New National Academy of Engineering Member George M. Pharr and the Future of Materials Engineering at UT
Our governor recently introduced a bold plan, the TN Promise, as a part of the state’s effort to increase the science, technology, engineering, and math (STEM) workforce in the state. It is a plan that will provide increased opportunity and motivation for high school students to attend the first two years free at the community and technical colleges within the state with the intent to increase the technologically trained workforce in Tennessee. It is also intended to encourage select students who choose that route to then consider transferring to four-year colleges within the state to further their education. While we believe that entering our college as a freshman is the preferred approach for the majority of our engineering students, we look forward to seeing an increase in interest from the students that may enter as transfer students. This trained workforce will be invaluable in helping our state compete for and increase manufacturing capabilities in our area.

In response to our unprecedented increase in undergraduate student enrollment and PhD enrollment over the last five years (34% and 65%, respectively), and in anticipation of increased emphasis on manufacturing in the US and our state, our college is also adding additional faculty in advanced manufacturing, composites, energy, power electronics, and many other areas. These additional faculty members and their staff support were made possible by increased resources that have been provided by the state, university, alumni, and friends of the college, and in collaboration with ORNL, other federally funded agencies/facilities, and our corporate partners. I encourage you to read about several of our newest faculty and the national and regional awards being received by our faculty and students in this edition of Tennessee Engineer as we continue to support the university and college’s vision of becoming a Top 25 public university.
JIAM Director and Chancellor’s Professor Pharr Named Member of the National Academy of Engineering

George Pharr, Chancellor’s Professor in the Department of Materials Science and Engineering at the University of Tennessee, Joint Faculty Scientist in the Materials Science and Technology Division at the Oak Ridge National Laboratory (ORNL), and director of the Joint Institute for Advanced Materials (JIAM) at UT, has been named a member of the National Academy of Engineering (NAE). He becomes the fifth NAE member in the College of Engineering.

Election to the NAE is among the highest professional distinctions accorded to an engineer. Academy membership honors those who have made outstanding contributions to engineering research, practice, or education and to the pioneering of new and developing fields of technology, making major advancements in traditional fields of engineering, or developing and implementing innovative approaches to engineering education. The NAE elected sixty-seven US members and eleven foreign associates this year. This brings the total US NAE membership to two thousand two hundred fifty and the number of foreign associates to two hundred and fourteen.

“I was absolutely thrilled. There were some rumors floating around a few weeks before the official announcement, but prior to that I had no idea I had been nominated or was being considered,” Pharr said. “So when the formal announcement came to me on February 5, it was truly a thrilling moment.” Pharr was elected to the academy for his “development of methods for determining mechanical properties of materials by nanoindentation.”

“George is most deserving of this membership,” said UT Chancellor Jimmy G. Cheek. “He has made great contributions to his field, the classroom, and to UT and ORNL as director of JIAM. This honor is a reflection of the world-class scientist that he is.” Pharr’s research deals with understanding the mechanical behavior and strength of very small objects. These can be thin films, like those used in making semiconductor electronics or in magnetic hard drives, or small particles or devices used in nanotechnology. Many of these have dimensions as small as fifty nanometers, which is about a thousandth the size of a human hair. In many cases, the technological performance of these small objects depends on knowing exactly how strong they are. His research efforts for the last thirty years have been directed at ways to measure their strength and understand the basic physical mechanisms that determine their strength. One of the “mantras” in this field of research is that “smaller is stronger,” and Pharr and his research team have been striving to understand why.

“When I started this line of research, the materials we intended to focus on were engineering materials, e.g., metals, alloys, ceramics, polymers, and semiconductors,” Pharr said. “What we did not envision is there would be a wide range of applications for our testing methods in a large number of other scientific disciplines including geology, biology, medicine, and even anthropology.” Pharr is also a fellow of the Materials Research Society and the American Society of Materials International. He has served as editor of numerous academic journals and is the recipient of several awards, including the 2010 Materials Research Society Innovation in Materials Characterization Award, the 2007 Humboldt Research Award for Senior US Scientists, and the 1995 Amoco Teaching Award at Rice University.

Pharr received his bachelor’s degree in mechanical engineering at Rice University and his doctorate in materials science and engineering from Stanford University.

“George is a leader in the materials science field nationally and internationally,” said Wayne Davis, dean of the College of Engineering. “His research and ideas have served to inspire other faculty and his students.”

The NAE recognition comes at an important time as the construction of the building containing the first structure on the university’s new Cherokee Farm Campus—comes closer.

“Construction of the JIAM building is proceeding on schedule with a 2016 completion date anticipated in late summer or early fall of this year,” Pharr said. “Phase I will build out the entire external structure and finish half of the internal lab and office space along with an auditorium and several conference rooms. We are currently finalizing design plans for phase II, which will finish out the rest of the internal space. We hope that phase II construction will begin immediately at the completion of phase I, and if that happens, the JIAM scientists should be moving into the building in the summer or fall of 2016. The building is now complete enough that you can get a good sense of what it will be like by walking through it. It is really going to be first class.”

JIAM was established in 2005 and is comprised of a multidisciplinary team of scientists from UT and ORNL, operating at the forefront of modern materials science.

Through a partnership that spans more than sixty years, UT and ORNL researchers have maintained international prominence in the field of advanced materials synthesis and characterization. This broad research realm directly engages physicists, chemists, microscopists, computer scientists, and engineers, while involving myriad other areas of scientific investigation. Many of JIAM’s scientists hold joint appointments at UT and ORNL. The UT-ORNL joint institutes were created to spur collaboration and capitalize on mutual strengths. JIAM is one of five UT-ORNL joint institutes.

“We hope that once all the JIAM scientists are under one roof and sharing the same coffee pot and lunch spaces, new multidisciplinary research collaborations will develop that will push materials research activities at UT and ORNL to new levels,” Pharr added. “Given the strength and importance of advanced materials research here in East Tennessee, which stems from ORNL being the lead DOE laboratory for advanced materials development, there is no reason that JIAM shouldn’t become a world class materials research institute.”

As a NAE honoree, Pharr is in good company with other engineering members including Mark Dean, John Fisher Distinguished Professor in the Department of Electrical Engineering and Computer Science; Jack Dongarra, Distinguished Professor in the Department of Electrical Engineering and Computer Science; Ramamoorthy Ramesh, UT-ORNL Governor’s Chair for Nanomaterials Engineering; and Steve Zinkle, UT-ORNL Governor’s Chair for Nuclear Materials.

“It is certainly an honor to be included in such an august group,” Pharr said. “I have worked with several of these folks over the years and have great respect for their abilities and accomplishments.” For more information on NAE, visit www.nae.edu. For more information on JIAM, visit jiam.utk.edu/about.php.
“During the years that Wayne Davis has served as dean of the College of Engineering, he has shown tremendous leadership. Not only is he a leader in the engineering college, he is also one of the driving forces in the race to make the University of Tennessee a Top 25 public university.”

John D. Tickle (BS/IE ’65)
Chairman, Strongwell Corporation

“Dean Davis has spent his professional career serving the University of Tennessee, and he has been an outstanding dean of engineering. My wife, Ann, and I are proud to honor Dr. Davis by joining with the Tickles, the Cooks, and the Zeanahs to establish the Wayne T. Davis Endowed Dean’s Chair in Engineering. As a UT industrial engineering alumnus, I have great faith in his leadership, integrity, and dedication to the College of Engineering and his vision for the future of engineering at UT.”

Chad Holliday (BS/IE ’70)
Chairman of the Board, Bank of America

“We are pleased to support honoring Wayne Davis with an endowed chair in engineering. Dean Davis epitomizes the highest quality of leaders with his focus on serving others and being accountable for outcomes. This award recognizes the outstanding progress the College of Engineering has experienced under Dean Davis’ guidance and sets a high mark for those who follow.”

Joseph C. Cook, Jr. (BS/IE ’65)
Principal and Co-founder, Mountain Group Capital

“Wayne’s dedication to our College of Engineering and the University of Tennessee has been seen in so many ways over his tenure. Supporting him with this honor was an easy decision as it is rare to have an opportunity to work with someone who has both the vision and ability to move things forward.”

Eric Zeanah (BS/IE ’84)
President and Owner, American Accessories International Chair-elect, College of Engineering Board of Advisors
EECS Professor is ACM-IEEE Kennedy Award Honoree

Dr. Jack Dongarra of the University of Tennessee, Knoxville, has been honored with the ACM-IEEE Gordon Bell Award for his contributions to high-performance computing. The award, given by the Association for Computing Machinery (ACM) and the Institute of Electrical and Electronics Engineers (IEEE), recognizes individuals who have made significant contributions to the field of high-performance computing. Dongarra was recognized for his work on numerical linear algebra algorithms and software, which have been widely used in scientific and engineering applications. His research has led to the development of efficient parallel algorithms and software that enable researchers to solve complex computational problems more effectively. The Bell Award, established in 1980, is one of the highest honors in the field of high-performance computing and is presented annually to recognize the most innovative and practical contributions to the field.

Two COE Governor's Chairs Named AAAS Fellows

Dr. Steven Zinkle, the UT-ORNL Governor's Chair for Advanced Manufacturing in the Department of Mechanical, Aerospace, and Biomedical Engineering, and Dr. Joshua Fu, an associate professor in the Department of Mechanical Engineering, have been elected as AAAS Fellows by the American Association for the Advancement of Science (AAAS). AAAS is one of the largest scientific organizations in the world, with over 200,000 members. The designation of AAAS Fellow recognizes individuals who have made significant contributions to the advancement of science or engineering and its applications. Zinkle and Fu were selected for their contributions to the development of new technologies and methodologies that can help address global challenges such as climate change, energy security, and materials science. The AAAS Fellows designation is a recognition of outstanding achievements in the field and is an honor that is held in high regard by the scientific community.
Faculty Focus: Dr. Eric Boder

Department of Chemical & Biomolecular Engineering

Dr. Eric Boder was on the University of Pennsylvania faculty in 2006 when he first visited UT to give a guest seminar for the Department of Chemical and Biomolecular Engineering (CBE). A look at the department’s activities and a convincing sales pitch inspired him make the move to UT just a year later.

“I was impressed with the department and the vision for what the programs, especially the graduate education and research programs, could become,” said Boder. “Our department head, Dr. Bamin Khomami, is a very enthusiastic and persuasive individual—not to mention a respected former teacher and advisor from my undergraduate days at Washington University. So when he brought up the possibility of moving to UT, I couldn’t say no.”

Boder is now CBE’s career development associate professor, teaching biotechnology and bioprocess engineering courses, and conducting research in protein engineering. He is also the academic director for UT’s new Institute of Biomedical Engineering (iBME).

Boder takes a traditional approach in the classroom, favoring a chalkboard or whiteboard over PowerPoint presentations in order to promote a better pace. He also stays mindful of student needs.

“I focus on being very prepared before going into the classroom, which really means trying to anticipate where students are going to have the most difficulty understanding the material,” said Boder. “When developing content, I prefer to truncate the list of topics to avoid having to move too quickly and sacrifice details, depth, and rigor.”

Boder sees success in teaching through the achievements of his students.

“I recently graduated my first PhD student from UT, and that is certainly the most measurable and rewarding example,” he said. “I now tell people that once your kids get past age ten, you have to give up the rest of them.”

“Looking ahead, Boder believes that this line of research will yield important solutions and better medicines.

“We are going to keep pushing our molecular switch research to see what kind of problems we might be able to solve with these,” he said.

Outside of academia, Boder spends time with his wife Marti—who also has a PhD in chemical engineering— daughter Josie, 14; son Ethan, 11; and daughter Rosa, 8. He helps out with Josie’s dance company performances and travels to gymnastics competitions with Ethan and Rosa.

Boder keeps up with graduate school friends via an annual fantasy football league, but doesn’t have much time these days for previous hobbies such as home brewing and aviation.

“I used to tell my students that if you are going to be a PhD scientist or engineer, you have to give up fifty percent of your hobbies because your research must become your number-one hobby,” said Boder. “I now tell people that once your kids get past about age ten, you have to give up the rest of them.”

The research hobby is rewarding for Boder, though, especially within the CBE community.

“I have the pleasure of being part of an amazing group of passionate colleagues applying their expertise to topics ranging from fundamental understanding of the behavior of cells and nanoscale materials to developing new materials and processes for sustainable energy and drug delivery, among other things,” he said. “That puts our program right in the middle of some of the most exciting research and education areas currently active in the college, and these are areas that are poised for dramatic growth in industry, with real potential to improve our lives. It’s an exciting time to be part of CBE at UT.”

The Heath Endowed Faculty Fellowship in business and engineering provides me with a unique opportunity to identify and encourage interaction and collaboration between the College of Business Administration (CBA) and the College of Engineering (COE) by working with my business counterpart, Dr. Chanaka Edirisinghe. The support from this award allows me not only to integrate my work in systems productivity and reliability with others in the CBA, but also to identify opportunities for other faculty and students in both colleges. The endowment has already generated educational and research collaborations.
Thanos Papanicolaou Joins CEE as Goodrich Chair of Excellence

Dr. Thanos Papanicolaou has joined the Department of Civil and Environmental Engineering (CEE) as the Goodrich Chair of Excellence and a tenured full professor. Prior to joining the department, Papanicolaou was a Donald E. Bently Faculty Fellow of Engineering and professor of civil and environmental engineering at the University of Iowa, and was affiliated with IHR Hydrosystems & Engineering. Papanicolaou is also a research scientist for the Center for Global and Regional Environmental Research & Policy Center. Prior to his tenure at the University of Iowa, Papanicolaou was an assistant professor and associate professor of civil and environmental engineering at Washington State University. Papanicolaou is a member of numerous professional associations and scientific societies, serves on several editorial boards, is a technical advisor of several federal agencies, and was a 2008 National Civil Engineering Prize Award recipient.

He is a distinguished member of the Iowa Academy and has co-authored more than 120 refereed papers, numerous reports, and almost three hundred conference proceedings. According to Google Scholar, citations of his papers reaches an impressive total of one thousand and twenty-four since 2008 alone. His papers have been cited six hundred and seventeen times.

Papanicolaou is the new chief editor of the Journal of Hydraulic Engineering American Society of Civil Engineers (ASCE) associate editor for the Water Resources Research (American Geophysical Union) and the International Journal of Sediment Research.

Papanicolaou earned a BS degree in environmental engineering from Aristotle University of Thessaloniki, Greece, and a MS degree in civil and environmental engineering from Virginia Polytechnic Institute and State University. He also received fellowships from the Onassis Foundation and NATO.

Papanicolaou’s research focuses on sediments and soil, and how they interact with flow and precipitation. He and his research group develop methods to predict the rate of transport and deposition of sediments and soil and also trace the sediment source.

UT College of Engineering AIChe Student Chapter Returned from the 2013 AIChe National Conference in San Francisco with a List of Awards

A team of students from the UT College of Engineering AIChe Student Chapter returned from the 2013 AIChe National Conference in San Francisco with a list of awards to show for their attendance. The team was also featured in a set of YouTube videos related to the conference’s Chem-E-Car competition.

Kelli Byrne won the Praxair’s Scalpel Award for her essay submission. Her paper compared the emissions of greenhouse gases from hydrogen production through reforming of natural gas and electrolysis of water. Amanda Jones won first place in the Undergraduate Student Poster Session on Fuels, Petrochemicals, and Energy for her poster “Comparison of Membranes Performance for Vanadium Redox Flow Batteries.”

The Chem-E-Car Team competed with their car, the Tennessee Titan, in the 2013 National Chem-E-Car Competition and brought home the National SACHE Award: Inherent Safety in Design for the best application of the principles of chemical process safety to the Chem-E-Car competition.

The Chem-E-Car Team Members were captains Byrne and Jones, Adithi Amarnath, Kristen Barnes, Alex David Edralin, Megan Favell, Sam Kingego, Jordan Parkhurst, Kyle Saylor, Aston Thompson, and Christian Wilson.

The chapter’s faculty advisor is Dr. Gabriel Goenaga and the safety advisor is Dr. Douglas Aaron.

Some of the team members, and one of the Tennessee Titan’s competition runs, are shown in the official AIChe Chem-E-Car Competition video: tiny.utk.edu/80ukR

Engineering Students Explore Strongwell Corporation and Products

The company is an avid supporter of science, technology, engineering, and mathematics (STEM) development at the K-12 level. CEE students viewed all areas of the production process during the visit, including the daily operations, research and development, marketing, and sales functions that Strongwell engages in within the composites and manufacturing industry.

The visit showcased the company’s facilities and pultrusion technologies.

“This Tickle family was so, so hospitable,” said John Scobey, a former CEE Ambassador who earned his BS degree in civil engineering from UT in December 2013, and is now pursuing his MS degree at Georgia Tech. “The tour included an introduction to fiber reinforced plastic (FRP) and a tour of the pultrusion operations that started to finish. Not only did the ambassadors learn about the materials that are used to build the UT College of Engineering Building bridge, but we also learned about the emerging market of composite materials.”

Tours of different plant areas were led by key Strongwell staff members: David Ring, manager of personnel affairs; Meghan Carte, pricing manager; Melissa Harrison, fabrication estimator; Jeff Roberts, custom products manager at Bristol; and Te-Kai Shu, print and social media specialist.

Discussion during the visit covered topics such as thermoset versus thermoplastic composites, market and job growth, the potential role of 3D printing, raw materials, how closely concrete resembles FRP, and the high tensile strength of composites.

After the tour, the group enjoyed a lunch and presentation by Spike Tickle on Strongwell’s history and its trajectory for the future. John Tickle also shared insights from his years building the company.

COE students enjoyed the opportunity to interact with both the Tickle and Strongwell executives, asking questions about the future of the industry and possibilities it presents.

On the ride home to Knoxville, students also had the chance to talk with Dean Davis about the future of the College of Engineering, the Journey to the Top 25, challenges facing engineering students, and upcoming plans for new COE buildings.

Earlier in 2013, Dr. Stephanie TerMaath, an assistant professor in the Department of Civil and Environmental Engineering, and four of her students visited Strongwell specifically to learn about the advancement of composite materials versus traditional ones. Glen Barefoot, Strongwell’s vice president of marketing and business development, welcomed the group.

Students Jonathan Weigand, Heleney Rynaczek, Geoff Goodmiller, and Shane Morrison received an overview briefing on composite manufacturing and applications for the materials. They also got to see the manufacturing process and product samples.

The visit provided the students with the opportunity to discuss the advantages and disadvantages of materials and processes, and in the year TerMaath’s students had the chance to test those materials. In early December of 2013, her class gathered in a testing lab in the John D. Tickle Engineering Building to see how the products compare to more traditional materials.

The booming textile included two types of composite beams—square-tube and wide-flanged beams—and some steel and aluminum beams. Students were able to observe the localized damage in the composite beams versus the more global, plastic deformation of the metallic beams.

“Greatly appreciate the support from Strongwell that provided our students with invaluable hands-on experience with composite materials,” said TerMaath. “This interactive learning in the lab exemplified the distinct behavior of composites, and the manufacturing tour enabled our students to witness composite production.”
The Center for Transportation Research (CTR) has been a nationally and internationally recognized research entity at the University of Tennessee (UT). The group continues to be an outstanding research venue for innovative faculty, researchers and graduate students who are finding new ways to deal with the nation’s transportation problems.

For over forty years, the Center for Transportation Research (CTR) has been a national leader in the field of transportation research, education, and technology transfer. CTR benefits the region, state, and nation through its programs of research, education, technology transfer, workforce development, training, and community outreach. The center’s work touches the lives of many by improving safety on the nation’s highways; making it easier for citizens to engage in bicycle and pedestrian activities; influencing and informing transportation policy; understanding the attitudes citizens have toward transportation issues; educating drivers on safe practices; advising on regional economic impacts; training, and community outreach services and other community activities that meet diverse client travel needs. CTR researchers currently have several proposals under review.

CTR recently won a $5.5 million federal award that renews the center’s lead in the research consortium for the US DOT Federal Transit Administration Region 4, the Southeastern Transportation Center (STC). The two-year award from US DOT’s Research and Innovative Technology Administration is one of ten granted to regional university transportation centers. The money will advance US technology and expertise in the many modes and disciplines that comprise transportation through research, education, and technology transfer.

To learn more, visit ctr.utk.edu.

UT COLLEGE OF ENGINEERING
Enterprising students in the Department of Electrical Engineering and Computer Science (EECS) found themselves on the forefront of the national Lean In movement not too long after forming their own UT student group, Women in EECS.

LeanIn.Org, named after the New York Times best seller Lean In by Facebook chief operating officer Sheryl Sandberg, is a private foundation focused on encouraging women to pursue their ambitions. Lean In partnered with the Anita Borg Institute (ABI), a nonprofit organization dedicated to the advancement of women in computing, and sought out Women in EECS to create the first Lean In Circles sub-community.

Circles are small peer groups that meet regularly—in person or online—to learn and share information. For this first Circle, they specifically wanted to focus on women in technology. ABI contacted Denise Koessler, a doctoral candidate in the Department of Electrical Engineering and Computer Science. A manager at the institute knew about Koessler’s involvement in the recently formed UT group, and thought Women in EECS would be a good fit for their idea of Lean In Circles.

“Tpreneurs” students in the Department of Electrical Engineering and Computer Science (EECS) formed in 2013. Picture from left are faculty advisor Dr. Lynne Parker, Katie Schuman, Casey Miller, Sadika Amreen, and Zahra Mahoor.

The group’s past activities have included the “Bazinga!” building party in August, 2013, in the Min Kao Electrical Engineering and Computer Science Building; a game night; attendance at the Grace Hopper, Southeastern Women in Computing, and Alliance of Women Philanthropists Annual Giving Circle conferences; the mentorship program kickoff; study breaks during final exams; and an interview workshop.

Future plans include a Hack-a-thon Workshop, a partnership to provide the “Hour of Code” program to Vine Middle School in Knoxville; and more mentorship programs. The group holds meetings every two weeks to discuss professional development, networking, and communication practices within each member’s respective field.

Dr. Lynne Parker is the group’s faculty advisor. Koessler is the president and chairperson. Other founding members are Katie Schuman, Nicole Pennington, Meg Drouhard, Casey Miller, Sadika Amreen, and Zahra Mahoor.

College of Engineering alumni Dr. H.M. “Hash” Hashemian donated the seed funding to kick off Women in EECS through a college-endowed fund. The group’s formation.

Women in EECS Form Lean In Circle

Women in EECS members have remained busy since their group’s formation.

“We have a mentorship program underway; we are holding a course this semester which addresses the discussion points brought up in Lean In; and we are officially a part of Sheryl Sandberg’s next Lean In book,” said Koessler.

Sandberg’s Lean In for Graduates is scheduled for release in April 2014. Koessler was quoted in a January 2014 USA Today article about involvement in the book and Lean In Circles.

Women in Electrical Engineering and Computer Science (EECS) launched the first Lean In Circle at the Grace Hopper Conference in 2013. Picture from left are faculty advisor Dr. Lynne Parker, Katie Schuman, Casey Miller, Meg Drouhard, Nicole Pennington, Denise Koessler, Sadika Amreen, and Zahra Mahoor.

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As a student with an interest in computer science, I understand a great deal about problem solving. One of the greatest problems I have to face, as a student, is the issue of financial debt. The Anthony L. Vest Engineering Scholarship has been one of the most critical support beams that keep my tower of finances stable. Thanks to this scholarship, I have been able to not only maintain an acceptable GPA and complete the majority of my general classes, but I was also able to perform these tasks without having to take out any loans. I came to UT with the simple goal of learning more information and skills that will be useful for me throughout my life, and I can assuredly state that I am already accomplishing that goal. The Vest scholarship is proof that educational financial aid is important. I hope to continue to put this scholarship to good use and pursue my desire to learn even more here at UT.

Patrick Davis ’14  
Anthony L. Vest Scholarship Recipient

Engineering College hosts Student and Donor Appreciation Luncheon in October

The University of Tennessee College of Engineering hosted the Student and Donor Appreciation Luncheon at the Foundry on Thursday, October 31, 2013. The annual event provides an opportunity to recognize outstanding students and to thank the donors who have generously provided support for scholarships. This year, for the first time, both department and college level scholarship recipients and donors were invited to the luncheon.

Dr. Masood Parang welcomed one hundred and forty guests, including donors, students, and university and college administrators, and noted that the college was celebrating 175 years of engineering at the University of Tennessee in 2013. He then introduced a special video presentation that outlined the history of engineering at UT.

The student speaker for the event was Dave Seeman, a senior in the Department of Mechanical, Aerospace, and Biomedical Engineering. Seeman is a COE Ambassador and will graduate in May of 2014 as a National Academy of Engineering Grand Scholar with a focus in entrepreneurship.

Parang concluded the luncheon by thanking the attending donors and extending congratulations to the outstanding students at the event.

Patrick Davis ’14  
Anthony L. Vest Scholarship Recipient

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EDP Students Participate in High-Profile Undergraduate Research Projects

Dr. Stephanie TerMaath (left) is working with Melanie Smith (right) on a project studying the effectiveness of Fiber Reinforced Polymer composite patches.

For over forty years, the Engineering Diversity Programs Office (EDP) in the College of Engineering has provided mentoring, support, and academic resources to underrepresented students, during their engineering studies at UT. One of the most important components of the undergraduate experience is research. Currently, three Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP) students are participating in important projects with COE faculty. Melanie Smith, Michael Massey, and Cristian Orozco. The TLSAMP program is a National Science Foundation funded grant geared towards increasing the involvement of underrepresented students majoring in science, technology, engineering, and mathematics (STEM).

Smith is collaborating with Dr. Stephanie TerMaath, an assistant professor in the Department of Civil and Environmental Engineering, on a project studying the effectiveness of Fiber Reinforced Polymer (FRP) composite patches as a repair and reinforcement technique to improve the structural performance of metallic structure. FRP composite patches are adhesively bonded to damaged or undamaged metallic parts to increase load-carrying capacity and improve damage tolerance of the part. This method has been successfully applied to aircrafts as well as naval vessels. In civil engineering, composites are now being integrated into the nation’s infrastructure, including bridges.

Composite patches are ideal because they are easy to install, have a lesser degree even when they go perfectly, there are crucial critical thinking skills to explain why. This is different from a classroom setting, where we are told why and then we do the work. In the classroom, we use the scientific method and form a hypothesis, test, and compare our hypothesis to our results. This gives me a distinct advantage in that I have accredited experience in a research setting, proven my ability to apply my skills to various aspects of a professional engineering, and have a particular knowledge in a specialized field." Smith commented. "It has shown me how to apply civil engineering to real world situations. Working as a research assistant with Dr. TerMaath has given me the chance to learn about something I am interested in, at my own speed. This opportunity has given me an introduction into research. Also, working with Dr. Jenny Rutherford on distribution curves of the lamina properties has increased my coding skills. Through all of this I feel that I have a better understanding of the concentration that I want to test to the variety of options I have as a civil engineer."

"I first met Melanie over the summer when we were both working on the HIT'S program to encourage under-represented high school students to pursue STEM degrees," TerMaath said. "Melanie was one of the counselors, and I was immediately impressed with her maturity and enthusiasm. She has recently learned very advanced engineering methods, and is writing a sophisticated set of programs to perform complex probabilistic evaluation of material behavior. I am grateful for the efforts of the EDP Office to facilitate research collaboration between faculty and exceptional students such as Melanie.

Smith hopes to gain an in-depth understanding of structures and composite materials and methods. She hopes that what has gone into this project should increase efficiency with testing and analyzing the variability in the lamina properties and provide a better knowledge of the behavior of the composites. She hopes to continue this project through graduate school.

Massey's research project is being guided by Governor's Chair in Advanced Manufacturing Dr. Suresh Babu. Babu is part of a research team at ORNL focusing on developing the next generation of composite materials that would allow for the next leap in aerospace and energy applications. Massey's role is to work with Dr. Ryan Dehoff of ORNL on analyzing the effects of stress on the properties of metallic particles on the metal on the metal laser melting platform at the Manufacturing Demonstration Facility.

The overall goal of the project is to create a revolution in manufacturing by making variable additive manufacturing techniques the main player. This includes making large-scale, high quality products with minimal defects and flaws. Massey's research is focused on properly cataloging and minimizing the effects of orientation in this process, especially for metals. His personal goal is to use this research and knowledge as a launching platform for his own graduate and professional research.

"On one level, the project highlights theoretical knowledge learned in the classroom to real world lab situations," Massey said. "In addition, as this is a relatively unexplored area of engineering techniques, when things happen unexpectedly and to lesser degree even when they go perfectly, there are crucial critical thinking skills to explain why. This allows me to apply my skills to various aspects of a professional engineering, and have a particular knowledge in a specialized field.”

The ability to work in an interdisciplinary team really challenges students, as well as faculty like me,” Babu said. “These challenges lead to discoveries in making additive manufacturing real for aerospace and energy applications.”

Massey also works with two mentors at Oak Ridge National Laboratory (ORNL), Chief Duty and Ryan Dehoff.

"In some ways, the mentors are like tutors, in that they go over concepts needed for the paper work side of the research," Massey commented. "But more importantly, they make sure you understand the physical truth of what’s going on and do their best to make sure you have all the training you need. They also recommend extra readings and trainings that would help in this experience, making sure I get the most out of this experience.

In addition to their research projects, Smith and Massey both recently won honors at the TLSAMP undergraduate research conference, held February 27-28, 2014, at Vanderbilt University. Smith won second place in the engineering category of the poster competition for her entry titled “Probabilistic Analysis of Composite Lamina Properties.” Smith’s contribution in the competition was evaluated based on scientific merit, originality, and her ability to explain her research and respond to questions from conference participants and poster session judges. Massey won third place in the Oral Presentation Competition in the engineering category at the event. His research project was the Center for Ultra-wide-area Transmission Electric Networks (CURENT), and he was mentored by the professor and head of the Department of Electrical Engineering and Computer Science Leon Tolbert.

Orozco is working with CEE assistant professor Angelica Palominos in a NSF-sponsored project titled “Engineering a Mixable Polymeric Clay ‘Tunable’ Polymer-Clay Composites.” The purpose of this research is to investigate the morphological and mechanical properties of “tunable” clay-polymer composites. The results of this research will have a greater impact on the use of plastic-clay composite systems, ultimately leading to improved barrier systems, clay filters, and contaminant removal systems by using tunable engineering clay-polymers.

Orozco has personally been working on determining the plastic behavior of these materials by measuring the stress-strain response under different pH and ionic concentrations by measuring its swelling/shrinkage.

"I think understanding how a particular soil will behave gives civil engineers more freedom to design and maintain heavy steel and concrete structures on a given site," Orozco said. "Cristian’s participation has been invaluable to the progression of this project.” Palominos said. “The work that he is performing will lead to a greater impact into the behavior of tunable clay-polymer composites. I am very appreciative of the opportunity to include Cristian into this research.”

Orozco hopes this undergraduate research opportunity will prepare him for the challenges and environment that he will encounter in graduate school.

All three of these projects are examples of what the EDP program and staff have been instrumental to their success as engineering students.

"The EDP staff has been helping me since day one, starting with tutoring sessions for my introductory engineering courses to all the training you need. They also recommend extra readings and trainings that would help in this experience, making sure I get the most out of this experience.

The support from EDP has encouraged me to push myself further and excel within engineering," Smith added. "They offer a multitude of resources, including seminars, workshops, and a welcoming environment for students. I always feel that I can come to the office for advice about my academic goals, or my future career plans. I feel proud to be an under-represented student within my field and am grateful for the support that the EDP office has given to me.

"The EDP was crucial in my initial recruitment of this project,” Massey said. “However, they have been supporting me the whole time in my academic career, everything from tutoring to counseling on future plans. I’ve met other students with similar goals and backgrounds, been exposed to various programs, and opportunities to have the opportunity to help others thru mentoring and post-collegiate development programs. I think it is the staff of the EDP office that makes it such a welcoming place to get the support needed.

The EDP and the TLSAMP programs both encourage students to not only take advantage of internships and co-ops, but to explore other experiences, most importantly research,” said Erica Scholz, a program coordinator in the EDP office. "Undergraduate research offers a perspective of the student’s academic discipline that normally is not gained while taking their semester courses. We applaud our student researchers on the great work they are doing and the faculty members that continue to invest time and knowledge into our students."
The University of Tennessee and this college in particular are on quests to become the best we can be—better than ever before, and just as important we want the world to see our unstoppable progress. But journeys need funding and ideas need support. As the College of Engineering moves forward, we ask you to be part of our success. Alumni giving is one measure of the value our graduates place on their degree. Every gift, every year, is important. If you work for a company that matches gifts—there are fifteen thousand of them—you can multiply impact just by completing a form and turning it in with your gift.

The capacity for greatness is here and now in UT Engineering. It’s more than a possibility; it’s happening in our labs and classrooms. As you read the inspiring stories in this edition of the Tennessee Engineer, I invite you to join the journey and make a gift. An envelope is tucked conveniently in the center of this magazine, or call to find out about more ways to contribute to supporting engineering education at Tennessee.

Alumni Profile

University of Tennessee College of Engineering alumni Mark Cox (BS/ChE ’89) and Steve Crawford (BS/ChE ’87) have a lot in common. The two men were both born in Kingsport, Tennessee, grew up in that city, and even went to the same high school. Cox and Crawford have both been employed long-term with Eastman Chemical Company, which is located in Kingsport, and both currently hold professional positions with the company—Cox as Senior Vice President, Chief Manufacturing and Engineering Officer and Crawford as Senior Vice President and Chief Technology Officer. So it is no surprise that they share similar goals and visions for Eastman and for their careers.

Cox became interested in engineering as a youngster, assembling models of planes, trains, boats, and automobiles. In high school, he realized that he enjoyed chemistry and seeing how the earth’s elements come together to create new and useful things. After graduation, he decided to major in engineering at the University of Tennessee. “I knew I was interested in engineering and although I finally decided to major in chemical engineering, I found the breadth of engineering disciplines offered at UT very attractive,” Cox said. “Also, the university was close to home, and offered an attractive scholarship. I was confident I would receive a quality education that would, if I applied myself, provide the opportunity to pursue a meaningful career.”

After graduation, he began working at Eastman on a full-time basis and immediately had multiple assignments within manufacturing, research & development, and commercial business management arenas. He eventually decided to further his education by studying for a Master of Business Administration (MBA) degree. “During the early part of my career at Eastman, I had the opportunity to interface with several business organizations within the company and learned that I enjoyed working to create value at the intersection of science and commerce,” Cox commented. “As my commercial interest grew, the company and I realized that some business education would allow me to contribute more meaningfully to the company’s success.” Northwestern’s MBA program offered strong general business management preparation and was structured such that I could commute to Chicago on weekends to engage in the program.

Cox believes that his background in both business and engineering have allowed him to make unique contributions to Eastman, which is a technology-driven company that interfaces with global markets. In his current position, Cox oversees Eastman’s worldwide design and construction efforts along with Eastman’s global manufacturing operations. This includes responsibility for the safety of employees and the communities in which Eastman operates.

“As we spend a lot of time ensuring we design, build, and operate safely,” Cox said, “we also work hard to produce the highest, quality products in the most efficient manner possible.”

Crawford was initially interested in medicine, but he eventually chose chemical engineering for his undergraduate degree because it provided the chemistry curriculum as well as the engineering and math influences to provide a diverse set of choices going forward. He decided to attend UT after a campus visit.

“The culture and the size of the university aligned well with my preferences,” Crawford said. “UT’s chemical engineering program also had a very challenging curriculum, which was important to me.”

Crawford also started with Eastman as a co-op student and enjoyed the practical application of his studies. He wanted to work for the company full-time after graduating, initially hired into the technology division, but he quickly moved into manufacturing. He held several management positions in the Acetyl and Cellulose Esters Division before returning to technology in 2000. During his twenty-seven years at Eastman, Crawford was a part of several initiatives, including the Tritan™ launch, the emergence of the company’s Displays product line, and the expansion of the Asia Pacific Technology organization.

Crawford’s division is responsible for providing global technical support to Eastman’s manufacturing assets, focused on operational excellence, safety, reliability, and improved productivity. The group also has responsibility for new process and product development and for providing technical support to customers. The continued growth of the company is a priority.

“We employ fourteen thousand people around the world and serve customers in one hundred countries, so Eastman is a global company,” Crawford said. “Our impact on East Tennessee and the state as a whole is particularly substantial. Our international headquarters are in Kingsport, and we have six thousand five hundred permanent employees plus another three thousand five hundred contract employees here. That makes our Tennessee Operations Eastman’s largest site and makes us the biggest manufacturer in the state. In terms of sheer economic impact, Eastman’s Kingsport site is a state. In terms of sheer economic impact, Eastman’s Kingsport site has an estimated impact of $4.8-$5.6 billion in Tennessee.”

Both Cox and Crawford plan to continue their careers at Eastman for years to come.

“At Eastman, we want to be world class innovators,” Crawford commented. “We want to create value for our customers by delivering practical solutions for their needs both today and in the future. We aim to combine our unique insights and proprietary technologies to deliver new offerings that our customers value. Process and application innovation has always been at the core of our strength and culture.”

Cox and his wife, Karen, met at UT, where she received her bachelor’s degree in education in 1991. The couple has a son and daughter, and enjoy outdoor activities and exploring the national parks (including the Great Smoky Mountains). Crawford and his wife, Shawna, met while both were working at Eastman, and they have two sons. They both play golf and enjoy exercising together.

The Journey to the Top 25

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Department of Nuclear Engineering
Wins First UT-COE Halloween Spirit Challenge

Faculty and staff from the Department of Nuclear Engineering (NE) won the inaugural UT-COE Halloween Spirit Challenge on October 31, 2013. The challenge, also called the “Battle on the Bridge,” took place between NE and the occupants of the new John D. Tickle Building: the Department of Industrial Systems Engineering (ISE) and the Department of Civil and Environmental Engineering (CEE).

The NE team’s theme was “Pirates,” as they were attempting to “take over” the walkway bridge to the Tickle building. They were successful and were crowned “winners” by a team of COE staff judges, who presented them with a now-coveted Halloween trophy.

The three departmental winners of the costume contest were, from left, Dr. James Ostrowski from Department of Industrial and Systems Engineering as “The Man in the Yellow Hat,” along with his Curious George; Dr. Ondrej Chvala from the Department of Nuclear Engineering as a pirate; and Dr. Chris Cox from the Department of Civil and Environmental Engineering as a “minion” from the animated film Despicable Me. ISE’s costume theme was “Industrial and Systems Engineering taming the evil forces that affect process efficiency.”

College of Engineering
Names New Coordinator of Media Relations

David Goddard, formerly of the Knoxville News Sentinel, has joined the College of Engineering as coordinator of media relations, where he will focus on media placement for engineering research, faculty, students, and outreach.

Goddard reports to Dean Wayne Davis and serves on the dean’s leadership team. He is also a member of the Office of Media and Internal Relations team, which is part of the UT Office of Communications and Marketing.

An East Tennessee native, Goddard was most recently an online producer for the News Sentinel, where he spent seven years compiling, editing, designing, or working with the publication of articles for both print and online distribution. Prior to the News Sentinel, he worked as assistant news editor for the Daily Times in Maryville and as a reporter for the Cleveland Banner and the Morristown Citizen-Tribune.

Goddard graduated from UT in 1998 with a bachelor’s degree in geography. He is a three-time winner of the Society of Professional Journalists Award of Excellence as well as the 2012, 2011, and 2008 winner of the Tennessee Sports Writers Association’s statewide award for design. “David will help advance our strategic goals for growing the college and enhancing Tennessee’s workforce,” Davis said. “His background as a reporter and producer will help us share the many ways our college has an impact across the state, nation, and world.”

Goddard will work closely with the Engineering Communications Office and Engineering Development Office on advancing public relations goals with the college’s broad constituencies.
Events & Awards
UT Engineering Team Wins Awards at First Knoxville Holiday Construction

Jonathan Skinner, Javan Reynolds, Marvin Martinez, Aaron McClellan (student team leader), and Kyle Scobie (Messer representative, team corporate sponsor).

A team from the University of Tennessee College of Engineering led by Department of Civil and Environmental Engineering professor Dr. Jennifer Retherford was awarded for its unique sculpture at the first Knoxville Holiday Construction that took place at the Knoxville Convention Center November 23-December 3, 2013.

Five location teams of architects, engineers, and construction companies competed in the Knoxville Construction, a massive can sculpture art competition presented by Messer Construction Co. that benefited Second Harvest Food Bank of East Tennessee. Nationally, Construction events take place in one hundred and seventy cities and are one of the largest national contributors of food to local food banks. Qualifying structures from the Knoxville Construction event will be entered into the national Construction competition. Each Construction structure typically includes between nine hundred and three thousand five hundred cans, with only one-quarter inch plywood or Plexiglas between the rows of cans and one-quarter inch cardboard tubing for support.

Nine judges representing media, arts organizations, nutritionists, tourism organizations, and local food production companies convened to select the winners of competition and scored each structure in four categories. A “People’s Choice Award” was decided through a public vote on the Knoxville Construction Facebook page.

The College of Engineering team won “Best Meal” and “Honorable Mention” for its sculpture “Cathcracker.” The sculpture included two large nutcrackers with a moving mouth and motion-sensor sound effect built with cans to prepare a balanced meal of chilli with potatoes and fruit dessert. The team was selected for creating the most nutritious meal to help fight hunger in East Tennessee and for earning the second-most points among the jurors. The team was also awarded the coveted “People’s Choice Award” for receiving the most votes in an online poll.

The Knoxville Holiday Construction donated more than ten thousand cans of food to help Second Harvest Food Bank of East Tennessee. Second Harvest targets the working poor-who are employed but might not receive benefits or earn sufficient wages. According to Second Harvest, one in six Tennesseans lives in poverty and has difficulty meeting basic needs. The charity secures and distributes more than 16 million pounds of food and serves one hundred and fifty-eight thousand people each month. Second Harvest targets the working poor—those who are employed but might not receive benefits or earn sufficient wages. According to Second Harvest, one in six Tennesseans lives in poverty and has difficulty meeting basic needs. The charity secures and distributes more than 16 million pounds of food and serves one hundred and fifty-eight thousand people each month.

Cavanaugh Mims (BS/ME ’10) COE alumnus and president of the UT Alumni Board of Directors, was the keynote speaker for the 2013 College of Engineering Engineers Day.

On October 24, 2013, almost one thousand students from forty-two different high schools (and some home-schooled students) traveled to UT’s Knoxville campus to explore and learn about engineering through discussions, project demonstrations, and exhibits prepared by UT engineering student clubs and societies. Participants experienced an overview of the different engineering disciplines and saw examples of how an engineer’s work impacts daily life.

The keynote speaker for the day was COE alumnus Cavanaugh Mims (BS/ME ’10) Mims enjoyed a long career with the Department of Energy and the Tennessee Valley Authority before founding his own company, Visionary Solutions, LLC. He is also the current president of the UT Alumni Board of Directors. The College of Engineering Engineers Day features six competitions for visiting students. The Quiz Bowl, presented by Tau Beta Pi (the National Engineering Honor Society), pits teams of four against each other in three rounds of multiple-choice questions. A team from Farragut High School in Knox County won the 2013 Quiz Bowl. The Egg-Drop Competition is sponsored by the Department of Materials Science and Engineering (MSE), the Materials Advantage student chapter and student chapter of the Society of Plastic Engineers. This contest challenges students to design a device that will protect an egg from breaking when dropped. The winning team for 2013 was from East High School in Memphis.

The UT Student Chapter of the American Society of Civil Engineers (ASCE) sponsors the High School Balsa Wood Bridge Competition, which tests the structural efficiency of miniature bridges constructed by participants. Students from Hampton High School in Knox County won first place this year with the Balsa Bridge Competition. The winning team for 2013 was from East High School in Memphis.

The Food Battery Competition, sponsored by the UT Materials Research Society (MRS), provides a lesson in emissions-free transportation by challenging students to design a battery from edible or drinkable materials. First place went to a student at Pigeon Forge High School.

The Radiation Shielding Competition, sponsored by the American Nuclear Society (ANS), challenges students to construct a shield that blocks radiation from an intended target. This year’s winners attend the LANL STEM Academy in Knoxville.

The Society of Hispanic Professional Engineers (SHPE) at UT coordinated the very first Solar/Fuel Cell Car Race for the 2013 Engineers Day. Teams assembled small cars, energized solar fuel cells, and competed in a twenty-two foot race in Ferris Hall. Students from Pigeon Forge High School in Sevier County were the winners with their entry.

More information on the competitions and Engineers Day can be found at www.engr.utk.edu/ed or by calling the Engineering Academic and Student Affairs office at 865-974-2454.

The next Engineers Day will be held in October 23, 2014.

COE Welcomes High School Students to Engineers Day 2013

Engineers Day has been a UT College of Engineering tradition since 1992, when engineering students were enlisted to help construct a road to Estakerekia Hall. Now, each October, undergraduate engineering classes are dismissed for one day to allow university students and faculty to spend time interacting with hundreds of potential engineering students from high schools across the region.

Students compete to design and build an effective battery in the Food Battery Competition during the 2013 Engineers Day.

High-school students test their engineering skills in the Egg Drop Competition during the 2013 Engineers Day.

Students attempt to build the strongest structure in the Balsa Wood Bridge Competition during the 2013 Engineers Day.
COE Hosts Successful Homecoming 2013 Alumni Event

The University of Tennessee College of Engineering hosted its annual Alumni BBQ on the Hill on Saturday, November 9, 2013. The event, held three hours prior to kickoff of the UT-Auburn game and catered by Dade Edid BBq, included two hundred and thirty-nine faculty, staff, students, alumni, and special guests.

The Homecoming celebration featured exhibits, demonstrations, reunions with former classmates and faculty, and games for both adults and children. Student exhibitors included the American Society for Civil Engineers, who showed off steel bridge and concrete canoe projects; the American Society for Mechanical Engineers, who demonstrated the chem-ecar, the Society of Women Engineers, the Engineering Professional Practice Office, the Department Nuclear Engineering, the Engineering Ambassadors, and the Engineering Fundamentals Program.

Guests also enjoyed tours of the new Min H. Kao Electrical Engineering and Computer Science Building and the John D. Tickle Electrical Engineering Building. Special guests included COE Dean Wayne Davis and wife Sylvia; Associate Dean for Research and Technology Bill Dunn; and ISE Department Head John Kobza, as well as many other engineering faculty, both current and retired.

Although the Tennessee Volunteers were defeated by the Auburn Tigers at the game following the event (Auburn went on to play against Florida State in the national BCS championship), the event remained high and everyone enjoyed the beautiful fall weather and the opportunity to demonstrate the Vol spirit.

COE Hosts Successful Alumni Event

Enjoying the College of Engineering Homecoming 2013 event are left to right: Linda Whaley, Lee Dodds, John Hanula; and Kevin Colvett.

Dr. David W. Merryman

Dr. David Merryman II (BS/ES '01, MS/ES '02), an assistant professor in the Biomedical Engineering, Pharmacology, Medicine, and Pediatrics Department at Vanderbilt University, has been selected by the American Society of Mechanical Engineers (ASME) to receive the Y.C. Fung Young Investigator Award at the 2014 seventh World Congress of Biomechanics Conference in Boston, Massachusetts, in July.

Merryman received a BS degree in 2001 and a MS degree in 2002 from the University of Tennessee, both in engineering science.

The award is presented for singular achievements in the study of heart valve mechanobiology in the teaching of biomechanics, and in recognition of outstanding services to the engineering profession, including the ASME Bioengineering Division. For more information, visit www.asm.org/about-asm/ get-involved/honor-awards/achievement-awards/y-c-fung- young-investigator-award.

COE Alum Receives Fung Young Investigator Award

Dr. Dewey Hodges (BS/CE '69), a professor at the Georgia Institute of Technology, recently received one national engineering organization award and is nominated for a second.

Hodges received the American Institute of Aeronautics and Astronautics (AIAA) Award for Aerelasticity in 2013. The Ashby Award for Aerelasticity recognizes outstanding contributions to the understanding and application of aerelastic phenomena. It commemorates the accomplishments of Professor Holt Ashley, who dedicated his professional life to the advancement of aero space sciences and engineering and had a profound impact on the fields of aerelasticity, unsteady aerodynamics, aerorheology, and multidisciplinary optimization. Hodges was recognized for lasting contributions to analysis methodology for aerelasticity of rotorcraft and high-aspect-ratio wings, and development of educational materials for undergraduate study of aerelasticity. The award consisted of an engraved medal, a certificate of citation, a rosetta pin, and an honorarium.

Hodges will also be recognized by AHS international at the 2014 Alexander A. Nikolsky Honorary Lectureship. The lecture will be delivered at the 70th AHS Annual Forum and Technology Display in Montréal, Québec on Tuesday, May 20, 2014. The Nikolsky Lecture is awarded to “an individual who has applied his or her technical expertise in the study of the analysis and control of aeroelastic phenomena. Hodges was cited for his seminal contributions to analysis methodology for aerelasticity of rotorcraft and high-aspect-ratio wings, and development of educational materials for undergraduate study of aerelasticity. The award consisted of an engraved medal, a certificate of citation, a rosetta pin, and an honorarium. Hodges has been an international leader in the development of the analytical and computational methods for analysis of structural mechanics, structural dynamics, and aerelasticity. 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Hodges was the first to develop the computational methods for analysis of structur
Memorials

Staff

Angela Miller, of the College of Engineering Advising Services staff, passed away suddenly on Monday, December 30, 2013. She was a graduate of Powell High School in Knoxville, and also a 2009 graduate of the University of Tennessee. Miller joined the advising office in 2011 and was a recipient of the Outstanding Staff Award in 2013.

Faculty

Dr. John Milton Bailey, Jr., of Knoxville, passed away October 14, 2013. Bailey grew up in his home in the Shannondale Retirement Community. Bailey was a professor emeritus in the Department of Electrical Engineering and Computer Science and an adjunct participant at the Oak Ridge National Laboratory (ORNL). In 1994, he received the Nathan W. Dougherty Award for Distinguished Service in the Engineering Profession, the most prestigious award given by the College of Engineering at the University of Tennessee. Bailey held five patents in the field of electric motor design and control.

Dr. Joseph Perona, former head of the Department of Chemical and Biomolecular Engineering (CBE), died on December 9, 2013, at his home in Brevard, North Carolina. Born May 28, 1930, Perona was a professor of chemical engineering at UT from 1963 until his retirement in 1996, and served as head of the CBE from 1994 until 1996. While in Knoxville, Perona was a member of the Smoky Mountain Hiking Club, after retiring to Cashiers, the Nantahala Hiking Club, and after moving to College Walk Retirement Community in Brevard, the Pisgah Hikers. For six summers while in his 70s, he made hiking trips in the French and Italian Alps, the last when he was 79. He was a member of Tau Beta Pi and Pi Tau Sigma Engineering Fraternities and Phi Sigma Kappa social fraternity. He was the author of numerous technical papers. Wilson was presented an Outstanding Engineering Alumnus Award by UT.

Dr. Clement “Clem” Wilson (BS/ME ’56, MS/ME ’72, PhD ’85) died on January 25, 2014. He was a UT professor emeritus in the Department of Mechanical and Aerospace Engineering. Wilson received his BS and MS from UT and his PhD in Engineering from Purdue University. He worked for IBM in engineering management for twenty-six years. While with IBM in Boulder, Colorado, he was a member of the College of Engineering board of Advisors. After retiring from IBM, Wilson returned to UT to teach engineering. He was a member of Tau Beta Pi and Pi Tau Sigma Engineering Fraternities and Phi Sigma Kappa social fraternity. He was the author of numerous technical papers. Wilson was presented an Outstanding Engineering Alumnus Award by UT.

Students

US Air Force Captain Christopher Stover died on January 7, 2014, in a helicopter accident while serving his country off the coast of England. He was a Master’s Degree candidate in the Department of Nuclear Engineering from the fall of 2012 through the fall of 2013. Stover was a native of Vancouver, Washington.

Dr. James W. Blackburn (PhD/ChemE ’88) died on February 21, 2013. He was a resident of Carbondale, Illinois.

Dr. Andrew Spickard, of Knoxville, passed away suddenly on Monday, December 30, 2013, at Blount Memorial Hospital in Maryville. Born July 22, 1921, he was a graduate of Tennessee Military Institute and the University of Washington in Seattle, where he studied engineering and business administration. He served in the Pacific Theatre as a pilot in World War II. Spickard retired from Alcoa in 1978 following a thirty-five-year-career in management positions in sales, real estate, and subsidiary companies. At the time of his retirement he was president of Alcoa Construction Systems Inc. Following his Alcoa service, he

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The University of Tennessee is an EEO/AA/Title VI/Title IX/Section 504/ADA/ADEA institution in the provision of its education and employment programs and services. All qualified applicants will receive equal consideration for employment without regard to race, color, national origin, religion, sex, pregnancy, marital status, sexual orientation, gender identity, age, physical or mental disability, or covered veteran status.

E01-1301-013-027-14 3/14

Calendar

**Spring 2014**
- Classes Begin: Jan 8
- 2nd Session Begins: Feb 27
- Spring Break: Mar 17-21
- Classes End: Apr 25
- Study Day: Apr 28
- Exams: Apr 29-30, May 1-2, 5-6
- Graduate Hooding: May 8
- Commencement: May 7-10
- Official Graduation Date: May 10

**Fall 2014**
- Classes Begin: Aug 20
- Labor Day: Sept 1
- Fall Break: Oct 16-17
- Classes End: Dec 2
- Study Day: Dec 3
- Exam: Dec 4-5, 8-11
- Graduate Hooding: Dec 12
- Commencement: Dec 13
- Official Graduation Date: Dec 13

Contact Information

- Senior Administration
- Dr. Wayne Davis, Dean of Engineering
- Dr. Bill Dunne, Associate Dean for Research & Technology
- Dr. Veerle Keppens, Associate Dean for Faculty Affairs
- Dr. Masood Parang, Associate Dean for Academic & Student Affairs

- Departments
  - Chemical & Biomolecular: 974-2421
  - Civil & Environmental: 974-2503
  - Electrical & Computer Science: 974-3461
  - Industrial & Information: 974-3333
  - Materials Science: 974-5336
  - Mechanical, Aerospace & Biomedical: 974-2093
  - Nuclear: 974-2525

- Communications: 974-0533
- Dean’s Office: 974-5321
- Development: 974-2779
- Engineering Advising Services: 974-4008
- Engineering Diversity Programs: 974-1931
- Engineering Fundamentals: 974-9890
- Engineering Professional Practice: 974-5323
- Engineering Research: 974-8360
- Engineering Student Affairs: 974-2454
- Finance & Admin. Affairs: 974-5279
- Research Centers: 974-0816
- Materials Processing: 974-9625
- Scintillation Materials: 974-0267
- Transportation Research: 974-5255
- Intelligent Systems and Machine Learning: 974-5803
- CURENT: 974-9720
- Innovative Computing Laboratory: 974-8295

Big Orange Friday

*Show us your orange!*

Do you want to show your love for the University of Tennessee? Participate in Big Orange Friday! Every Friday, UT alums are encouraged to wear orange. The color unites alumni and fans alike, and provides an opportunity to connect with one another and tell our Volunteer stories to the world.

Wear your colors. Tell your story.

#BigOrangeFriday

Future Vols

Do you know a high school or college transfer student the University of Tennessee should contact with admission information? If so, we want to introduce them to our great university.

Refer a Vol at [futurevols.utk.edu](http://futurevols.utk.edu)

The University of Tennessee

**College of Engineering**