds access ramps at the homes of elderly and disabled individuals. With a high quality faculty doing research at the highest level, dozens of undergraduates are having the opportunity to do undergraduate research. The Athletic Program hosts many engineering students who excel both academically, and in sports. The nationally ranked Honors College enrolled over one hundred engineering students and provides high quality and additional leadership education.

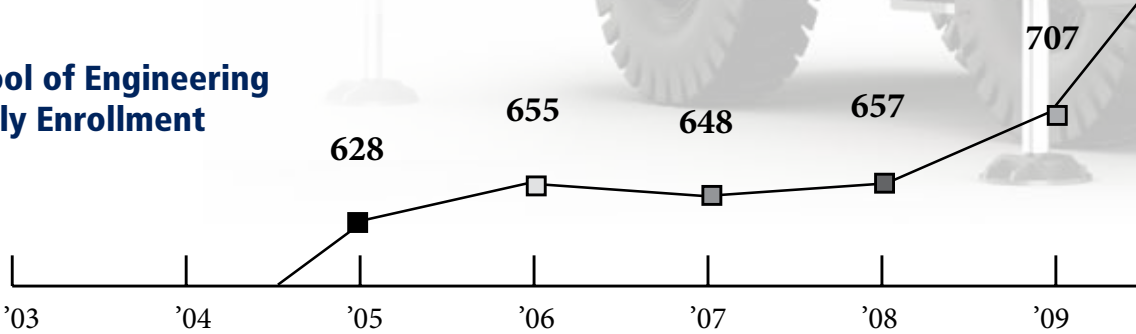
We are pleased to report some of these progresses in the articles presented to you in this issue. I hope you will enjoy them.

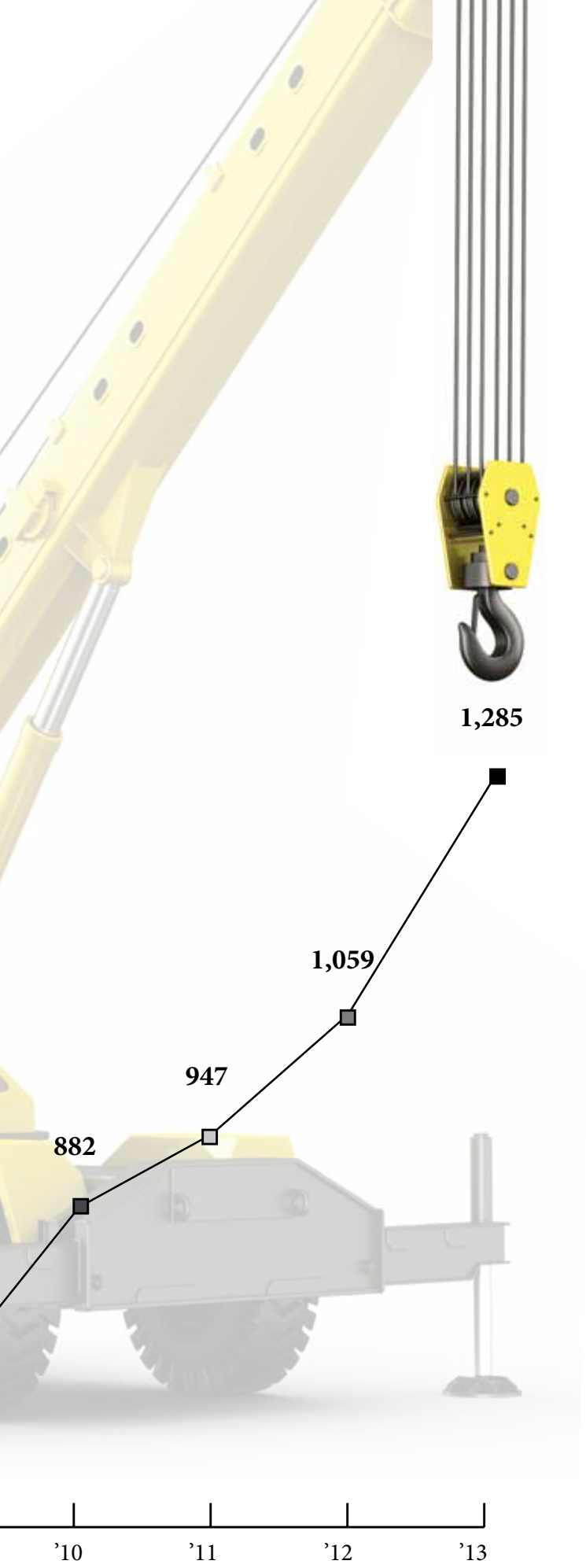
Sincerely,

ALEX CHENG
Dean of Engineering

Are you receiving our new Monthly Memo via email? If not, please send your contact information to engineer@olemiss.edu, and we will add you to the list.

School of Engineering Yearly Enrollment





DEAR FRIENDS OF THE SCHOOL OF ENGINEERING:

As the stock market experienced many changes this year, one might ask: How do I calculate a wise investment for 2014 and beyond? I will leave Wall Street advice to the experts, but I do hope you will take a moment to hear about the "investment strategies" possible through the University of Mississippi School of Engineering. Students and graduates have long made significant investments in their communities and beyond, and I would like to encourage you to invest in Ole Miss Engineering.

The enormous width and depth of the Ole Miss Engineering degree allows many of you to give back. Thank you for your generosity toward our Engineering School, where we have experienced such strong support for the Woods Society. This society provides important resources for student activities, helping them develop as professionals through travel for professional conferences and student society meetings. Leadership and service opportunities arise often and are supported by this important program. Please consider renewing your annual membership for 2013-2014 or joining for the first time.

Our record 2013 enrollment of freshmen Engineering majors continues to present great opportunities. The Ole Miss Engineering faculty is expanding to keep up with this unprecedented growth. Having adequate professors has a direct bearing on one of our major cornerstones: student-to-teacher ratio. Attracting faculty support to hire and retain outstanding teachers who value all students and champion their successes is absolutely critical. Please give thought to supporting Engineering faculty, and know that gifts of all sizes truly make a difference.

Certainly, investing in Ole Miss also can focus on recruiting high school students, hiring new Engineering graduates, coming to campus to interact with students and speak to classes, and financially connecting your passion with School of Engineering needs. In all these ways, we are grateful for your willingness to give back to Ole Miss. Please contact me (kevin@olemiss.edu or 662-915-7601) when we can visit about ways you may invest in the School of Engineering – we promise you'll be pleased with the returns. Thank you for your exceptional commitment to the School of Engineering.

Sincerely,

Kevin W. Gardner

KEVIN GARDNER
University Development Officer
for the School of Engineering

FROM THE GROUND UP

UM's geological engineering program draws students from region and beyond

BY ELIZABETH BURGREEN

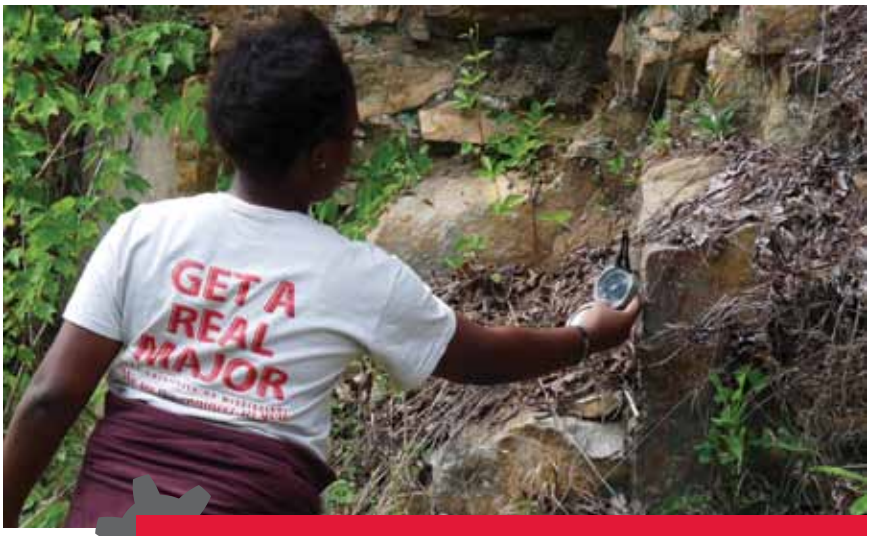
Geological engineering is a one-of-a-kind major at the University of Mississippi that has many unique opportunities for undergraduate and graduate students.

This fall, 265 undergraduate students are enrolled in the geological engineering and geology programs at Ole Miss—the largest geological engineering enrollment in the nation. This number is up from 163 majors in the program last year.

"We were equal to the largest undergraduate enrollment in geological engineering in the nation last year, and experienced a substantial increase again this year," said Gregg Davidson, department chair and professor of geology and geological engineering. "We have gone from three 15-passenger vans on our annual freshman trip 15 years ago, to three tour-bus loads this year."

Ole Miss is the only public university in a 13-state region that offers a geological engineering program. Since the program is exclusive at a regional level, many students from the South are drawn to it. Ole Miss is able to waive out-of-state tuition for those coming from states that participate in the Academic Common Market and do not have a geological engineering program.

Geological engineers design safe, economic and efficient solutions to problems humanity faces within natural geological systems. To be a geological engineer, a student must be highly interested in math, science and the beauty of the outdoors.



Elsie Okoye measures strike and dip on an outcrop in Alabama.

Elsie Okoye, a senior geological engineering major is one such student.

"Coming to Ole Miss from Nigeria as a full-time international student, I had a flare for geology, mathematics and the sciences," Okoye said. "At the time, I hadn't even met a geological engineer, and I was taken in by the title. So I took on the challenge to be one."

Geological engineering majors take traditional geology classes such as Petrology and Geomorphology, and engineering classes such as Mechanics of Materials and Engineering Geophysics, which prepare them to participate in real-life projects in the geological engineering field. Students' coursework ultimately culminates in a senior design experience that varies each year, said Davidson.

"Senior Design is a senior-level class that takes all that we have learned in our previous years and puts it to work in investigating, characterizing and analyzing the beautiful highlands and valleys of South Dakota and Wyoming," Okoye said.

Geological engineering students are also given the opportunity to participate in field camp experiences. All students enroll in a multi-week summer program where they learn mapping, geologic analysis, and design skills at sites both local and in the American Southwest. In addition to field camp, students in the program have gained additional hands-on experience ranging from a summer internship with the National Oceanic and Atmospheric Administration in Washington, D.C. to studying abroad in Turkey.

Career choices for geological engineering graduate are many. A few examples include being an engineer in the mining or gas and oil industries; mapping and resource assessment geologist for a state or federal government agency; geotechnical engineer for a consulting company specializing in environmental remediation; and consulting engineer assessing hazard potential due to earthquakes, floods, landslides or unfavorable site geology.

> **Coming to Ole Miss from Nigeria as a full-time international student, I had a flare for geology, mathematics and the sciences"**
>
> — **Elsie Okoye,** senior geological engineering major

Geology student Chase Cromwell is part of an NCPA research group studying Rayleigh wave properties, which may lead to IED detection devices.

UNDERGRADS UNDERTAKE UNIQUE RESEARCH

More than 120 students work with engineering faculty in variety of studies

BY EDWIN SMITH

Whether building a concrete bridge from scratch, co-authoring a peer-reviewed journal article, installing infrasound sensors in Idaho or helping develop cutting-edge nanotechnology, University of Mississippi engineering students are at the forefront of undergraduate research conducted around the country.

During the past three years, some 120 students in the School of Engineering's six departments have engaged in various types of scientific studies supervised by faculty members. Another 11 nonengineering students have engineering faculty as leaders of their particular research projects.

"Our engineering faculty brings the best educational opportunities to our undergraduates," said Alex Cheng, engineering dean. "Typically, this type of involvement and close supervision is found in small and elite liberal arts colleges, or private and Ivy League schools. That we have an abundance of our students involved in research in a public university says a lot about the quality of our education and the faculty's dedication."

Undergraduate research projects under way or completed in the last few years in engineering include:

- **Chemical Engineering:** 30 students supervised by professors Wei-Yin Chen and Ajit Sadana and/or associate professor Paul Scovazzo
- **Civil Engineering:** 55 students led by professors Waheed Uddin and Ahmed Al-Ostaz, associate professors Elizabeth Ervin and Cris Surbeck and/or assistant professor Hunain Alkhateb
- **Computer and Information Science:** nine students guided by assistant professors Byunghyun Jang and/or Jianxia Xue
- **Electrical Engineering:** 11 students mentored by professors John Daigle and Alexander Yakovlev, associate professor James Chambers and/or National Center for Physical Acoustics R&D engineer Daniel Kleinert
- **Mechanical Engineering:** 11 students managed by associate professor Chambers and/or NCPA R&D engineer Kleinert

Nonengineering students supervised by engineering faculty come from the departments of public policy leadership, political science, psychology, biochemistry, international studies, economics, Spanish, biology, math and physics, and the School of Business Administration.

Profiles spotlighting exceptional examples of research:

Mark Sumpter (BSME 12) helped Scovazzo collect sediment data on the Rio Grande River and install infrasound sensors in Idaho and other locations in the West to monitor large explosions. He used his field data collection expertise to get a job in the oil and gas industry and is working on vessels laying pipelines in the Gulf of Mexico.

Heather Rivera (BSCE 11, MSESC 13), Coleman Fowler (BSCE 10, MSESC 12) and Anna Chapman (BSCE 10, MSESC 12) interned in Al-Ostaz's nanotechnology studies, working on subjects such as protecting buildings against IED attack, protecting chlorine-transporting railcars against bullet penetration and creating a nano cement.

Gary Bell, a junior civil engineering major, served as foreman on a student-led project to construct a three-span reinforced concrete bridge from scratch. The students designed, formed, poured and assembled everything under Ervin's guidance.

Lee Ferguson (BSChE 06, MD 10) worked with Scovazzo on transport phenomena and with John O'Haver, professor of chemical engineering, on data to support a patent application. One of Ferguson's papers has been cited 64 times, another he co-authored has been cited 107 times, and his work has been summarized in Perry's Chemical Engineers' Handbook. He is a graduate student at the University of Mississippi Medical Center.

Tracey Sisco (BSCvE 12) developed a chemical-free drinking water treatment system to be used in communities lacking electricity. She works for Engineering Ministries International.

> **"Our engineering faculty brings the best educational opportunities to our undergraduates."**
>
> **— Alex Cheng,** engineering dean

RAISING THE INDUSTRY STANDARD

With comprehensive training, CME students emerge as versatile professionals

BY LINDSEY ABERNATHY

When University of Mississippi mechanical engineering senior Katie Borgmeyer becomes one of the first graduates of the Haley Barbour Center for Manufacturing Excellence in May 2014, she'll enter the job market with a unique advantage.

In addition to the hands-on experience that Borgmeyer gained from a summer internship at Toyota Boshoku Mississippi, the St. Louis, Mo., native has received a 360-degree education in manufacturing — the result of a unique partnership among the schools of Engineering, Business Administration and Accountancy through the CME.

Created in 2010, the CME's interdisciplinary course work in manufacturing covers accounting, finance, business, human resources and marketing. Chemical, mechanical and general engineering students — along with business and accounting classmates — earn a minor in manufacturing as part of the program. Students learn the ins and outs of the industry though classes, co-ops and internships.

"Our hope is that engineering students will teach the accountancy and business students to speak their language and vice versa," said Ryan Miller, programs manager and assistant director of the CME. "There's a huge communication breakdown out in industry between engineering and human resources, marketing and laboratory research. We're trying to create versatile professionals who can transition from one environment to another seamlessly."

Madison Blankenship, a junior accountancy major, said she chose to enroll in CME because it offered her the opportunity to study both accountancy and engineering. Borgmeyer, who enrolled in CME's first class when the program was created four years ago, also said the comprehensive approach to manufacturing was what attracted her to the center.

"[CME faculty] told me about how I would become a better rounded engineer and learn about manufacturing and all the different departments needed to keep it running like accounting and business," said Borgmeyer. "I've always loved knowing the ins and outs of things, so I was sold."

CME students begin creating products in the spring semester of their freshman year as part of a Manufacturing Processes class and a Products Realization Lab. Students use 3-D printing technology to design and build various products including high-grade aluminum tape dispensers, carbon fiber clipboards and bookends.

"We start out with small tasks," Miller said. "For us, that's the foundation of manufacturing. They learn at first on older equipment, manual equipment using simple materials like metals, woods and certain plastics. If they have a desire to dream big and come up with a new product, they now have an appreciation for how one goes about doing that, and they know how to safely use the factory floor."

Currently, a capstone project is in the works for the center's first graduating class that will involve teaching students about cost, logistics, budgeting, staffing and human resources issues, Miller said.

In addition to on-campus experiences, Borgmeyer said visits to regional manufacturing facilities were greatly beneficial to her. A group of CME students recently completed a one-week class held in a real manufacturing environment, focusing on the Toyota Production System philosophy.

Borgmeyer said that CME's programming helped prepare her for her internship, during which she worked in Toyota Boshoku's Engineering Department, spending much of her time on the factory floor, assisting on projects ranging from designing processes to programming.

"One thing [CME] did to prepare me was teaching me about Japanese manufacturing culture and lean manufacturing," she said. "They also took me to local businesses for class so that when I got my internship, it was much less intimidating."

The CME program's creation was announced by UM and the state of Mississippi in 2008 to train leaders in manufacturing. In 2010 it began with 27 freshmen from nine states and has grown to include about 150 students this year, roughly 70% of whom are engineering students.

View of the 12,000 square-foot "factory floor" located on the first floor of the CME, contributing to the most unique educational facility anywhere.

The University of Mississippi Chancellor Dan Jones and former Mississippi Governor Haley Barbour arrive at the dedication ceremonies of the Haley Barbour Center for Manufacturing Excellence on the Oxford campus of The University of Mississippi, today, Thursday, October 18, 2012. The Center for Manufacturing Excellence (CME) educates students on the fundamental and innovative practices needed in modern manufacturing. Photo by Kevin Bain/Ole Miss Communications

BUILDING A CULTURAL BRIDGE

Team Costelli celebrating the successful completion of first two wooden trusses for the school building. Michael Costelli, P.E., EWB professional mentor and Maddie Costelli, VP of Design, Gulfport, MS, made a great team in Togo.

Engineers Without Borders team assists West African villagers

BY EDWIN SMITH

Planning to build four classrooms, a library and administrative offices for the Hedome Village school in Togo, West Africa, was one thing. Spending two weeks in the remote area overcoming an avalanche of unforeseen obstacles to begin accomplishing that goal was another.

Yet, for the seven people who did so through the University of Mississippi's chapter of Engineers Without Borders-USA, the rewards of the experience far outweighed the liabilities.

"I saw a lot more challenges than I had expected and received a better return on the investment than I had anticipated," said Marni Kendricks, assistant dean of the UM School of Engineering and EWB chapter adviser. "We didn't quite reach the aggressive goals we set, but I am very pleased with the amount of success we were able to accomplish."

Students who joined Kendricks on the trip included Maddie Costelli of Gulfport, Diana Kapanzhi of Oxford, David Austin of McComb, Courtney Cunningham of Chicago and Joey White of Springfield, Ill. Michael Costelli, a professional engineer from Gulfport who served as mentor, accompanied them and supervised the crew's design work.

Team members had anticipated communication challenges due to the language differences. What they had not anticipated were the Hedome villagers' failure to make necessary preconstruction preparations; limited equipment and building materials; and a male-dominant culture that frowns upon women in leadership roles. Although prepared for it, their living accommodations were also subpar, with no electricity, running hot water or Internet access. Electricity at the job site was delivered by a generator when needed. Water was delivered by women from the village who drew it by the bucketful from an open well a few hundred feet away.

"It was extremely hard work for all of us," Kendricks said. "There were a few occasions when [we] wondered if it was worth the effort we were making, but then those days would be followed by amazing times when our students' resilience and creativity shined bright and the Hedome people would work alongside us with just as much vigor."

One night, the team used flashlights and generator light to finish pouring concrete for a slab by 9 p.m.

"If any Ole Miss engineering students have had to learn to overcome adversity on the job site, it's these five," Kendricks said.

Day by day, team members would encounter new obstacles and overcome them.

"As the education lead, I had to make sure that the villagers understood why we were doing things the way we were doing them," Kapanzhi said. "This required me to express myself in several ways in order to make certain [that] messages were not only understood but accepted too."

The crew drew pictures, used charades, demonstrated, worked together and used their fingers for counting in different languages. Their concrete mix design was spelled out in shovelfuls of sand, cement and gravel, requiring lots of quality control counting.

"I always knew that I liked engineering, but before this experience I didn't

There were a few occasions when [we] wondered if it was worth the effort we were making, but then those days would be followed by amazing times when our students' resilience and creativity shined bright and the Hedome people would work alongside us with just as much vigor."

— **Marni Kendricks,** assistant dean of the UM School of Engineering and EWB chapter adviser

know the importance of being able to think on my feet," Austin said. "Many times I'd have to make on-the-spot decisions. That immediately took me from design and theory to practice every time."

Maddie Costelli, who visited the site the previous year as part of the EWB assessment team, said this time was markedly different for her.

"They didn't have the proper bolts for construction, so I had to invent usable ones from iron rebar," she said. "I'd done some carpentry work before, but this project involved building trusses for the entire roof system of the school with my father. Compared to the birdhouses he and I'd built together when I was younger, this was phenomenal."

White's problem-solving skills were sharpened as well.

"My primary responsibilities were making sure the beam forms were fitted and positioned correctly on the top of 10-foot columns," he said. "Learning how to improvise when building materials are not always up to specs showed me I can get a task done when necessary."

The best available lumber was not cut to a standard size nor fully dried. It was typically bowed and curved substantially.

"There's no Home Depot in Togo," White said. "That's what we had to work with, so we did."

Cunningham became a part of the team late after another student scheduled to participate was unable to go. For the Ole Miss women's volleyball player, the concept of being able to "take a charge" took on a whole new meaning.

"Being in that male-dominated environment, where women aren't expected to do much more than carry water pots and take care of children, taught me to stand up for myself and be confident in the decisions I make," the August civil engineering graduate said.

While crossing cultural and language barriers, Cunningham also found new fans.

"I love the kids, and a couple of them began following me around," she said. "It was really cool to bond with them even though I couldn't fully communicate with them."

At the end of the two weeks, the UM team members found they had come up a little short on their original goals and were out of time.

"Under ideal circumstances, we would have been successful in finishing the two classrooms we came to build," Kendricks said. "As it is, we were able to complete the footing foundation, two reinforced concrete floor slabs, the 17 load-bearing columns and five high-strength beams. This was just the first phase of the construction project. We're definitely planning on returning and completing what we set out to do."

The UM team did all the work with two hammers, three hand saws, three shovels, three wheelbarrels, a few buckets and barrels, one manual drill, one wire cutter, one bar-bending tool, three tape measures, four scaffolding systems made of cut trees, one generator, two power drills, two power saws, three languages (French, Ewe and English) and between 10 and 25 Hedome workers at any one time.

"Fortunately, numbers, smiles and pride in our work are pretty much understood universally," Kendricks said.

While Austin concedes that the Togo experience will look good on his resume, he said the benefit goes far beyond that.

"Being a part of this took me from design to practice, but it also made me realize that what engineers do really makes a positive difference in the lives of people," he said. "Knowing what we did will somehow make their lives better is rewarding beyond words."

Kendricks, who visited Togo in 2008 as part of a planned UM-Oxford collaboration to build a hospital there, said this experience was transformative for all involved.

"Living in close quarters for an extended period of time, we got to know

Marni Kendricks, Joey White and David Austin work with Emanuel Saba to prepare steel reinforcement grid for floor slab.

Photo above left is EWB Ole Miss Team at the start of the second day of the project. Photo above right includes the EWB team and new friends – volunteer workers from the village, a few children who will be attending the school, NGO host, and the Prefect (governor of the region) on the last work day of the August project.

Photo below left:

Diana Kapanzhi and Courtney Cunningham cutting steel rebar into 5-inch "bolts" while Togolese children look on and want to help. Michael Costelli and David Austin building trusses in background.

one another really well," she said. "During this time, I saw tremendous character emerge from each of them. This project required a full commitment of themselves to achieve what was done, and they gave just that."

While both visits were to the same country, Kendricks said there was little similarity between the two.

"Doing what we did, given the circumstances we had and with this particular group of students, went far beyond that dream. No doubt we had an impact upon the Hedome people, but we probably received as much, if not more, from them."

Founded in 2009, the Ole Miss chapter of EWB-USA meets weekly to discuss upcoming challenges, including fundraising and project progress. Delegates attend the EWB-USA Southeast Regional workshop in October and the international conference over spring break. While engineering students make up most of the chapter's membership, students from other fields of study are welcome.

EWB-USA is a nonprofit humanitarian organization established to partner with developing communities worldwide to improve quality of life. The partnerships involve implementing sustainable engineering projects while training internationally responsible engineers and engineering students.

ENGINEERING SUPER CAREERS

Engineering background helps forge callings in other fields

BY TOM SPEED AND EDWIN SMITH

While most University of Mississippi engineering graduates move on to careers as professional engineers, some use their engineering background — and their ability to think about, analyze and solve problems — in unexpected ways.

For example, after earning his engineering and law degrees, Jim Greenlee (BE 74, JD 81) went on to have an illustrious career as an attorney, including a 22-year stint in the U.S. Attorney's Office for the Northern District of Mississippi. He is currently a partner with the law firm of Holcomb Dunbar in Oxford.

GREENLEE

Greenlee's legal career was not always so clearly defined or designed. He attended Ole Miss on a Navy ROTC scholarship, and because of ROTC requirements, he would have needed to take an extra year to earn his undergraduate degree and obtain a commission in the Navy. That was an extra year not covered by his scholarship.

Fortuitously, Damon Wall (who died last year and was assistant dean emeritus of the School of Engineering and associate professor emeritus of electrical engineering) informed him of a new degree program, the Bachelor of Engineering, that would allow him to earn his undergraduate degree in four years, with the possibility of going back to school later for a specialization. That meant options. Greenlee remembered his high school guidance counselor suggesting that he pursue a legal career. With the new engineering program, he could serve his Navy commitment, then decide whether to further pursue engineering or law. He chose law and practiced in Southaven before being tapped as an assistant U.S. attorney.

Greenlee credited his engineering education with helping him to become a better lawyer.

"If you're an engineer, you're a problem solver," Greenlee said. "You have to use your analytical ability to solve problems. To solve problems, you just keep thinking about them and go after them."

In addition, he said that he sometimes deals with complex technical issues at Holcomb Dunbar and that his broad scientific background gives him an understanding of how to resolve them.

"You have to go through steps to get processes accomplished," he said. "… a lot of things can be simplified into a bunch of little processes that you can accomplish so that the task can be organized and accomplished."

Greenlee said engineering remains a great option for undergraduates in preparing for a legal education and career.

"If you have a science and math background and enjoy engineering and want to use that, I think that's a great way of doing it," he said.

While the number of female engineers continues to increase, Christy Lea (BSChE 97) discovered that although she had a promising career in the field of chemical engineering, practicing law was her true passion and calling. She received her Juris Doctor from the University of Texas in 2000 and is now a partner in Knobbe Martens law firm. She credits her success to the discipline and principles she acquired while studying engineering at Ole Miss.

LEA

"I had wanted to be a lawyer ever since I did a presentation on Sandra Day O'Connor in elementary school," Lea said. "I might have majored in pre-law, but my parents encouraged me to major in engineering because I had shown an aptitude for math and science."

While at Ole Miss, Lea worked for a tutoring company, helping fellow Ole Miss students with calculus. Once she told the company's owner that she was majoring in engineering but planning to go to law school, he suggested that she pursue patent law.

"I'm glad he made that suggestion and that my parents encouraged me to pursue an engineering degree," she said. "I was once recruited by a law firm to be an environmental attorney in light of my chemical engineering background. I chose the IP (intellectual property) route instead."

Lea said she thinks an engineering degree is a great degree choice for people planning to attend law school, regardless of whether they plan to pursue IP law.

"My engineering degree has been hugely beneficial to my patent litigation practice," Lea said. "First, an engineering or other technical degree is required to sit for the patent bar. Second, I apply the problem-solving skills that I learned in engineering in my litigation matters all the time. If you can solve an engineering problem, you can solve anything."

Lea also uses the knowledge she gained from engineering courses, such as organic chemistry, when litigating patents on behalf of pharmaceutical and medical device companies.

Similarly, John Mayo (BSGE 98, JD 06), also used his engineering background to help him in his legal career. After serving as a professional engineer for five years, Mayo went back to law school and eventually joined his father's practice, Fair & Mayo, opening a satellite office in Meridian.

MAYO

While conducting construction litigation, Mayo is able to analyze and assess complex engineering issues that arise and to evaluate expert witnesses.

"You kind of speak their language," Mayo said.

He also cites the rigorous academic background of an undergraduate engineering degree as ample preparation for postgraduate study.

"Ole Miss was more of a theoretical school versus a technical engineering school," he said. "Instead of teaching you a finite set of skills, my professors were geared towards teaching the students how to think and analyze problems regardless of what kind of engineering issue it was. I graduated law school in '06, and one thing that helped me is the confidence level that you develop going through the academic rigors of an engineering program."

That rigorous work ethic and training also transfers to the medical profession.

Christopher Lee Martin (BSCvE 04) comes from a family of civil engineers and has an aptitude for math and science. Naturally, he followed in his family's footsteps, at least at first. His junior year, he began to cultivate an interest in medicine and later learned that his engineering background gave him an advantage over his medical school peers.

"Most of my classmates had biology, biochemistry or chemistry backgrounds," Martin said. "I think an engineering background is a benefit for medical school and medicine because it gives you a different perspective and teaches you how to think, as opposed to just regurgitating facts."

Martin is completing his surgery residency at Tulane Medical Center in New Orleans and said he is able to apply his engineering background to his work.

"I would say I have a different perspective," he said. "In terms of being a surgeon, I look at the whole system of how things work."

Dr. George Flinn (BSEE 95) has shaped his engineering background into not only a medical career but also a media empire and status as a patent holder.

It all started at age 10, when Flinn's fascination with ham radios cultivated in him a desire to learn more about how they worked. That interest lasted all the way to Ole Miss, where he studied electrical engineering. He had an engineering job already lined up after graduation when, during his senior year project, he developed a similar fascination with radiation and radiology that led to him shifting gears toward the medical profession.

After medical school, he worked for the National Institutes of Health in Bethesda, Md., and was introduced to a nascent technology called ultrasound.

"I looked at it, and they were using the same basic oscilloscope that I had used in the engineering school at Ole Miss," said Flinn. "They said there were a lot of knobs and dials on this thing, and I knew what every one of them did."

Flinn became one of the foremost researchers of the technology that would become widespread within a decade.

"I took the engineering training and the medical training, and I knew what needed to be done to put the two together," he said. "We came up with a lot of innovations in ultrasound. Really, I never separated the two. I use my engineering degree daily. I put it to work."

Following his research at NIH, he opened the Flinn Clinic in Memphis and was on the cutting edge of ultrasound technology, so much so that many folks in Memphis had never heard of the term "ultrasound."

"They thought it was a record label!" he said.

The Flinn Clinic now has seven locations throughout the Memphis area, and through his research, Flinn holds multiple patents on ultrasound and radiologic technology.

He also ended up pursuing his interest in radio after all. In 1980, he founded the Flinn Broadcasting Co., which now owns more than 40 radio and television stations throughout the country.

Law and medicine are certainly not the only professions for which a background in engineering is

FLINN

> **I took the engineering training and the medical training, and I knew what needed to be done to put the two together. We came up with a lot of innovations in ultrasound. Really, I never separated the two. I use my engineering degree daily. I put it to work."**
>
> **— Dr. George Flinn,** Flinn Clinic, Memphis

Engineering faculty and students lining up for commencement, led by Dean Cheng and Class Marshal Jennie Katherine Ellis, presently a first-year medical student at UMMC.

Forward!

ideal. The field has also proven beneficial to those pursuing careers in higher education and administration. Nadim Aziz (BSCvE 78, MSESC 80, PhD 84) exemplifies someone in that category.

AZIZ

"I chose a major in civil engineering because it was something I could relate to," Aziz said. "I always saw the connectivity between civil engineering and society, people and nature. These interested me from a young age as a Boy Scout. The fact that I pursued a career in academic leadership was a natural extension [of] my desire to serve and willingness to take on new challenges."

Aziz joined Clemson University in 1984, and after one semester as a visiting assistant professor, he became assistant professor, then advanced through the ranks to become a full professor in 1995.

In 2003, he was selected to chair Clemson's civil engineering department. Aziz also served as director of the resilient infrastructure focus area for the Clemson University Restoration Institute. Last year, he was selected associate provost, and in May 2013, Clemson President James Barker named Aziz the interim vice president for academic affairs and provost.

"In reflecting upon the past 29 years, I came to the conclusion that at least three things about Ole Miss made a world of difference in my life," Aziz said. "First, the people that were a part of my life at Ole Miss, professors such as Dr. (Sam) DeLeeuw, Dr. (Shyam) Prasad and Dr. (Sam) Wang, friendships that lasted to this date, and of course, my wife, Susan (also an Ole Miss grad).

"Second, the solid engineering science education I received at Ole Miss that armed me with the confidence to venture into new areas of teaching and research without hesitation," he said. "Third, the experiences of being an active student, such as being on the Ole Miss Engineer's editorial staff, the president of the Engineering Student Body, a volunteer for MathCounts and the EIT (Engineer in Training) review course and, of course, that paying job at the computer center."

Under his leadership, the civil engineering department at Clemson has witnessed increased diversity of its faculty and student body, and growth in its research funding, Ph.D. productivity, and students and faculty awards and recognitions. In September 2011, with a $5 million endowment from a department alumnus, the name of the department was changed to the Glenn Department of Civil Engineering and became one of only four named civil engineering departments in the nation.

As associate provost, Aziz was instrumental in developing and implementing a $12 million market- and performance-based salary adjustment initiative that brought faculty salaries to a nationally competitive level. He was also instrumental in developing and implementing a three-year plan to add almost 100 new positions to accommodate increased enrollments and to strategically support and grow research focus areas.

"I credit the engineering science education [for] my ability to advance in different teaching and research areas," Aziz said. "This allowed me to work with people of diverse backgrounds, and I believe this prepared me to develop skills that are vital to my current position."

POWERFUL IMPACT IN A TINY PACKAGE

UM nanomaterials research helping to improve national infrastructure

BY EDWIN SMITH

Imagine seeing metal-penetrating bullets stopped by a substance less than an inch thick but stronger than steel. Visualize a bomb explosion inside a building, but the blast is practically neutralized by flexible outer walls that contain the spread of debris.

These are just two examples of the groundbreaking research under way in the University of Mississippi's Nano Infrastructure Research Group, or NIRG, where School of Engineering scientists are developing bio-inspired nanomaterials to improve resilience of the nation's infrastructure.

Ahmed Al-Ostaz, professor of civil engineering and director of the research team; and collaborators Alex Cheng, dean of the School of Engineering; A.M. Rajendran, chair and professor of mechanical engineering; and Hunain Alkhateb, assistant professor of civil engineering; were awarded a grant from NASA to also design new materials for spacecraft that will be able to withstand impacts of extremely fast-moving space debris, meteoroids and subatomic particles.

Ahmed Al-Ostaz showing an experimental layered composite polyurea plate that self-sealed after the penetration of a hardened sharp-tip bullet from a high power rifle. **Application:** protection for chlorine-transporting railcar against attack.

The three-year project, "Hyper Velocity Impact Environmental Resistant and Self-Healing Nanomaterials for Space Applications," is aimed at exploring the revolutionary properties of bio-inspired and nano-enhanced multifunctional nanocomposites for ultralightweight space structural applications under extreme environments and loading conditions.

"In our laboratory we design new materials and study the process of existing materials that can withstand extreme environments and improve the resilience of our nation's infrastructure against man-made threats (such as bomb blasts, fire or projectiles) and natural disasters (tornadoes, earthquakes and hurricanes," Al-Ostaz said. "We are also preparing future engineers and scientists to better understand and meet both today's needs and tomorrow's challenges."

In the past five years, under Cheng's leadership, NIRG researchers have studied materials at extreme sizes (from nanoscale to full structures), extreme distances (from oil and gas shales deep in the ground to space applications, including the International Space Station), extreme loading rates (from static blast to ballistic to hypervelocity impact), extreme temperatures (from freezing to boiling) and extreme times (from a femtosecond – or one quadrillionth of a second – to years).

"These materials are often referred to as multifunctional materials," Alkhateb said. "They merge modeling, designing and manufacturing new materials with actual testing of these products in simulated environments."

Examples include materials that can resist blast loading with improved fire performance, and new materials and structures to enhance the performance of New Orleans' levees during extreme hurricane seasons.

"One project's outcome was the designing of new materials that can resist a 50-caliber bullet by self-sealing after impact," Al-Ostaz said. "This has potential applications for the hazmat transportation industry."

Research results have been published in major academic journals and technical reports.

"NIRG has established a niche of prominence in the national nanotechnology scene with our capabilities to model, design, build and test new nanomaterials, especially drawing inspiration from the abundant, low-cost nanomaterials of nature," Cheng said.

Grants for NIRG projects have come from the Office of Naval Research, Department of Homeland Security, Mississippi Space Grant Consortium and North Carolina Agricultural & Technical State University/U.S. Army. In just the last three years, the team has received about $8 million to support its research.

The late theoretical physicist Richard P. Feynman's vision of a powerful and general nanotechnology driven by nanomachines that build with atom-by-atom control promises great opportunities and, if abused, great dangers.

"New classes of nanomaterials – such as carbon nanotubes, nanofibers, nanowires and quantum dots – are being assembled atom-by-atom, with various high-tech applications in mind: electronics, biomedicine, energy, environment and so forth," Al-Ostaz said. "However, these materials are still very expensive and can only be produced at a relatively small quantity."

To help protect the nation's critical infrastructure, including buildings, bridges, tunnels, transportation systems, pipelines, power transmission and communication systems, against natural and man-made threats, officials need nanomaterials that can be produced at low cost and in huge quantities.

"Fortunately, not all nanomaterials are man-made and expensive," Al-Ostaz said. "There are abundant, naturally occurring and low-cost materials that are at or near nanosize, such as nanoclay, volcanic and fly ash, cellulose nanowhiskers and many carbon- or silica-based minerals."

Grants for NIRG projects have come from the Office of Naval Research, Department of Homeland Security, Mississippi Space Grant Consortium and North Carolina Agricultural & Technical State University/U.S. Army. In just the last three years, the team has received about $8 million to support its research.

In the last several years, University of Mississippi engineering students have won a number of national honors, including the Goldwater Scholarship, Fulbright Program fellowships, American Institute of Chemical Engineers (AIChE) National Team Design Competition (first and second places), and being named Tau Beta Pi National Laureate. The UM liberal arts education environment gave these students their leadership development opportunities.

WHERE ARE THEY NOW?

Young alumni are making their marks in graduate schools, professional fields

BY EDWIN SMITH

A few years after their graduation, we wonder, "Where are they now?" Here are a few examples of students making their marks through continuing success in terminal degree programs or professional fields:

Anna Hailey

Anna Hailey (BSChE 11, BA 11, BA 11), a Goldwater Scholar who earned her degrees in chemical engineering, chemistry and Chinese, has been busy finding new ways to produce lightweight, flexible electronics to help solve the energy crisis.

"I am researching methods for controlling crystallization of solution-processable small molecules for use in organic photovoltaics," said Hailey, who is pursuing a Ph.D. in chemical and biological engineering at Princeton University. "The opportunity to contribute to solving the world's energy crisis through production of cheap, lightweight and flexible electronic materials is very exciting and fulfilling to me."

A National Science Foundation graduate research fellow, Hailey said she is honored at this display of confidence in her abilities and the promise of her future achievements. The prestigious and generous award will fund three years of her graduate studies.

"Ultimately, I would like to work as a researcher in industry or in a national laboratory," she added.

Joey Parkerson

Joey Parkerson (BSChE 10), a founding member of the Ole Miss chapter of Engineers Without Borders-USA, took first place in the Team Division of the 2009 American Institute of Chemical Engineers' national design contest. The UM group beat competitors from 34 other universities, including five-time champion Oklahoma State University and two-time champions Michigan State University, Northeastern University and Washington University. Other previous winners include Mississippi State University, University of Toledo, Columbia University and the University of Utah.

"This is a great achievement for us, the chemical engineering department, the School of Engineering and the University of Mississippi as a whole," said Parkerson. Following a summer internship with NASA during his college career, Joey is now employed as a Hypergolic Propulsion System Engineer for NASA's Kennedy Space Center in Cape Canaveral, Florida.

Christina Bonnington

Christina Bonnington (BSEE 10) has written her way to success, literally.

Bonnington is a consumer technology reporter for Wired magazine, primarily covering mobile technology, particularly Apple, Google and apps, as well as robotics. (Her senior design project involved helping build a solar-powered autonomous robot at Ole Miss.) Bonnington also does a number of product reviews, including smart phones, notebook computers and cycling gear.

Postgraduation, the alumna moved to San Francisco, where she started her career in technology journalism as an intern with the tech culture blog Gizmodo. Soon after, Bonnington became an editorial fellow for the product reviews section of Wired. She worked as a contributing editor on the magazine's first annual App Guide and began contributing to Gadget Lab, Wired.com's consumer technology vertical, before joining Gadget Lab officially as a staff writer in September 2011.

Nikki Reinemann

Nikki Reinemann (BSChE 12, BS 12), also a Goldwater Scholarship recipient, was a NASA Academy research associate in the Environmental Control and Life Support Systems branch of Marshall Space Flight Center in 2010.

"The Goldwater scholarship allowed me to finish another degree with the funding received from the award," said Reinemann, who also completed a major in chemistry. "Having the B.S. in chemistry, along with the B.S. in chemical engineering, better prepared me for various graduate school options and allowed me to be more versatile in industry."

She is pursuing a Ph.D. in chemical and biomolecular engineering at Vanderbilt University so she can conduct research in the pharmaceutical/biotechnology industry.

Martin Ducote

Martin Ducote (BSME 12), a Fulbright fellow and a German Language Initiative student, used his award to travel to Germany, where he performed research with Fraunhofer ICT, a German-based research organization, in connection with the Institut für Fahrzeugsystemtechnik, or FAST, at Karlsruher Institut für Technologie, or KIT.

"I had studied with the German Language Initiative program one summer, and I knew I wanted to go back to Germany," Ducote said. "Eventually, I wanted to work with the auto industry there; that's why I learned the language."

FAST works to provide students a deeper understanding of vehicle systems so they can help produce more efficient, safer and luxurious automobiles, which fits well with Ducote's goal of one day designing parts for an automotive company.

After returning from Germany last year, in Fall 2013 Ducote began a mechanical engineering master's program at Michigan State University, and is working work as a research assistant in the Composite Vehicle Research Center. He was recently selected as one of a 12-member delegation by the German-American Chambers of Commerce to return to Germany in November 2013 as part of the 7th annual "Transatlantic Program – Young Technology Leaders: Automotive R&D" where participants will be given the chance to explore cutting-edge developments and innovations in automobile design and production in an intensive 8-day trip throughout the country.

WATCHING FOR FLOODS

Research team develops automated modeling tool for simulating dam/levee breach floods

BY MISTY COWHERD

Responding to natural disasters such as hurricanes Katrina and Sandy devastating the U.S. coasts, the University of Mississippi's National Center for Computational Hydroscience and Engineering (NCCHE) may have found a new solution to saving lives, properties and businesses.

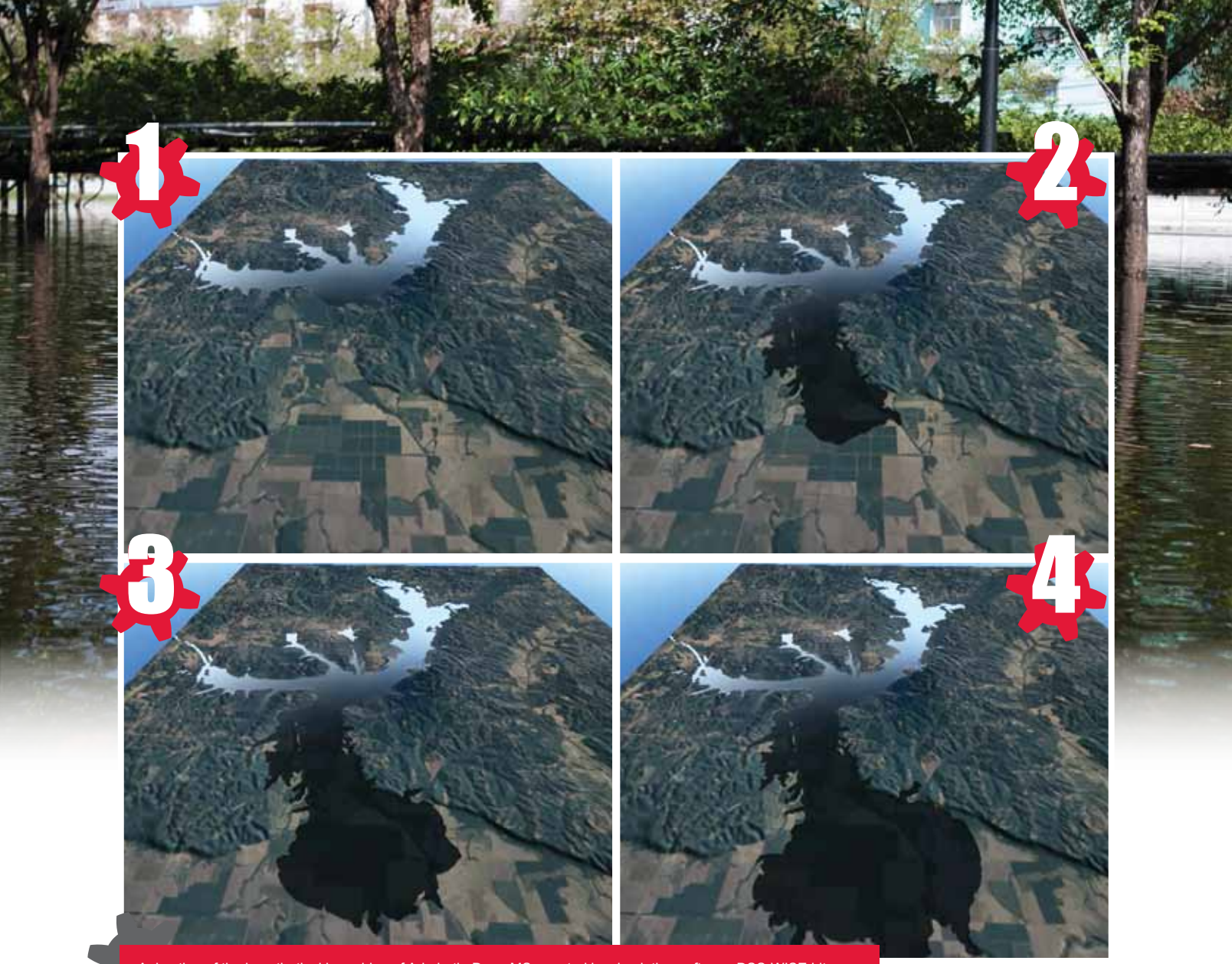
A small research team, composed of Mustafa Altinakar, director and research professor at NCCHE; Marcus McGrath, a graduate student; and Vijay Ramalingam, a research software developer, has created an innovative, Web-based, automated dam-break simulation system called DSS-WISE Lite for emergency planning in the event of floods, storm surges or dam and levee breaches.

DSS-WISE Lite was developed jointly with the U.S. Department of Homeland Security (DHS) and the U.S. Army Corps of Engineers (USACE). It employs state-of-the-art science and engineering methods to perform flood simulations while providing federal and state agencies the ability to address dam safety issues simply, flexibly, economically and efficiently.

Users can access DSS-WISE Lite 24/7 via the Dams Sector Analysis Tool (DSAT) Web portal, developed by the Office of Infrastructure Protection, DHS National Protection and Programs Directorate (NPPD), and the Office of Homeland Security, USACE headquarters.

DSS-WISE Lite is a special Web-based version of the DSS-WISE (Decision Support System for Water Infrastructure Security) software, which was developed within the framework of the Southeastern Region Research Initiative (SERRI) program funded by the DHS Science and Technology Directorate

> **"This software answers the questions, 'If a dam is breached, where [does] the water go, how deep [are] the flood waters, and at what time will the flood waters arrive at different locations of the inundation zone?"**
>
> — **Mustafa Altinakar,** director and research professor at NCCHE



Animation of the hypothetical breaching of Arkabutla Dam, MS, created by simulation software DSS-WISE Lite.

and managed by the U.S. Department of Energy's Oak Ridge National Laboratory (ORNL).

"This software answers the questions, 'If a dam is breached, where [does] the water go, how deep [are] the flood waters, and at what time will the flood waters arrive at different locations of the inundation zone?'" Altinakar said. "Armed with this knowledge, emergency managers and first responders can proactively and more effectively plan what measures need to be taken, which areas must be warned and/or evacuated in case of a failure to protect lives and property."

Altinakar added that "the Web-based DSS-WISE Lite software can also be used as a real-time operational model for emergency planning whenever a dam is in danger of failure, or for training dam safety engineers and emergency planners."

The failure of dams and levees can generate catastrophic floods leading to the loss of life, property damage and environmental issues and may lead to cascading failures of other critical infrastructures. About 32 percent of the 84,000 dams currently registered in the National Inventory of Dams are categorized as "high-hazard" and "significant hazard" dams.

These dams are required to have an Emergency Action Plan (EAP), which is a formal document that identifies potential emergency conditions at a dam and specifies preplanned actions to be followed in order to minimize property damage or loss of life in the case of a dam failure. Precisely, DSS-WISE Lite capability can be used to create new EAPs or update existing EAPs based on a two-dimensional flood dam-break flood model, which can handle mixed-flow regimes and wetting and drying, and it constitutes significant improvement on the current engineering practice based on one-dimensional modeling. DSS-WISE Lite directly provides two-dimensional maps of maximum flood depth and flood arrival time. The DSAT/DSS-WISE Lite system is the first of its kind in the world.

"The recent adoption of the DSS-WISE model by the Department of Homeland Security, USACE and FEMA is not only a recognition of the center's

As of Oct 7, 2013, there are 62 users from 36 states who have launched 1243 simulations.

leading role in creating the nation's disaster modeling and management tools but also a way to propagate the model for wider use by the U.S. and the international community for an even greater impact," said Alexander Cheng, dean of the School of Engineering.

As of Sept. 10, 2013, 1,068 simulations have been submitted to DSS-WISE Lite by 56 users in 34 states. More simulations are being launched every day. Federal Emergency Management Agency (FEMA) Region IV is currently pilot testing DSS-WISE Lite as its dam emergency management model for the 2013 hurricane season. If this pilot test is successful, the use of DSS-WISE Lite will be expanded to other FEMA regions. The development team at NCCHE has already used DSS-WISE Lite to help federal and state agencies during emergencies.

During Hurricane Isaac in 2012, NCCHE researchers were called to urgently assist FEMA Region IV and the Mississippi Emergency Management Agency (MEMA) by providing inundation maps for two dams in imminent danger of failure. More recently, during extreme floods in May 2013, DSS-WISE Lite capability was used to provide inundation maps for four dams in danger of failure in order to assist dam safety engineers in North Dakota.

"The SERRI program is proud to have sponsored research at UM-NCCHE leading to the development of DSS-WISE Lite," said Benjamin Thomas, operations manager for SERRI at ORNL. "The tool is a unique Web-based capability that is being used (free of charge at present) by numerous state agencies to support a variety of applications relative to flood risks due to dam failure. The DSS-WISE Lite tool has been validated and provides a significant cost savings for dam safety, flood management and emergency operational activities."

Having coordinated the original DSS-WISE project since its start, Thomas said, "The research conducted by UM-NCCHE and leading to the development of DSS-WISE has been an impactful and successful SERRI project. Flooding caused by dam failures is an imminent and persistent societal threat. DSS-WISE offers the capability to model and simulate the risks of this threat to local and regional communities, critical infrastructure, properties and to the population. Using this information, officials can make better decisions during emergency planning, mitigation and response operations to help make communities and regions more resilient."

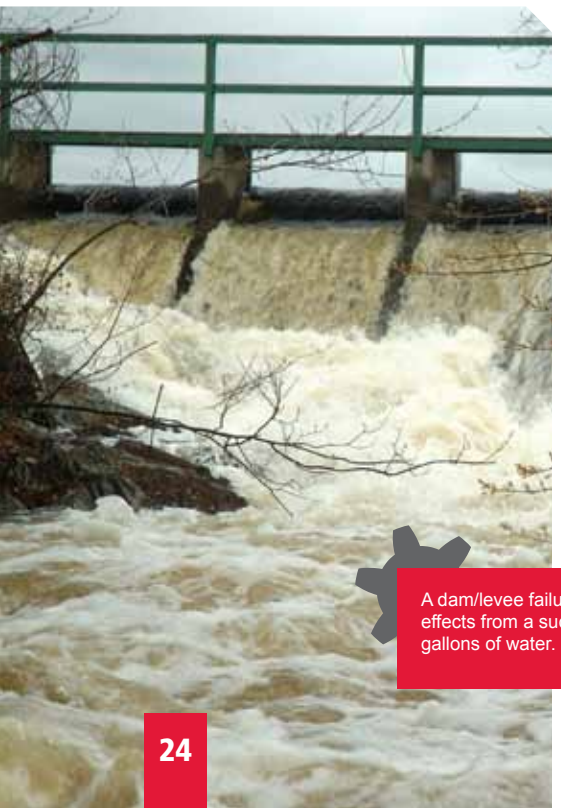
Michael Matthews, who served as program manager of SERRI for the DHS Science and Technology Directorate, said that the DSS-WISE Lite project is the outcome of a successful strong partnership across several federal agencies to bring this concept to reality, which included DHS S&T, DHS NPPD, USACE and Argonne National Laboratory.

"I believe this goes to show that the combined strength of several federal agencies working together can be very powerful," Matthews said.

"Our team is now working on adding new capabilities to DSS-WISE Lite, and we are preparing for the commercialization of the original DSS-WISE software," Altinakar said.

NCCHE researchers are also upgrading an operational flood model they had developed as a computer game within the framework of another SERRI project. This software tool uses a GPU (Graphics Programming Units) based fast solver to simulate and realistically visualize dam-break floods in real time.

This serious gaming capability will advance the capabilities of emergency managers in preparing for mitigating and responding to flood emergencies while providing a new paradigm for flood protection training for first responders in the aftermath of a dam/levee breach.



A dam/levee failure has always had the potential for catastrophic effects from a sudden release of millions, billions, or even trillions of gallons of water. Almost unimaginable in the past.

SUPER ATHLETES

Some engineering students enjoy studying and playing fields

BY WILL HAMILTON

While playing SEC sports and studying engineering at the University of Mississippi may seem incompatible and daunting, more than a dozen student-athletes in the School of Engineering are proving they can do both.

Courtney Cunningham, a senior civil engineering major and Ole Miss volleyball player from Chicago, Ill., and Ontario Berry, a senior chemical engineering major and Ole Miss football player from Mendenhall, Miss., are among the athletes who are able to successfully balance school and sports.

"What I learn in the classroom helps me out a lot," said Berry, a defensive back on the football team. "I always try and find some way to apply what I learn in the classroom to my everyday life as well as on the playing field."

Working toward an engineering degree and playing college athletics are similar in that they are both time-consuming. Between practices, film sessions, classes and labs, Berry said he spends somewhere between eight and nine hours a day on campus to fit everything into his schedule.

Another challenge for student-athletes is that, aside from their day-to-day routines, they often have to travel to compete. Cunningham said she uses travel time to "study on the bus and study on the plane and sometimes at the hotel after team dinners. I just try to squeeze it in when I [can]."

When asked how she is able to balance both engineering and volleyball, Cunningham said, "I just do! Coming from a family where I was always taught to fight for what you want, always be a leader, and that if I wanted to play sports I still needed to excel in school, I knew what I needed to do once I got to Ole Miss.

"Being aggressive in completing a homework assignment and volleyball drill, studying my craft and not to give up until I see a 'W' or a correct answer are all examples of how being an engineer and a volleyball player worked together for me," she said.

Athletes also have a lot of on-field and off-field commitments that they must fulfill to be successful. In the engineering classroom, the same applies.

"When you have more than one thing that you are doing, that you are passionate about, then there is no limit [to what you will do] to make sure the best of both opportunities are established," Berry said.

After graduation in August 2013, Cunningham moved to Houston, Texas to work for Lockwood, Andrews & Newman Inc. as a transportation engineer. As for Berry, he hopes to play football for as long as he is given the opportunity and then work for a company where he can continue to grow and learn.

Engineer Athletes

Ontario Berry	Football
Markis Barnes	Men's Track
Stephen Greer	Men's Track
Benjamin Lapane	Men's Track
Peyton Moss	Men's Track
Abigail Newton	Women's Golf
Kaitlin Voll	Women's Golf
Rafaelle Leone Carvalho Souza	Women's Soccer
Mai Mahmoud Aly	Women's Tennis
Alexandra Robbins	Women's Tennis
Iris Verboven	Women's Tennis
Mary Louise Clawson	Women's Track
Amber Wilson	Women's Track
Courtney Cunningham	Women's Volleyball

Giving Back

Engineering education through service learning.

Students learn and practice real-world skills by defining, designing, building, testing, deploying, and supporting engineering solutions to assist local and global communities.

1. Living Independence for Everyone (LIFE)

Sean Ray: tsray1@go.olemiss.edu

Project: Building ramps at the homes of elderly and disabled individuals giving them better accessibility

Description: LIFE has enhanced the lives of over 35,000 individuals with disabilities since 1993. LIFE services are provided at no cost.

2. Center for Mathematics and Science Education (CMSE)

Mannie Lowe: 662-915-6621 or 404-626-6431

Project: FIRST Tech Challenge (FTC) www.mississippiftc.org

Description: The FIRST Tech Challenge is a robotics competition between teams of students in grades 7-12 who are responsible for designing, building, and programming medium-sized robots.

3. Technology Recycling to Enhance Education (TREE)

tree@olemiss.edu

Project: Refurbishing computers for Mississippi Delta schools.

Description: The UM student chapter of Association for Computing Machinery (ACM), the Department of Computer and Information Science (CIS) and the Office of Information Technology (OIT) are working together to collect computing equipment from across the Ole Miss campus that would otherwise be sent to salvage, clean and refurbish it, and coordinate the donation of that equipment to public schools in Mississippi.

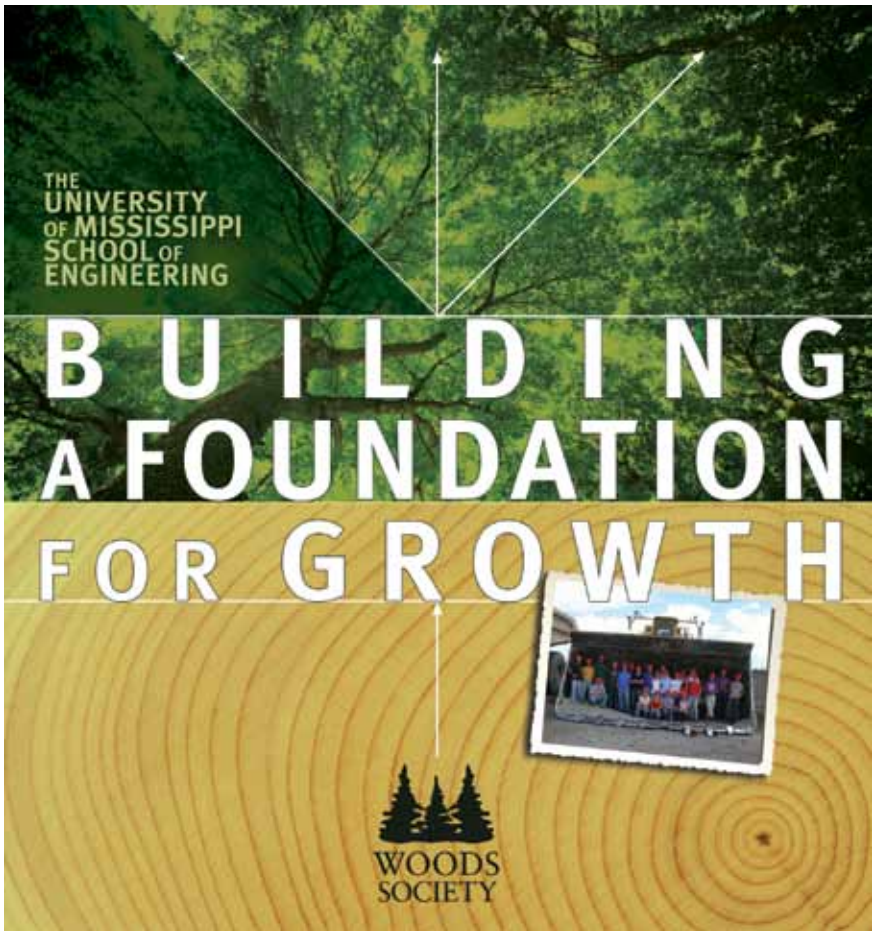
4. Engineers Without Borders (EWB)

Jim Mosier: OleMissEWB662@gmail.com

Project: Service in Togo building a school.

Description: EWB has designed and begun construction of a four-classroom school in Hedome Village, Togo.

Interested in volunteering your technical skills? Contact the organization for information.



As a Woods Society donor, you can take pride in defining the student who defines the future.

Every gift of every size to the School of Engineering truly does make a difference for both current and future generations of students—and all gifts make a significant difference for alumni, too, strengthening our programs and subsequently increasing the value of the thousands of degrees already awarded. Just as larger endowed gifts directed to particular areas are extremely important to our continued success, annual gifts are also absolutely critical. These gifts provide the school the flexibility to ensure our students have the best resources available while also meeting unexpected needs as they arise.

The Woods Society was created to help us better recognize our donors who provide such crucial means of support. As a Woods Society level donor, you will play a key role in the success of the School of Engineering.

For information about becoming a Woods Society member, contact Kevin Gardner at
(800) 340-9542 or
(662) 915-5092 or
email: kevin@olemiss.edu

engineering.olemiss.edu/woods

HELP SUPPORT:
- Scholarships
- Technology upgrades
- Internship opportunities
- Engineering Career Fair
- Professional society competitions
- Global experiences
- Service learning opportunities
- Engineers Without Borders
- Society of Women Engineers
- National Society of Black Engineers
- Undergraduate research
- SUCCESS/Bridge program
- Tutoring programs
- Leadership training opportunities

WOODS SOCIETY

Russ Alexander
Samuel Alexander
Janet L. Bauman
Barbara Beckmann
Louis K. Brandt
Henry C. Brevard Jr.
Denny and Robin Buchannon
David Carroll
Keith Carson
Alex Cheng
Filo and Gloria Coats
Joseph B. Durrett
Bill Dykeman
Stephen Edge
Steve Foose
Kevin Gardner
Mike Harris
Mark Harrison
Lew Hazlewood
Albert Hilliard
Hunter and Kelly Howell
Kent Howell
Chuck Jenkins
Dorothy Johnson
Mike Jurgensen
Siva Malladi
Doyle W. McCully
John Miles
Wayne Minor
David Mitchell
Markeeva and Shaquinta Morgan
Paul Murrill
Yacoub and Oana Najjar
Dwayne Nesmith
Casey Wilson Pearce
Johnny Reed
Neal and Cindy Rich
Julius Ridgway
Bill Rigby
Steve Scott
Rob Short
Chuck and Tami Smith
Steve and Karen Smith
Debbie Starnes
Wade Stinson
Vish Viswanathan
Lisa Wadlington
Sam Wang
Mike and Emily Williams
Clint Williford
Xu Zuo

2013 SCHOOL OF ENGINEERING DONORS

PATRON ($25,000+)
John G. Adler
Barbara K. Beckmann
Henry C. Brevard Jr.
Estate of Randall L. Owens
ExxonMobil Foundation
Deborah and Bobby R. Pate
Gail G. Seely
The Estate of Harper Johnson Jr.
Jine and S. Y. Wang

BENEFACTOR ($10,000 TO $24,999)
Nancy L. and George G. Byers
Wei-Yin Chen
Estate of Thomas T. F. Tsai
Cindy L. and Michael C. Jurgensen
MRISAFETYMODELING LLC

EXECUTIVE ($5,000 TO $9,999)
Samuel L. Deleeuw
Denise C. and Gerald A. Gibson III
Martha R. and Frank S. Hill Jr.
Harriet N. and Albert L. Hilliard
Neel-Schaffer Inc.
Elizabeth W. and Dale A. Touchstone

ADVOCATE ($2,500 TO $4,999)
A. Cheli and Samuel F. Alexander
Barbara D. and David W. Arnold
BorgWarner Foundation
Celeste G. and David M. Carroll
Sara M. Costner
Angelia and William D. Dykeman
Sarah E. and Stephen V. Edge
Electric Power Associations of Mississippi
Hunter H. Howell
Sheryl S. Williams-Jenkins and Charles M. Jenkins
Siva Malladi
Mississippi Power Foundation
Suzanne and Bruce Senter
Williams Foundation

ASSOCIATE ($1,000 TO $2,499)
Minda J. and J. R. Alexander
Blair B. and William H. Anderson
Janet L. Baumann
Robin C. and Denny N. Buchannon
Daisy T. and Alexander Cheng
Chevron Texaco
Elizabeth R. and John R. Cleveland
Carolyn C. and Joseph B. Durrett
Patty and Stephen S. Foose
Virginia L. and George R. Goza
Michael Gratzer
Elizabeth and Mark D. Harrison
Janice A. and P. L. Hazlewood Jr.
Marijean H. and S. Kent Howell
Dorothy D. Johnson
Barry J. Kanuch
Tadanori Kitamura
Rudolf G. Kittlitz Jr.
Doyle W. McCully
Judye B. and John H. Miles
Wayne Minor
Becki and David H. Mitchell
Barbara and William B. Mixon Jr.
Shaquinta and Markeeva A. Morgan
Nancy W. and Paul W. Murrill
Dwayne Nesmith
Casey W. and Cason Pearce
Raytheon Co.
RCT, LLC
Deidre and John B. Reed Jr.
Cindy and R. Neal Rich
Mary Jane and Julius M. Ridgway
Susan S. and William H. Rigby Jr.
William W. Rowland Jr.
Linda B. and Stephen H. Scott
Shell Oil Co. Foundation
Carol E. and Robert D. Short
M. Karen and Steven A. Smith
Debra L. Starnes and David M. Lindsay
Sara Su
Ramanarayanan Viswanathan
Elizabeth F. Wadlington
Damon Wall
Laura A. Wall
Emily F. and Mike E. Williams
Xu Zuo

STEWARD ($500 TO $999)
A-1 Lock Inc.
Lawrence A. Ashley Jr.
Carolyn K. and Ray R. Ayers
Susan T. and Nadim M. Aziz
Margie S. and Mark A. Barger
Mandy L. and T. Bryan Caviness
Deborah D. Conway
David N. DeLeeuw
Jill J. and Kevin W. Gardner
Allen W. Glisson Jr.
Janice and Barrett E. Green
Carmen M. and Alan B. Haag
Kay N. and W. Larry Holman
Ryan A. Holmes
Judith T. and B. Jerry L. Huff
Sally H. and Robert P. Hughes Jr.
William F. Imre
Marcus C. Jennings III
Clark C. Liu
Sara G. and Taylor H. McElroy Jr.
Janice M. Molloy
Oana C. and Yacoub M. Najjar
Parker Hannifin Corp.
Greer P. Person Jr.
Jeff W. Rish III
Rixie H. and Kenneth H. Rose
Charlotte F. and G. Darrell Scruggs
Frances D. and Joe P. Sheffield
Simpkins and Costelli Inc.
Standex International Corp.
Christy and A. Wade Stinson
Jewel W. and Delmar D. Stover
Jackson Taylor Jr.
James D. Walcott Jr.
Bernice J. and Henry A. Walker
Susan S. and Steven W. Wall
Dawn E. Wilkins
Sharyn and Clint W. Williford Jr.
Christy L. Wootan
Camille S. and Stuart A. Yahm

SENIOR PARTNER ($250 TO $499)
Tanvir Ahmed
Vicki A. and Robert P. Arnold
ASCE North Mississippi Branch
Theodore T. Bean
John W. Bolich
Wayne M. Bradley
Ting-Ying Chen
Sumer T. and Doyne D. Clem
Stuart H. Coleman
Mark A. Crawford
Shelton B. Davis
John S. Endom
Sarah K. and Thomas W. Faulkner
Travis G. Ferguson
Mary M. and K. P. George
Christina Glick and Thomas E. Guillot Jr.
Ronald H. Godwin
John T. Hardy Jr.
Henry W. Haynes Jr.

Thank you to everyone who made contributions to the School of Engineering.
The following list reflects gifts that were made between July 1, 2012 and June 30, 2013.

Michael L. Hedges
Dorothy T. and J. R. Hightower
Webster J. Hill Jr.
Emily and F. H. Hohenschutz
Ronald L. Imre
Laura M. and Matthew G. Kellum
Sandeep Khanna
Dicki L. and John W. King
Ian T. Kistler
Therese T. and Damon T. Lai
Hannah and John W. Lang Jr.
Christy G. and Scott A. Lea
Sarah G. and Zachary L. LeBlanc
Suzanne L. Dickinson and Philip A. Lewis
Rhea A. and Robert H. Little
Mary E. and Michael E. McNulty
J. Kenneth Metcalfe
Michael G. Metcalfe
Microsoft Giving Campaign
Henry H. Munn Jr.
Jarrett R. Pierce
Walter Prince
Norma S. and Jimmy M. Reagan
Meg E. Reese
Science Applications Intl. Corp.
Marie P. and James H. Scott
Joel D. Serafin
Arsalan M. Shaghaghi
A. Mike Slaughter
Southern Company Services
Margaret A. and Frederick J. Swearingen
Alan A. Troy
Paula Q. and Tommy B. Turner
United Space Alliance Trust
Sheila Whincup
Cuihua and Yang Zhang

PARTNER ($100 TO $249)

Landry H. Adkins
Karen T. and Frank A. Anderson
Curtis P. Ayers III
Manil Bajracharya
Joyce H. and Ralph A. Barber Jr.
Alison A. Barnes
Theodore T. Bean
James W. Beazley III
Susan M. and James B. Biddy
Randy B. Blackmon
Allen Bodron
Jennifer R. and R. Carter Bolt
M. Lynn and James P. Bonner
Toni R. Bonnette
Carolyn W. and Mark A. Bronston
Joanna W. and William Burnett
Cameron International Corp.
William E. Cameron Jr.
Michael M. Cassaday
Ann L. Jones and Michael D. Caulfield
Susan and Joseph Cerny III
Shree B. and Sailendra Chatterjee
Diana M. and Larry A. Clawson Jr.
Tina and Jerry S. Cliburn
Gregg O. Coningsby
Jewel S. Crowson
H. Conrad Cunningham
Michael A. Dasovich
James W. Davis
Richard S. Delaquis
James Q. and James Q. Dickerson III
Kathy M. and Terry W. Dillard
DIRECTV Matching Gift Center
Barry T. Doolittle
Nancy M. and Joseph C. Dupont III
Entergy Corp.
Pamela R. Estes
J. R. Ezzell
FNB Oxford
Freeport-McMoran
John B. Fried
George L. Gafford Jr.
Sabodh K. Garg
Damien D. Gibbs
Nancy H. and Jerry Q. Gilder
Thomas H. Gore
Helen P. and Jason G. Hale
Kenneth G. Hale
Patton B. Harrison
Harry E. Hawkins
Thomas E. Hester
Ronald H. Hill
Bieu C. Hoang
David C. Holmes
Xuexun Hu
Weiwen Huang
Jack H. Hurdle

Vonda K. and Brad P. Jobe
George P. Johnson
Karin Jones
May A. Kaechele
Larry C. and Larry C. Kelly
Jeannette B. and Billy W. Key
Sharon H. and Allen D. Lantz Jr.
Joseph E. Lauderdale
Paula G. and Joseph F. Lauderdale
Calvin W. Leggett
Frank Y. Liao
Lynda M. and Ernest B. Lipscomb III
Stephanie F. and J. Clark Love III
Deborah K. and Lee G. Martin
Eugenia B. and J. Purves McLaurin
M-I LLC
Lana and Jim Miller
Freddie R. Miskelly
James H. Moody
Jane and Kevin Moore
Bettye F. and William M. Myers
Sandra B. and Gholam R. Navidi
Kay M. and James E. Orth
Iona C. and Kenneth P. Parks
Hal A. Perry
Henry L. Porter
James D. Quin
Elizabeth M. and Neilson G. Raggio
Shahid M. Rana
Swaminathan Ranganathan
Morgan G. Ray
Arthur J. Rogers Jr.
Danny R. Roy
Saputo's Italian Foods Inc.
Dorothy C. and William Senf
H. Gurudutt Shenoy
W. David Shumate
Carol C. and Thomas R. Sims
Mary S. and Hugh J. Sloan III
Sarah W. and Allie M. Smith
Jane M. and Brian K. Sneed
Gwen A. Stacell
David B. Steele
Jay S. Street
Chandran Subramaniam
Daniel G. Swanson
Hongmei Gao and Lin Tang
Lisa C. and William A. Tedesco
Carolyn C. Thomas
William L. Tippitt
Deborah W. and David J. Townsend

>>

2013 SCHOOL OF ENGINEERING DONORS

continued

Sidney R. Trevillion
David M. Turbeville
Donald L. Urbani
Mary E. and William C. Voorhees
Waggoner Engineering Inc.
Nell B. and Oscar E. Wall
Ching-Ru Wang
Jack Wang
Benjamin J. Ward
Gary D. Weale
Debora R. and Mitchell R. Wenger
Andrea L. and Joseph W. Wesley
Michael D. Willingham
I-Cheng Yuan
Jianping Zhang
Xiao Zhang
Jie Zou

FRIEND ($1 TO $99)

Cotena C. Alexander
Chester Anderson
Gary Armstrong
Melissa E. and Adam O. Austin
Lauren E. Averill
Azalea Gardens Resident Council
Elizabeth and H. Bruce Baggett
Vada M. and Gordon E. Baird
Rhonda L. and Todd Bertolet
Elise E. and Stephen E. Bingham
Roberta K. and James E. Bodamer
John L. Boling
David R. Boswell
Luanne Buchanan and Michael H. Hoffheimer
Rachel L. Buttermore
James L. Carr
Marvin L. Carraway
Alice M. Clark and Charles D. Hufford
Vickie M. Cook and Michael W. Wright
Virginia Cornelius
David L. Davidson
Elizabeth H. and Edward F. Dean
Mary H. Dixon
Donna K. and James V. Doucet
Kodanda R. Engala
First Baptist Church
Ralph M. Garrard
Cameron L. and James M. Gray
Peggy Y. and J. Dreher Harris
James R. Hendrick
Julie C. Hernandez
Charles L. Howorth III
Chih-Ming Hsiao
William T. Hyde Jr.
IBM
Christopher L. Jerome
Marquita A. Johnson
Lorena Karahan
Michael Karpenko
John F. Lewis
M & F Bank
Curtis J. Matthews
Marty and Steve Mauldin
Rolf W. McHenry
Margie and Kevin W. McLeod
Charles R. McRae
Tridib K. Mittra
Kuchibhotla A. Murthy
Billy F. Nicholas
Katherine K. Osborne
Alicia P. Panetta
Charles A. Panetta
C. Beth Reid
Kaci A. H. and Andrew M. Richardson
Kathy L. and Craig N. Schaal
Thomas T. Schreiber
Anthony J. Shelton
Mary M. and Samuel J. Sliman
Jennifer S. and Clinton T. Spencer
Gordon Still
Linda P. and Eugene W. Sullivan
Kay S. and J. Larry Tyler
Juliet H. and Gerald W. Walton
Donald L. Ware
Chirag V. Warty
Kathryn S. White
Lauren A. White
Gayle L. and Roger F. Wicker
Stephanie R. and Ryan J. Williams

Every effort was made to present an accurate reflection of our donors. Please contact Kevin Gardner, development officer, at 662-915-7601 or kevin@olemiss.edu with any questions.

SCHOOL OF ENGINEERING

Please detach and return to:
The University of Mississippi Foundation
P.O. Box 249
University, MS 38677-0249
or contact Kevin Gardner at
(800) 340-9542 or (662) 915-5092
Email: kevin@olemiss.edu
olemiss.edu/depts/foundation

I/We will support The University of Mississippi with a gift of $ _____

Name _____

Address _____

City/State/Zip _____

Phone (Day) _____ (Evening) _____

E-Mail _____

My Pledge Will Be Fulfilled As Indicated:

❑ Check enclosed Bill my: ❑ MasterCard ❑ Visa

Card number _____ Exp. Date _____ Name on card _____

Payment Schedule*

Monthly $_____ Beginning _____ Quarterly $_____ Beginning _____ Yearly $_____ Beginning _____

Pledge Designation: SCHOOL OF ENGINEERING

Signature _____ Date _____

*Please complete this section exactly as you wish your payments to be scheduled by the Foundation office.

HARD WORK RECOGNIZED

Twenty-three engineering students receive awards at Honors Convocation

Twenty-one undergraduate and two graduate students were among the award recipients at the 2013 University of Mississippi annual Honors Convocation held at the Gertrude C. Ford Center for the Performing Arts in April.

John H. O'Haver, director of the Center for Mathematics and Science Education and professor of chemical engineering, delivered the keynote address during the ceremony. He received the Elsie M. Hood Outstanding Teacher Award at the 2012 Honors Convocation.

TAYLOR MEDALISTS: (the university's highest academic honor):

Paul Hamilton Furr (chemical)
Lauren Brooke Harrelson (geological)
Jennie Katherine Ellis (general)
Charles Oliver Townsend (mechanical)

OUTSTANDING ENGINEERING SENIOR LEADERSHIP AWARD:

Joanna Leigh David*
Jennie Katherine Ellis
Lauren Brooke Harrelson
Cornelius Hughes
William Walker Wroe

**David also received the David W. Arnold Engineering Award.*

DEPARTMENTAL AWARDS:

Chemical Engineering:

Robert Patrick Wood	John Robert Boswell Memorial Award
Haley Elizabeth McFall	Outstanding Freshman
Rachaurd Montell Keyes	Outstanding Sophomore
Alec Anthony Mattei	Outstanding Junior
Stephanie Amber Hall	Outstanding Senior

Computer and Information Science:

Jessica Elyse Forbus	Blake Davis Award
Devin Charles Rossetti	Outstanding Freshman
Elijah Edward Allen	Outstanding Sophomore
Aishat Oluwaseun Aloba	Outstanding Junior
Cornelius Hughes	Outstanding Senior
David Caleb Robinson	Richard E. Grove Award

Electrical Engineering:

Samuel Liyang Di	Eta Kappa Nu Outstanding Student
Dustin Thomas Brown	Eta Kappa Nu Outstanding Sophomore
Rana Gordji	Eta Kappa Nu Outstanding Junior

Geology and Geological Engineering:

Lauren Brooke Harrelson	Outstanding Senior
Andrea Renee Bowen	Outstanding Graduate Student

GRADUATE ACHIEVEMENT AWARD:

Rebecca Ashley Werner, civil engineering
Ahmed Khidre, electrical engineering

THE UNIVERSITY of MISSISSIPPI
School of Engineering
P.O. Box 1848
University, MS 38677-1848

Nonprofit Org.
U.S. Postage
PAID
Permit No. 6
University, MS

If you've been told by others that engineering is a demanding degree, you should know that they're right. But Ole Miss Engineering students understand that effective leaders must embrace challenges in order to achieve excellence.

WE SEE THE **ENGINEER** IN **YOU.**

Forward Leadership

Forward Innovation

Forward Excellence

www.engineering.olemiss.edu

OLE MISS SCHOOL OF ENGINEERING. ***STEP FORWARD.***