

TENNESSEE

FALL 2015

ENGINEER

THE UNIVERSITY OF TENNESSEE, KNOXVILLE • COLLEGE OF ENGINEERING

Aerospace Engineering
Student Joshua Dobbs
Leads the University of
Tennessee Volunteer
Football Team to an
Exciting New Era



UT Vols
quarterback
and
engineering
student
Joshua Dobbs



THE UNIVERSITY OF
TENNESSEE
KNOXVILLE

COLLEGE OF ENGINEERING

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Dean's Message

Welcome to our Fall 2015 *Tennessee Engineer*! There are many changes in the "landscape" that are occurring in and around the College of Engineering. As I sit at my desk drafting my message, the noise of trucks, saws, hammers, bobcats, and construction are all about me. They are coming from the general "quad" area outside of Perkins/Ferris/Dougherty Halls as well as from within Perkins Hall. Hopefully, by the time you read this, it will have quieted down. For the first time in many years, the "quad" area—where we celebrate Engineers Day, Homecoming BBQs, Co-op activities, etc., will be completely re-landscaped with new sidewalks, landscaping, tables/seats. This includes Estabrook Drive from the Tickle Building down to Cumberland Avenue. These are occurring simultaneously with significant changes to Cumberland Avenue to make it more pedestrian friendly. While these changes are only cosmetic, they create a more inviting outdoor environment for students, faculty, staff, and our many alumni and friends who visit our part of campus! Substantial renovations have occurred in Dougherty Hall with new research/teaching laboratories on many floors and the new Eastman Unit Operations Laboratory, which opened to students for the first time this fall. A part of Perkins Hall has also been renovated and our freshman Honors and Jerry E. Stoneking engage™ Programs have been relocated to Perkins Hall effective this semester with a record number of freshmen (approximately 780). It will be wall to wall people in Perkins for the next several years—but well worth the inconvenience. This is in preparation for the new engineering complex that will be built at the current location of Pasqua and Estabrook Halls. The new complex will house our freshman programs and the Department of Nuclear Engineering.

The student and faculty landscape is also changing. We are striving to increase the diversity of both our students and faculty. In the summer of 2015, as a result of support from our faculty and corporations (Boeing, Eastman, and Volkswagen) and the efforts of our Office of Diversity, we were able to provide six different weeks of summer pre-college programs (MITES7,8; eVOL9,10; and HITES11,12) to rising seventh through twelfth graders. A record number of two hundred and nine students participated.

This fall's freshman class has a record 22% female students, and we now have twenty-three female faculty. While we, like many other colleges of engineering in the country, have a long way to go to provide a truly diverse student body and faculty, we are making measureable progress in these areas, and we are implementing programs at both the faculty and student levels that will facilitate our becoming an increasingly diverse college.

This issue of the *Tennessee Engineer* also contains a listing of our alumni and friends who have donated funds to the college through various scholarships, professorships, endowments, and enrichment funds this past year. We value and express our sincere appreciation to each of you and we encourage you to be proud of your alma mater, to be involved in helping to make our college a better college and to be invested in our future.

Wayne T. Davis
Wayne T. Davis Endowed Chair in Engineering

Aerospace Engineering Student Joshua Dobbs Leads UT Vols



Engineering student Joshua Dobbs is the UT Vols starting quarterback for the fall 2015 season.

UT quarterback Robert Joshua “Josh” Dobbs created a sensation among Tennessee Volunteer football fans when he took over from an injured Justin Worley and, with incredible poise, led an amazing and improbable rally in the final five minutes to overtake South Carolina in the game at Columbia last season. Dobbs then led the Tennessee team to win its first bowl game since the 2008 Outback Bowl, dominating Iowa, 45-28, in the 70th TaxSlayer Bowl on January 2, 2015, at EverBank Field in Jacksonville, Florida. The victory gave the Vols their first winning season since 2009, and Tennessee ended up with a 7-6 record in Butch Jones’ second season on Rocky Top. This season, Dobbs is considered one of the top quarterbacks in the Southeastern Conference.

“Last season was a great experience. I was really happy to have the opportunity to get on the field to help the team and excited to see our hard work pay off,” Dobbs said. “As a team last year, we set a goal to make it to the post season and to win our bowl game, which we accomplished by winning the 2015 TaxSlayer Bowl. We finished the season 4-1, and won Tennessee’s first bowl game since 2008. That win has given our team a lot of momentum throughout the offseason. We are excited about the positive impact it has had for our program and especially our fans, and we are building off that success for the 2015 season.”

Coming off a sophomore campaign in which he was presented the 2015 TaxSlayer Bowl Scholar Athlete Award and named the MVP of the bowl game, Dobbs is now listed as a preseason candidate for five major college football awards. He has been named to the Davey O’Brien National Quarterback Award® Watch List (recognizing the nation’s best college quarterback), the Weurffel Trophy Watch List (college football’s premier award for community service), the Maxwell Award Watch List (America’s college player of the year), the Allstate Sugar Bowl Watch List for the Manning Award (honoring the college football accomplishments of Archie, Peyton, and Eli Manning) and as a nominee for the Allstate AFCA Good Works Team® (recognizing superior commitment to community service).

Josh Dobbs also happens to be majoring in aerospace engineering at the UT College of Engineering, a demanding and complex curriculum that would daunt many students, not to mention one of the university’s most prominent and busy student athletes.

Dobbs, however, takes it all in stride, and the Chancellor’s Honors student manages to achieve both on and off the field.

“Juggling the demands of the curriculum for my aerospace engineering major and business administration minor, Honors courses, and football responsibilities isn’t easy,” Dobbs said. “It takes a lot of proactive planning and efficient time management. Thankfully, I have a great relationship with my

Thornton Center academic advisor, Brian Russell, who helps tremendously with my schedule. Before I even got on campus, we started working on my academic schedule to lay out a four-year plan, mapping every class that I would take. We wanted to identify any major conflicts with classes overlapping or time conflicts. He and I meet regularly, at least once a week, to evaluate the plan and address any concerns.”

A typical day for Dobbs begins after breakfast with an 8 or 9 am class and he has back-to-back classes until 2 pm. He usually grabs a quick lunch and then starts football activities from 2:30 p.m. to about 7 p.m. depending on the day. After dinner, he heads to the Thornton Center to meet with tutors or to the library to do homework/assignments. Dobbs studies until about 10:30 p.m. on a good night or midnight to 1:00 a.m. on the tough ones. He gets a snack and then goes to his apartment to get some sleep and prepare for the next day. He plans his day by the hour, but once it starts, it’s pretty much non-stop.

“Luckily, I’m used to the pace,” Dobbs said. “I grew up juggling academics, school activities, and athletics. Throughout high school, my class schedule was loaded with AP, honors, and dual-enrollment college classes. I played in the band, was on the student council, served in honors and community service programs, and played football, baseball, and a little basketball. So, managing my time effectively has become a habit.”

Dobbs is the son of Robert and Stephanie Dobbs, and attended high school at Alpharetta High School in Georgia. He praises his parents and cites them as “a perfect balance of success, integrity, self-determination, and the pursuit of excellence.” Mr. and Mrs. Dobbs raised Josh in a strongly Christian home, which helps ground him in the principles to deal with the demands of his life.

Dobbs was an All-State, All-Region, and All-Area quarterback and was named “Player of the Year” for both his region and county. In February of 2013, Dobbs was awarded the prestigious Franklin D. Watkins award, presented annually to the nation’s top African-American athletes who exemplify excellence in academics, leadership, community service, and athletics. In addition to graduating with thirteen years of perfect attendance, Dobbs was the Alpharetta High School Class of 2013 recipient of the Atlanta Journal Constitution (AJC) Cup. As the state of Georgia highest award for a member of the senior class, the AJC Cup is presented annually to the senior selected by the high school administrators and teachers for his/her demonstrated excellence in academics, arts, athletics, community service, and leadership.

Prior to signing with UT, Dobbs had previously committed to Arizona State University. He initially selected Arizona State because of its aerospace engineering program, but he changed his mind when Coach Butch Jones contacted him about an open spot for him at UT.

“I knew I wanted to major in aerospace engineering from a very early age,” Dobbs commented. “So, as I started the college search, my first criteria was to identify colleges that not only offered a general engineering undergraduate degree, but more specifically had an aerospace engineering program at the undergraduate level. The University of Tennessee, which has the partnership with the UT Space Institute in Tullahoma and a long tradition of training engineering professionals, certainly fell into that category. I also wanted to be in the honors program and was impressed with the Chancellor’s Honors Program. And athletically, I wanted to play football at the most competitive level possible, which is the trademark of football in the SEC. When Coach Jones and his staff came to Tennessee, they started recruiting me. I came up to Knoxville for an official visit and had an opportunity to meet with Professor Robert Bond and several engineering students. I was able to spend a good bit of time with them, touring the engineering buildings and discussing the curriculum. I was really impressed with the program. I also knew that being in Coach Jones’ first recruiting class at Tennessee that I could be a part of the class to turn the program around. So, when I looked at the academic opportunities and UT’s rich football history, I knew I could get the best of both worlds and felt that it was a great fit for me.”

This has been a very busy summer for Dobbs. In May, he interned in West Palm Beach, Florida, at United Technologies-Pratt & Whitney, a global aerospace manufacturer, in their Systems Engineering & Validation Division. He worked with a test team on the new F135 propulsion system, which is the engine of choice for the military’s F-35 Lightning II, fifth generation, advanced, single-engine tactical aircraft. At the end of the assignment, he returned to Knoxville in June to start summer school and summer workouts with his team.

July marked the busiest period of his summer schedule. Three years ago as rising high school senior, Dobbs traveled to the west coast to compete in the Elite 11 Quarterback Camp, the nation’s premier quarterback competition for high school quarterbacks across the country. During that competition, he was select as one of the eleven members of the camp’s 2012 Class of QBs. Maintaining close relationships over the years with the Elite eleven coaches, he returned to the camp, held at Nike’s headquarters in Beaverton, Oregon, as an invited college counselor to mentor the next group of elite high school QBs. Three days and a red-eye flight later and a quick stop thru Knoxville to take an Honors Systems exam, he was off to Thibodaux, Louisiana, to serve as a college counselor at the annual Manning Passing Academy, where he had also previously camped as a young rising ninth grader. The academy is led by the patriarch of the Manning Family, Archie, and his two famous quarterback sons, Peyton and Eli. Peyton Manning, a UT legend and one of Dobbs’ athletic role models, has shown serious interest in Dobbs and has supported him with advice and encouragement for the fall football season. Peyton, who makes regular visits to campus, was in attendance at Tennessee’s most recent Spring Orange & White Game when Dobbs was the first to be recognized for an award in his namesake, the inaugural Peyton Manning Leadership Award.

Staying ever on the move, Dobbs returned to Knoxville just in time to catch a plane with UT Head Coach Butch Jones and teammates Curt Maggitt and Cameron Sutton, as one of three student athletes representing the Volunteer football team at the annual Southeastern Conference Media Day in Birmingham, Alabama. He was selected to the Pre-Season All SEC Team and featured in a group of student-athletes from each university, in a new initiative called “Beyond The Field: Stories of the SEC” for his academic endeavors and Pratt & Whitney internship.

Despite an exciting summer, Dobbs also has a lot to look forward to this fall.

“I am definitely looking forward to getting back on the field and competing. The team is extremely excited and ready to get back into Neyland Stadium. We have worked hard this off season and have high expectations for our season,” Dobbs said. “I am also excited about several of my AE courses this year. I’m really looking forward to the Airplane Performance course. After my internship this past summer with Pratt and Whitney, it’s going to be great studying concepts that I saw firsthand while at their facility.”

He advises fellow and potential engineering students to aim high.

“I would tell young students who are considering careers in engineering that it is never too early to challenge themselves. Challenge yourself in the classroom and don’t shy away from taking the tough classes in middle and high school; do more than the minimum. I know that I am extremely grateful that my parents emphasized the importance of education and pushed me to take challenging classes throughout primary, middle, and high schools. It has paid huge dividends for me in my college preparation. I would also tell them, to never let anyone tell you that you can’t do something. No matter the obstacles, never lose your faith or your hope! Don’t let someone else’s judgment define your personal goals. Put in the extra work now and you will reap the benefits down the road.”

The UT Volunteers started the football season on Saturday, September 5, at 4:00 p.m. EST against Bowling Green in Nashville, Tennessee.

*Article written by Kim Cowart, Communications Director, UT College of Engineering
Kathy Williams, Communications Specialist II in the Department of Mechanical, Aerospace, and Biomedical Engineering, contributed to this article.*

Dean Davis Joins Editorial Board of Top Engineering Journal



COE Dean Wayne Davis

Dr. Wayne Davis, dean of the College of Engineering, recently received a high honor when the Chinese Academy of Engineering extended an invitation to him to join the editorial review board of its publication *Engineering*.

Supported and encouraged by the United Nations Educational, Scientific and Cultural Organization, scholars and national engineering societies from across the globe, and several science-oriented publishers, *Engineering* is a premier science-based journal looking at meeting humanity's challenges in the coming years.

The format is one in which articles, research, and surveys help facilitate discussion on topics

ranging from energy to infrastructure. In his role, Davis will be on the team reviews analyzing submissions for relevancy and accuracy, something he takes seriously.

"The Chinese Academy of Engineering is one of the premier engineering groups in the world," said Davis. "This publication can serve as a way to bring together some of the leading minds in science and engineering research and get us focused on solving some of the big issues of the day. This is a tremendous honor."

Davis came to the attention of the academy when he spoke at the 2014 International Conference on Engineering Science and Technology in Beijing. Conference topics included China's challenge to improve air and water quality, areas of Davis's expertise.

As part of that visit, he heard an address from China's president Xi Jinping, met with engineers from around the world, and delivered an address entitled "Control of Sulfur Emissions from Fossil Fuels—Successes and Challenges."

Davis had additional personal contact with the academy when students from UT took part in the Global Grand Challenges Summit in September in Beijing.

COE Names New Governor's Chair



Dr. Uday Vaidya

The UT College of Engineering is pleased to announce that Dr. Uday Vaidya has been appointed as the Governor's Chair in Advanced Composites Manufacturing, effective June 1, 2015.

Vaidya is the fourteenth UT-Oak Ridge National Laboratory (ORNL) Governor's Chair and the seventh devoted to some aspect of advanced manufacturing, underscoring the vital importance of this research to both the university and the national lab.

Vaidya will also serve as a professor in College of Engineering's Department of Mechanical, Aerospace, and Biomedical Engineering (MABE). He earned his doctorate at Auburn

University in 1993, his masters at Shivaji University in Kolhapur, India, in 1987 and his bachelors at Karnataka University in Dharwad, India, in 1985, all in mechanical engineering.

In his role as Governor's Chair in Advanced Composites Manufacturing, Vaidya will focus on the design, modeling, and manufacturing of advanced materials such as carbon fiber, utilizing research and capabilities of UT and Oak Ridge National Laboratory (ORNL).

Vaidya will also play a role in the UT-led Institute for Advanced Composites Manufacturing Innovation (IACMI), announced by President Obama during his visit to East Tennessee in January 2015.

In association with that \$259 million venture, Vaidya hopes to find ways to produce such materials at a larger scale and an increased rate of production in an effort to lower costs and improve the distribution of their use. Advanced manufacturing is important to the economy of the United States and its position as a global leader in the automotive, energy, and aerospace industries, which are trending toward the use of lightweight yet durable carbon fiber construction. Advanced composites are already experiencing exponential growth both in the US and around the world.

Vaidya came to UT from the University of Alabama-Birmingham, where he taught classes ranging from engineering design and materials science to mechanical behavior and composites.

A member of several national and international societies, Vaidya has won grants from organizations including the National Science Foundation, the Department of Energy, and the Army Research Laboratory.

Outside of the classroom and lab, Vaidya is actively involved in engaging and encouraging underrepresented students in Science, Technology, Engineering, and Math (STEM) fields, as well as serving on several councils and committees related to students, manufacturing and research.

For more information on the Governor's Chair program, visit <http://govchairs.utk.edu>

For more on IACMI, visit <http://iacmi.org>.



Dr. William Dunne

Associate Dean Dunne Appointed to ASEE Engineering Research Council

Associate Dean for Research and Technology Dr. William Dunne was recently appointed to the American Society for Engineering Education (ASEE) Engineering Research Council (ERC). The appointment was confirmed at the ASEE annual meeting in Seattle, Washington on June 15, 2015. Dunne will serve in the role for three years.



Pharr Named UT Macebearer, COE Faculty Recognized at 2015 Chancellor's Honors Banquet



Dr. George Pharr (left) receives the UT mace from Chancellor Jimmy G. Cheek (right), as he is named the 2015 University of Tennessee Macebearer.

Chancellor Jimmy G. Cheek celebrated faculty, staff, and students for their accomplishments and service on Wednesday, April 8, 2015 at the annual Chancellor's Honors Banquet. The banquet is the university's largest recognition event of the year, and several outstanding engineering faculty members were recognized.

Dr. George Pharr, the McKamey Professor of Engineering in the Department of Materials Science and Engineering, director of the UT-Oak Ridge National Laboratory (ORNL) Joint Institute for Advanced Materials (JIAM), and a joint faculty scientist in the Materials Science and Technology Division at ORNL, was

named the 2015 University of Tennessee Macebearer. Pharr's distinguished record of teaching, research, and service were listed as his qualifications for the university's top faculty award.

As an engineering faculty member serving as Macebearer, he joins the company of COE Dean Wayne T. Davis, who served as the university's 2003 Macebearer, and Department of Civil and Environmental Engineering professor Dr. Ed Burdette, who was the university's Macebearer in 1990. The Macebearer is the highest faculty honor at the University of Tennessee, and is symbolic of the faculty's commitment of service to students, to scholarship, and to society. UT's Macebearer carries the mace, an ornate scepter, and leads the faculty in processions during commencement exercises for a full academic year.

In 2014, Pharr was named to the National Academy of Engineering, the highest honor an engineer can achieve in the United States. He is among only five UT faculty members to have earned this prestigious honor.

Pharr is internationally known for his research in small-scale mechanical testing. His development of nanoindentation for measuring hardness and elastic modulus forms the basis of an international standard for materials testing and is a common topic of discussion in textbooks on materials science and engineering.

Pharr recently was awarded the COE's 2015 Research Achievement Award and has also been the recipient of the college's Moses E. and Mayme Brooks Distinguished Professor Award. He was among the first group of faculty to be named a Chancellor's Professor.



Dr. Belle Upadhyaya (left) is awarded the Alexander Prize by Chancellor Jimmy G. Cheek (right).

Dr. Belle Upadhyaya, a professor in the Department of Nuclear Engineering, was honored for superior teaching and distinguished scholarship with the Alexander Prize.

Upadhyaya is an elected fellow of both the American Nuclear Society and the International Society of Automation. He is also a senior member of the Institute of Electrical and Electronics Engineers.

Upadhyaya helped establish the National Science Foundation-funded Reliability and Maintainability Center at UT. He has developed state-of-the-art technologies such as smart field devices and has helped bring national recognition to the nuclear engineering program, particularly for its roles in reactor control, instrumentation, system monitoring, and diagnosis research and development.

His expertise has led him to visiting lecturer positions throughout Europe, South America, and Asia, including national nuclear energy institutes in France, the Netherlands, and South Korea.

Upadhyaya has published more than three hundred and twenty five articles and helped author more than one hundred and thirty research reports. He has mentored more than fifty doctoral and master's students.

The Alexander Prize is named for former UT president and now US Senator Lamar Alexander and his wife, Honey. The award recognizes superior teaching and distinguished scholarship.

Additional outstanding faculty who were recognized at the Chancellor's Honors Banquet included:



Chancellor Jimmy G. Cheek (right) presents the Excellence in Teaching Award to Dr. Hahn Choo (left) from the Department of Materials Science and Engineering.



Dr. Jeffrey Reinbolt (left), a professor in the Department of Mechanical, Aerospace, and Biomedical Engineering, receives the Excellence in Advising Award from Chancellor Jimmy G. Cheek.



Chancellor Jimmy G. Cheek (right) presents the Research and Creative Achievement Award to Dr. Lawrence Heilbronn from the Department of Nuclear Engineering.



Chancellor Jimmy G. Cheek (right) presents the Research and Creative Achievement Award to Dr. Lawrence Townsend (left), a professor in the Department of Nuclear Engineering.



Dr. Rick Komistek (left), a professor in the Department of Mechanical, Aerospace, and Biomedical Engineering is presented the Research and Creative Achievement Award by Chancellor Jimmy G. Cheek (right).

Dr. Chris D Cox, Professor and Associate Head in the Department of Civil and Environmental Engineering (CEE) has been Named as the Department Head



Dr. Chris Cox

COE Dean Wayne Davis is pleased to announce that after a national search, Dr. Chris D Cox, professor and associate head in the Department of Civil and Environmental Engineering (CEE) has been named as the permanent department head, effective May 1, 2015.

Cox joined the faculty of the CEE department in 1991 as an instructor. He was promoted to assistant professor in 1992, to associate professor in 1997, and to full professor in 2007. He was named as the CEE associate department head in 2008.

Cox has also been the director of the Institute for a Secure and Sustainable Environment at UT since 2011, and he is also been an adjunct professor in the college's Department of Chemical and Biomolecular Engineering since 2005.

Cox began his career as an industrial engineer at Smith and Loveless, Inc., in Lenexa, Kansas.

He received his bachelor of science degree in chemical engineering in 1983 and his master's degree in environmental engineering in 1984, respectively, from the University of Missouri, Columbia. Cox was awarded his PhD in environmental engineering from Pennsylvania State University in 1993.

Cox is a registered Professional Engineer in the state of Tennessee, and has been the recipient of numerous awards during his tenure at UT, including the College of Engineering Outstanding Advising Award in 2011; the Chancellor's Teaching Award in 2009; the College of Engineering Research Fellow Award in 2008 and 2006; and the College's Allen & Hoshall Faculty Award in 2005.

Cox's research interests are in the areas of mathematical modeling of natural and engineered environmental processes and in the modeling, analysis, and simulation of gene expression processes. His research has been published in journals such as *Environmental Science & Technology*, *The Proceedings of the National Academy of Sciences*, and *Nature*.

Cox succeeds Dr. Gregory Reed, who has been the CEE interim department head since 2014. The college expresses its sincere appreciation to Reed, who retired from the university on May 1, 2015.



Dr. David Clarke

CTR Experts Featured in Amtrak Crash Coverage

Dr. David Clarke, director of UT's Center for Transportation Research, and Mark Burton, director of Transportation Economics at the center, recently provided valuable insight to national media in the wake of a rail disaster.

Clarke, who is also a research associate professor in the Department of Civil and Environmental Engineering, shared insight about the Amtrak accident near Philadelphia that killed eight people and injured more than two hundred with National Public Radio's nationwide show Morning Edition, discussing a type of backup control for trains called "Positive Train Control."

That system serves as a backup to engineers, helping slow the train before dangerous stretches that it has detected using GPS if the engineer has not already done so.

"You can't run the train too fast if the system is functional," Clark said "It will not allow you to do that. That's a big step for removing the human failure from the system."

Burton commented to *Marketplace* about the accident in general terms, concluding that although the Northeast Corridor—the section of Amtrak's network that includes Philadelphia—is safe, more funding would be required to fully modernize it.



Mark Burton

"You'd need to invest in it from one end to the other," said Burton, who is also a professor of economics at UT. "There would almost certainly be no section of track that was unaffected."

Clarke's interview can be heard at <http://www.npr.org/2015/05/14/406633703/ntsb-probe-focuses-on-speed-in-amtrak-derailment-in-philadelphia>.

Burton's interview can be read at <http://www.marketplace.org/topics/business/day-after-crash-vote-cut-amtrak-funding>.

Governor's Chair Brian Wirth Receives Top DOE Honor

The US Department of Energy (DOE) has named Dr. Brian Wirth, Governor's Chair in Computational Nuclear Engineering, an Ernest Orlando Lawrence Award winner for 2014.

Awarded by the DOE in recognition of research supporting science, energy, or national security, it is considered the highest achievement that a mid-career researcher can receive. Established in

1959, the award honors Ernest Orlando Lawrence, a 1939 Nobel laureate and inventor of the cyclotron—an accelerator of subatomic particles. A total of nine academics and researchers from across the country were designated to receive the award.

"These researchers, now at mid-career, have made significant contributions to the national, economic, and energy security of the United States," said Secretary of Energy Ernest Moniz. "I congratulate the winners, thank them for their work on behalf of the department and the nation, and look forward to their continued excellent achievement."

Wirth has spent his career studying aspects of nuclear environments and materials related to nuclear energy. He and his research group are striving to produce the safest nuclear energy possible while extending the life of the parts and the reaction itself. Wirth describes their work as being at the intersection of nuclear energy, materials science, and high-performance computing.

Wirth gives credit to the partnership between the university and Oak Ridge National Laboratory for provided a valuable partnership that enhances his group's research initiatives.

"UT and ORNL are increasingly becoming go-to centers for nuclear studies, materials research, and computing—the three critical areas his group studies and upon which our research relies," said Wirth. "The UT-ORNL partnership has created an interdisciplinary environment where collaboration between the two institutions is a 'world-class educational opportunity.'"

"ORNL joins UT in congratulating Dr. Wirth on this well-deserved honor," ORNL Director Thom Mason said. "His accomplishments in computation modeling, nuclear technology, and materials science illustrate the importance of crosscutting research to the nation's energy mission."

The nine award recipients were each presented with a medal and \$20,000 honorarium at a ceremony in Washington, DC, in July of this year in recognition of their achievements.



Dr. Brian Wirth (right) receives the Ernest Orlando Lawrence Award from US Secretary of Energy Ernest Moniz at the ceremony in July 2015.

NE Department Head Elected Fellow of ANS



Dr. Wesley Hines

Dr. J. Wesley Hines, Charles P. Postelle Distinguished Professor in Nuclear Engineering and head of the Department of Nuclear Engineering, has been elected as a Fellow of the American Nuclear Society (ANS).

The ANS honors members for outstanding accomplishments in nuclear science or nuclear engineering. Criteria for consideration include having "compiled a professional record of experience marked by significant contribution to the advancement of one or more of the various disciplines served by the Society."

Hines was recognized for his scholarly accomplishments as a leader in the discovery and development of reliability enhancing condition monitoring technologies for the nuclear industry.

The selection makes Hines the fourth full-time faculty member

in the department to become an ANS Fellow, along with Condra Chair and Chancellor's Professor Lawrence Townsend, Professor Belle Upadhyaya, and Governor's Chair Steven Zinkle, with several other part-time and emeritus faculty also holding the distinction.

Hines has received several other accolades for his contributions to nuclear engineering.

He was named 2014's Glenn Murphy Award winner for the American Society for Engineering Education's Nuclear Engineering Division, the 2015 SEC Faculty Achievement Award, the 1997 Duke Power Distinguished Professor of Nuclear Engineering, and has won several college and departmental awards, including being named a distinguished alumni of Ohio State from two different units.

Recently, Hines graduated from the inaugural class of the Academy for Innovative Higher Education Leadership at Georgetown University. This group of twenty administrators from across the country spent the last eight months studying higher education challenges.

Hines, who also served as UT's interim vice chancellor for research and engagement before becoming department head, received the award at the ANS banquet in San Antonio in June 2015.

For more information, visit <http://www.ans.org>.

COE Dean Davis Featured as Panel Member at National TVC Conference



College of Engineering Dean Wayne Davis (second from left) participates in a panel discussion moderated by (left) Dr. Janice Gilliam, president of Northeast State Community College, along with (left to right) Jeff Frazier, Principal Technologist, AMP Project, Eastman and Dean of the Regional Center for Advanced Manufacturing at Northeast State Community College; Niki Wekheiser, Project Manager for the In-space Manufacturing Initiative, NASA; and Dr. Vahid Motevalli, Professor and Associate Dean for Research & Innovation, Tennessee Tech University.

College of Engineering Dean Wayne Davis was part of a business and education roundtable of panelists at the Tennessee Valley Corridor (TVC) National Summit, held at East Tennessee State University in Johnson City, Tennessee, May 27-28, 2015. The topic of the panel conversation was "Workforce in Advanced Manufacturing." Davis discussed the recent \$259 million national composites manufacturing institute—the Institute for Advanced Composites Manufacturing Innovation (IACMI)—that UT has been chosen to lead, and also commented on the engineering college's efforts to enhance student interest in careers in advanced manufacturing.

The event marked the twentieth anniversary of the TVC, an organization that strives to improve educational, technological, and employment opportunities of the southeast region and to enhance the area's economic prospects.

TVC's leadership council members include Consolidated Nuclear Security, LLC, the management company for Oak Ridge's Y-12 National Security Plant; the University of Tennessee; the Tennessee Valley Authority; UT-Battelle; Oak Ridge Associated Universities; NASA; UCOR; Tennessee Tech University; ALSTOM; East Tennessee State University; and the Appalachian Regional Commission.

For more information, visit [facebook.com/TennesseeValleyCorridor](https://www.facebook.com/TennesseeValleyCorridor).

MABE Department Establishes Richard Rosenberg Endowed Professorship

The Department of Mechanical, Aerospace, and Biomedical Engineering recently received a generous donation to establish the Richard Rosenberg Endowed Professorship.

The donation honored Rosenberg—a 1954 graduate of the department—during a ceremony in which he and three others were inducted into the department's new Hall of Fame.

After completing his degree at UT, Rosenberg went on to have a very successful career in engineering—working at Oak Ridge, Westinghouse, and General Atomic.

Rosenberg traveled the globe during his profession and was named San Diego Engineer of the Year in 1988. He served as president of the American Society of Mechanical Engineers (ASME) and

received the Dedicated Service Award and Centennial Medallion from ASME in 1988.

In 2003, Rosenberg was named an honorary member of ASME for his contributions to the engineering profession—a designation that only three hundred and fifty people have received since the group was created in 1880.

"A gift in Mr. Rosenberg's honor is very meaningful," said current department head Dr. Matthew Mench. "I think Mr. Rosenberg represents all that a great state school like UT can do. He went to the top of his profession with hard work, honor, and integrity. To me, that is what we are all about, and I am so proud that our department will have an endowed professorship in his name."

The department plans to fill the professorship position next year. For more

information on the MABE Hall of Fame induction, visit <http://mabe.utk.edu/mabe-inducts-inaugural-class-in-to-hall-of-fame/>.



Richard Rosenberg (second from right) at the MABE Hall of Fame induction with fellow inductee and UT Knoxville Chancellor Emeritus Bill Snyder (third from left) and (left to right) COE Dean Wayne Davis, Judy Geddes, and MABE Department Head Dr. Matthew M Mench.

Keppens to Lead Materials Science and Engineering Department



Dr. Veerle Keppens

Dr. Veerle Keppens was named as head of the Department of Materials Science and Engineering (MSE) on June 1, 2015.

Keppens will take over the helm of the department from Dr. Kurt Sickafus, who is retiring from the position after four years.

"I want to express my sincere appreciation for Kurt's leadership over the last four years and to Veerle for her willingness to accept the new role," said Wayne Davis, dean of the College of Engineering. "With the concerted effort of the faculty and staff, I am confident that the department will continue its progress and journey in becoming a

more visible high-quality program that supports the university, college, and departmental vision to become Top 25 programs."

Keppens also serves as associate dean for faculty affairs in the College of Engineering, a role she will continue to fill after taking over as department head. The pairing of those positions brings about another set of considerations, and Keppens said she will work to ensure each position gets the "attention it requires and deserves."

Keppens came to UT's College of Engineering in 2003. She has authored or co-authored more than eighty technical papers and contributed to more than seventy technical presentations at national and international conferences, with her main area of

expertise being the elastic properties and lattice dynamics of novel materials.

A native of Belgium, she earned her both her bachelor's and doctoral degrees from Katholieke Universiteit in Leuven, just east of Brussels.

Her work in materials science has led to accolades and honors including the Fulbright-Hays Fellowship; Alexander von Humboldt Fellowship; numerous university, college, and departmental awards; and being named a fellow of the Acoustical Society of America. She also leads the Resonant Ultrasound Spectroscopy Group at UT.

The role of materials science—and along with it the profile of the MSE department—has come to prominence in recent years, as new alloys, fibers, and techniques have taken over from traditional materials.

At UT, the department has a roughly 4-to-1 student-faculty ratio, one of the lowest in the college, which allows for more hands-on instruction in both the lab and the classroom.

Faculty and students in the field must be experts in design, mechanics, chemistry, physics, mathematics, and electronics, with their work affecting everything from rocketry to sports. Additionally, the department is one of the key ties between UT and Oak Ridge National Laboratory (ORNL), with many of its faculty holding joint appointments with ORNL.

The MSE department will also play a prominent role when the Joint Institute for Advanced Materials (JIAM) is opened later in 2015. The state-of-the-art research facility, which is located on the university's Cherokee Farm campus, will offer unique opportunities for multi-disciplinary research and collaboration.

University of Tennessee is Awarded NSF Industry/University Cooperative Research Center Grant

The University of Tennessee, Knoxville, was recently notified that the university's efforts to join the Center for Integrative Materials Joining Sciences for Energy Applications (CIMJSEA), established five years ago at Ohio State University, has been funded. The CIMJSEA's mission was defined based on input from industries, national laboratories, and academia, and has been focused on closing the gap between material development and weldability. Specific aims include developing scientifically based methodologies for assessing material weldability and join-ability that span nanometer to millimeter scale, extending the life of material joints within the aging energy infrastructure, developing a new generation of materials joining engineers and scientists, and reducing the time and cost of deploying advanced materials (bulk, hybrid, and advanced) for the new energy infrastructure.

The addition of UT as a CIMJSEA site was initially suggested based on industry feedback requesting technical efforts in the areas of expanding research to include polymers, ceramics, and hybrid materials in addition to the ongoing metals portfolio, access to expertise and infrastructure on neutron characterization for studying phase transformations, kinetics, and residual stresses, leveraging the state-of-the-art additive manufacturing technologies within the Oak Ridge National Laboratory (ORNL) Manufacturing Demonstration Facility (MDF) and training graduate students with skills in this emerging area, and integrating computational materials engineering (ICME) tools developed by UT and ORNL researchers to guide and complement industrial joining needs. The call for the above technical efforts was answered by establishing a team of researchers from the Department of Civil and Environmental Engineering (CEE), the Department of Materials Science and Engineering (MSE), and the Department of Mechanical, Aerospace, and Biomedical Engineering (MABE) with expertise in the areas of additive manufacturing, ceramics, composites from hybrid materials, computational modeling, hybrid materials, neutron scattering, and polymers.

The relationship between UT and ORNL was essential in proposing the complementary research, especially since ORNL operates the large user facilities that include the MDF, High Flux Isotope Reactor (HFIR), Spallation Neutron Source, and supercomputers for the Department of Energy. These user facilities are open to the scientific community as a whole but the proximity of ORNL to UT really allows for longer and stronger collaborations between researchers and students, a key component in I/UCRCs, at the two institutions. Another important aspect for conducting the research that is unique to the UT site is the partnership between the university and ORNL that has resulted in the Joint Institutes of Advanced Materials (JIAM), Joint Institute of Computer Sciences (JICS), and Joint Institute of Neutron Sciences (JINS), all focused on promoting collaboration between researchers and students between both institutions.

The CIMJSEA site at UT put forth five research projects for the proposal including large-scale additive manufacturing of

dissimilar materials to be headed by Drs. Suresh Babu (MABE) and Dayakar Penumadu (CEE) with assistance from ORNL staff members Drs. Ryan Dehoff and Lonnie Love; fundamental understanding of microstructure-micromechanics relationships or additive manufactured components and dissimilar welds through neutron scattering headed by Drs. Hahn Choo and Claudia Rawn (both MSE); and integrated computational materials engineering (ICME) tools for the additive manufacturing of materials with personnel from several different affiliations including Drs. Zhili Feng (ORNL), Yanfei Gao (MSE), and Stephanie TerMaath (MABE). Two projects additional projects include metal-polymer composite joining where Drs. Madhu Madhukar (MABE) and Amit Naskar (ORNL) will focus on process optimization of polymer composites and Dr. Stephanie TerMaath (MABE) will focus on probabilistic modeling and simulation and structural mechanics of metal-polymer composites. The final project concentrates on nanobrazing for electronic packaging and lightweight metal bonding and will be headed by Dr. Anming Hu (MABE).

Rawn, the Director of the Center for Materials Processing (CMP), was chosen to lead the UT site due to her previous experience with industrial memberships through the CMP. Through the years the CMP has had a variety of industrial memberships resulting in experience with administrating membership agreements and conducting interdisciplinary research. Co-PI's on the project include Drs. Suresh Babu (MABE), Hahn Choo (MSE), Dayakar Penumadu (CEE), and Stephanie TerMaath (MABE).

In addition to the above, CIMJSEA memberships will have an overseeing Industrial Advisory Board (IAB) like CIMJSEA. One positive aspect about an I/UCRC is that it offers alumni that work in industry an avenue to support the MSE department, especially graduate research while at the same time receiving the benefits of working closely with the students they are supporting (part of the I/UCRC intent is that the students spend time at the industrial institutions that are supporting their research) and becoming part of the IAB. The IAB meets twice annually and the main focus of the meeting is student updates on their research projects, which provides a great setting for members to learn about pre-competitive research in areas of interest to them. Any MSE alumni working for an industry or company that is interested in exploring CIMJSEA memberships are encouraged to contact Dr. Claudia Rawn (crawn@utk.edu) for more details.



Dr. Claudia Rawn



Dr. Suresh Babu

Governor's Chair Hazen to Lead Institute for a Secure and Sustainable Environment



Dr. Terry Hazen

A leading center at UT will soon have a new director: accomplished faculty member Dr. Terry Hazen is taking the helm at the Institute for a Secure and Sustainable Environment (ISSE). Hazen replaces Dr. Chris Cox, who is leaving to become the head of the Department of Civil and Environmental Engineering, though he will remain an ISSE member.

Hazen brings an impressive set of environmentally related credentials with him to the new position. In addition to being the joint UT-Oak Ridge National

Laboratory Governor's Chair for Environmental Biotechnology, Hazen works with the Center for Environmental Biotechnology; directed investigation and recovery efforts surrounding the Deepwater Horizon oil spill; and was a senior scientist at Lawrence Berkeley National Laboratory in the Microbial Communities

Division, the Center for Environmental Biotechnology, and the Ecology Department.

Hazen also holds appointments in three UT departments—Civil and Environmental Engineering, Microbiology, and Earth and Planetary Sciences. He is a faculty fellow at ORNL, and works with both the Bredesen Center for Interdisciplinary Research and Graduate Education and the UT-ORNL Graduate School of Genome Science and Technology.

ISSE was founded to promote development of policies, technologies, and educational programs that cut across multiple disciplines; engage the university's research faculty and staff; and grow in response to environmental issues facing the state, the nation, and the globe.

The institute morphed out of the merger of three previous organizations—the Energy, Environment and Resources Center; the Waste Management Research and Education Institute; and the Joint Institute for Energy and Environment—in 2006.

For more information, visit

Dr. Baoshan Huang First Recipient of Dr. Edwin G. Burdette Professorship at UT



Dr. Baoshan Huang

A professorship named for an icon of civil engineering has its first recipient, as the UT College of Engineering's Dr. Baoshan Huang has been named the Dr. Edwin G. Burdette Professor.

The award honors Burdette, who has spent more than fifty years at UT and is world-renowned for his civil engineering expertise, particularly in concrete and concrete-based construction.

Huang, a professor in the Department of Civil and Environmental Engineering (CEE), also has expertise in concrete, cement and other such materials.

In making the announcement, College of Engineering Dean Wayne Davis lauded Huang's exemplary teaching and research record.

Huang has brought in more than \$6.5 million in research funding and published more than one hundred papers.

UT alumni Charley and Lynn Hodges, a married couple, established the endowment in honor of Burdette's service and commitment to UT, in particular the CEE department and its students.

Charley Hodges, a 1974 graduate of the college, went on to start New Forum Inc., a successful development company near Charlotte, North Carolina. He credits his education at UT for laying the foundation for his success.

Lynn Hodges graduated from the College of Arts and Sciences.

"Professor Burdette helped better not just my life, but many others," said Charley Hodges, who was a student under Burdette in the 1970s. "This endowment is a way for Lynn and me to honor him. The selection of Professor Huang, whose research is very similar to Professor Burdette's, seems somehow fitting."

Huang has worked with Burdette on several projects during his time at UT, and the two have co-authoring six papers.



Dr. Lynne Parker

EECS Professor Receives 2015 IEEE RAS Distinguished Service Award

Dr. Lynne Parker, Department of Electrical Engineering and Computer science, received the 2015 IEEE Robotics and Automation Society (RAS) Distinguished Service Award. This award is given annually to recognize individuals who have performed outstanding service for the benefit and advancement of the IEEE RAS. Dr. Parker was cited for her work as Editor-in-Chief of the RAS Conference Editorial Board, and her contributions to RAS conference. For more information, see <http://www.ieee-ras.org/awards-recognition/society-awards/69-awards-recognition/society-awards/57-ieee-ras-distinguished-service-award>.



College of Engineering New Faculty for 2015

The College of Engineering (COE) community welcomes new faculty members for 2015, continuing the college's growth and moving forward to strengthen opportunities for teaching and research.



Dr. Sankar Raghavan



Dr. Nicholas Wierschem



Dr. Ortal Arel



Dr. Harold Richards



Dr. Jason Fowlkes



Dr. Chad Duty



Dr. Brett Compton



Dr. Uday Vaidya



Dr. John Auxier II



Dr. Nour Abdoulmoumine



Dr. Amy Biegalski

Department of Chemical and Biomolecular Engineering

Dr. Sankar Raghavan

*Eastman Professor of Practice
PhD: Kansas State University*

Research Areas: Process design and optimization; risk evaluation and mitigation in chemical processes; engineering pedagogy

Department of Civil and Environmental Engineering

Dr. Nicholas Wierschem

*Assistant Professor
PhD: University of Illinois*

Research Areas: Structural control including innovative passive control technology exploiting strongly nonlinear phenomenon; structural dynamics, nonlinear dynamics; structural health monitoring of civil infrastructure; and sustainability

Department of Electrical Engineering and Computer Science

Dr. Ortal Arel

*Senior Lecturer
PhD: The University of Tennessee*
Research Areas: Cryptography, cyber security, signal processing

Department of Industrial and Systems Engineering

Dr. Harold Richards

*Research Assistant Professor
PhD: University of North Carolina, Greensboro*
Research Areas: Effective undergraduate and graduate student education; faculty development in health sciences and healthcare analytics

Department of Materials Science and Engineering

Dr. Jason Fowlkes

*UT-ORNL Joint Associate Professor
PhD: The University of Tennessee*

Research Areas: Electron, ion, and photon beam processing; nanofabrications; physical vapor deposition; laser-induced phase transformations; lithographic methods; thin film processing; microfluidics

Department of Mechanical, Aerospace, and Biomedical Engineering

Dr. Chad Duty

*Associate Professor
PhD: Georgia Tech*

Research Areas: Improving the mechanical performance of polymer-based additive manufactured components and the development of a large-scale system, Big Area Additive Manufacturing (BAAM); capable of depositing parts 10x larger and 100x faster than current technology

Dr. Brett Compton

*Assistant Professor
PhD: University of California, Santa Barbara*

Research Areas: Mechanical properties of composites and hybrid materials; fabrication of advanced ceramic, metal, polymer, and composite systems via additive manufacturing

Dr. Uday Vaidya

*UT-ORNL Governor's Chair Professor
PhD: Auburn University*

Research Areas: Advanced composites, composite materials and manufacturing; applications development; nondestructive evaluation; sustainable and green

materials; composites design; process modeling and mechanics; composites recycling and sustainability; sound and vibration damping; hybrid materials; multiscale, multifunctional and nano-bio materials

Department of Nuclear Engineering

Dr. John Auxier II

*Research Associate Professor
PhD: The University of Tennessee*

Research Areas: Advanced radionuclide separations, nuclear forensics for post-detonation analysis; advanced imaging techniques and methodologies for pre-detonation forensic samples

Department of Biosystems Engineering and Soil Science

Dr. Nour Abdoulmoumine

*Assistant Professor
PhD: Auburn University*

Research Areas: Biomass conversion to biofuels; bioenergy and bioproducts; process modeling and simulation of conversion processes; catalysis and intermediate product upgrading

Engineering Fundamentals Division

Dr. Amy Biegalski

*Lecturer
PhD: CASE School of Engineering, Cleveland, Ohio*

Research Areas: Finite element analysis and instrumentation of structures; first- and second-year engineering education

Faculty Focus

Dr. Mingzhou Jin—Department of Industrial and Systems Engineering



Dr. Mingzhou Jin, seated, discusses industrial and systems engineering research projects with graduate students, from left, Nelson Granda, Licheng Zhang, and Jerry Song.

Dr. Mingzhou Jin came to the UT College of Engineering's Department of Industrial and Systems Engineering (ISE) in 2012, and has distinguished himself in multiple roles in those three short years. He is a professor and associate head of ISE; the director of the Reliability and Maintainability Engineering (RME) program; and he collaborates with a wide cross-section of campus and area groups.

"Over three years, I have become affiliated with the Oak Ridge National Lab (ORNL) and with several academic and research units on campus," said Jin.

These include the Center for Transportation Research, the Reliability and Maintainability Center, the Department of Business Analytics, the Department of Political Science, the Department of Electrical Engineering, and many others.

"Working with colleagues all over the campus and at the lab, I have successfully grown my funded research program, including five full-time PhD students and several part-time graduate students," said Jin.

The program is the Logistics, Transportation, and Supply Chain Lab, which won the first place in 2014 Supply Chain Case Competition hosted by the Institute of Industrial Engineers (IIE).

"The lab's current focus includes intelligent transportation—railway options, flight risk analysis, connected vehicles, transportation data analysis—and advanced manufacturing—economic and life-cycle analysis, quality control, process optimization, and supply chain management," said Jin.

The opportunity to work with others in his field was one of the attractions for Jin in coming to UT, along with positive aspects of the city and region.

"I chose UT because of the collaboration potential with the Oak Ridge National Lab and the livability of the city of Knoxville," he said. "It is a good place to raise kids. We have a very good Chinese community, in Knoxville and at UT."

Jin and his wife Jun Feng have two children, Raymond, 11; and Kaylee, 5.

He also found a part of the UT sports community that appeals to him personally, though probably not in an area that comes to mind immediately for most Vols.

"I play badminton regularly," he said. "I am happy to see that we have an active badminton club at UT."

Jin began his studies at Zhejiang University in China, where he received his BS in electrical engineering in 1995.

advance manufacturing for spare part management, and reliability improvement. He teaches courses such as Supply Chain Engineering, Optimization in Industrial Engineering, Senior Design, Graduate Seminars, Stochastic Processes, Statistics, Operations Research I, Operations Research II, and Systems Engineering.

"I believe an effective teacher must build a strong connection with his students," said Jin. "The connection is based on the teacher's true love of teaching and a deep caring about students. I use many methods to make students feel that the material is connected to their current or future job assignments, to their career development, to contemporary issues, and even to their daily lives. I have developed and used examples based on real-world problems from my research projects, current students' internships and co-ops, or former students' job duties."

His approach earned Jin the 2015 College of Engineering Teaching Fellow Award; the 2014 Annual IIE Award for Excellence in the Teaching of Logistics and Supply Chain; the 2014 first place in the IIE Logistics and Supply Chain Case Study Competition (Advisor); and a 2014 Distinguished Professor Award, from the IIE Student Chapter at UT (voted by all IIE students).

Jin's work at UT has also benefited from the ISE's 2013 move into the John D. Tickle Engineering Building.

"Moving to Tickle provided space for my lab," he said. "I also enjoy the view from my office and the wonderful classrooms. It helps me invite external speakers and collaborators to visit our department."



From left, graduate students Jerry Song and Nelson Granda discuss computations with Dr. Mingzhou Jin.

Student News

Hundreds Take Part in Inaugural WomEngineers Day

Career advice, diversity, and opportunities for engineers and scientists were key topics Saturday, April 11, 2015, at the Knoxville Convention Center as more than 350 high school and college students turned out for the first WomEngineers Day hosted by the College of Engineering (COE).

Highlighted by speakers such as Lockheed Martin executive vice president Lorraine Martin and Pratt and Whitney Military Engines president Bennett Crosswell, the conference gave students a chance to hear from and talk to seasoned professionals in engineering and related fields.

"The support for WomEngineers Day within our college and the excitement for it among our attendees truly inspired us," said Jessica Boles, a UT senior who helped bring about the event. "Engineering as a whole will soon be in the hands of our generation, and it's up to us to responsibly shape its future."

One of the big themes of the day was inclusiveness, with male and female students alike asking panelists and speakers about their experiences in the workplace and how to deal with problems when they arise. Martin, who serves as project manager for Lockheed Martin's highly visible F-35 program, related a particular story of bias from her early days as an Air Force officer.

One particular supervisor saw her preparing a report and told her she was learning skills that would serve her well as a PTA member later in life. She said she realized it wasn't said with ill will, but that her supervisor honestly viewed her main worth as a future mom, not as the second lieutenant that she was. The episode taught her a particular lesson about bias, one she impressed upon the attendees.

"Bias says more about them than it does you," said Martin. "When you look at someone, don't see their outward packaging, see what they bring to the table. What's on the outside shouldn't matter."

The conference also offered up sessions on topics that weren't specific to engineering, such as money planning, starting a business, and balancing work and family. Students had the chance to break into smaller groups with the experts and ask them any number of questions, with the most frequent area of focus seeming to be how those experts got started in their field and how they assumed leadership roles.

"You don't have to walk around with a shirt that says 'I'm the leader,'" said Sabrina Hampton, a UT graduate who now is a liaison for Consolidated Nuclear Security LLC. "People know it by your actions."

The day ended with discussions on ethics, an introduction to the COE—attendees got a chance to bounce questions off Dean Wayne Davis—and a panel on diversity in the workplace that featured UT quarterback and aerospace engineering major Joshua Dobbs.

"We hope the conversations begun that day are continued among students and speakers alike," said Boles. "That's the only way for us to truly begin making an impact on our respective fields."

All told, nineteen UT students helped facilitate the event, with the support of the COE's Board of Advisors.



College of Engineering Dean Wayne Davis addresses the audience at WomEngineers Day.



Lorraine Martin, executive vice president at Lockheed Martin, spoke to the WomEngineers Day attendees.



Bennett Crosswell, president of Pratt & Whitney's Military Engines division and member of the COE Board of Advisors, speaks in a panel discussion during WomEngineers Day.



Eric Zeanah, College of Engineering Board of Advisors Chair, welcomes attendees to the inaugural WomEngineers Day conference.



From left, Jacinda Woodward and Paula Coleman participate in a panel discussion during WomEngineers Day.



Joshua Dobbs, (left), aerospace engineering major and quarterback of the UT Volunteers football team, addresses the audience during WomEngineers Day as Kevin McHale, UT industrial engineering alumnus and vice president of American Accessories, LLC (right), listens.



More than 350 attendees gathered for the inaugural WomEngineers Day conference at the Knoxville Convention Center.



Organizers of the inaugural WomEngineers Day at UT pose with College of Engineering Board of Advisors Chair Eric Zeanah, center.



Mechanical engineering senior Haley Register, (center), speaks with other attendees at WomEngineers Day.



WomEngineers Day coordinators included Eric Zeanah, College of Engineering Board of Advisors Chair (left); and Jessica Boles, senior in electrical engineering (right).



From left on stage, COE Board of Advisors members Sharon Habibi, Misty Mayes, and Cavanaugh Mims join with Tommy Nguyen, a computer science alumnus and founder of Right Click Design, and Dan Hurst, founder and CEO of Strata-G a science and engineering firm, in a WomEngineers Day panel discussion on starting businesses.



A dedicated team of coordinators helped organize the inaugural WomEngineers Day conference at UT.



Ralph Heath, (far left), a member of the COE Board of Advisors, speaks during a panel discussion at the WomEngineers Day conference.

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www.utaconnect.com/prof



Benjamin Brock Is Goldwater Scholar

Benjamin Brock, a Haslam Scholar and computer science major from Jefferson City, Tennessee, was named as a 2015 Goldwater Scholar at UT. The Barry Goldwater Scholarship and Excellence in Education Program awards scholarships to students studying mathematics, science, and engineering. Each scholarship provides a \$7,500 award for undergraduate study and research. Brock has done research at Oak Ridge National Laboratory, the University of Edinburgh, and here at UT.

Benjamin Brock

ASCE Team Places at Conference

The American Society of Civil Engineers (ASCE) student group at UT placed in the Top 4 at the Southeast Regional Conference on March 19-21, 2015. The conference consisted of challenging, exciting civil engineering competitions, with students offering their concrete canoe and steel bridge entries. UT students worked very hard all year long and continue to see success and improve in the largest conference in the nation.



Civil engineering Associate Professor John Ma, far left, stands with the College of Engineering ASCE team, celebrating strong showings at the 2015 ASCE Southeast Regional Conference in March.

Save the Date College of Engineering Homecoming 2015



HOMECOMING¹⁵

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Research Update

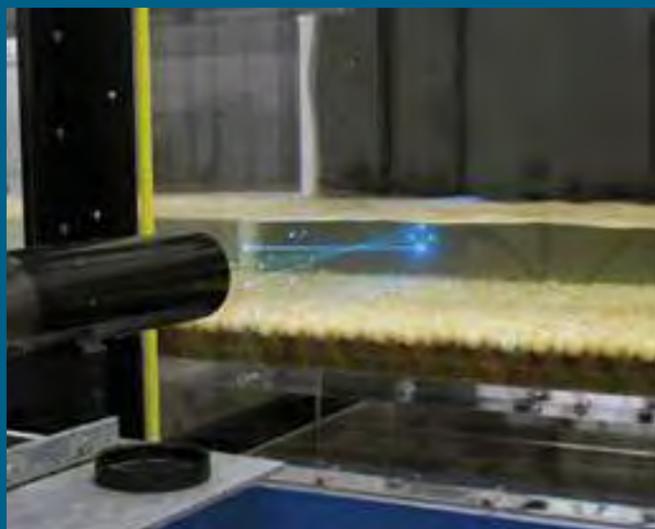
Department of Civil and Environmental Engineering's Hydraulics and Sedimentation Laboratory Officially Opens in July



CEE Professor and Department Head Chris Cox speaks at the opening of the Hydraulics and Sedimentation Laboratory opening.



Dr. Thanos Papanicolaou discusses the research that will take place in the Hydraulics and Sedimentation Laboratory at the lab's opening event.



A close-up look at a laser-based sedimentation measuring device in the lab.

Water-related issues are quickly shaping up to be a major concern around the world, and a new lab at UT hopes to tackle that concern.

The Hydraulics and Sedimentation Laboratory officially opened on Tuesday, May 12, 2015, with the implications of its research already becoming apparent.

"Thanos Papanicolaou came to UT with a passion for civil engineering and its impact, and our impact on the environment," said College of Engineering Dean Wayne Davis. "When you look around at the water crisis in California, or some of the other water-related issues closer to home like recent water woes in Atlanta, it's clear how important this research will be moving forward. Those areas of need in our country are his areas of expertise, and we're extremely happy to have him and his group here."

Based in the Department of Civil and Environmental Engineering (CEE), the Papanicolaou Research Group maintains one of the most advanced laboratories of this kind in the country and is one of only a small number of such labs in the Southeast.

Papanicolaou said his research group currently has twenty-five ongoing projects.

"It's a fast-paced field, and we've had phenomenal growth from when we started building this lab little more than a year ago until now," said Papanicolaou. "We're located in a strategic place in the Southeast to help study water issues that affect the entire region. Along with energy and food, water issues will play a huge part in society's future moving forward, and it really feeds into both of those subjects as well."

Papanicolaou's group gave attendees at the event a look at some of the notable equipment and discussed partnerships with other universities and government organizations, including:

The US Department of Agriculture (USDA): Studying where soil washed into streams is coming from and invest in better farming practices

University of Virginia: Studying riverbeds and their effect on erosion and habitat

Oak Ridge National Laboratory and the National Science Foundation: Studying the topology around boulders in rivers and how they help diffuse water flow and improve fish habitat

Arizona, New Mexico and Midwestern states: Studying rainfall patterns, improving conservation and waterway health

Transportation departments: Studying scour issues where water flows around bridges and developing warning systems to alert transportation officials to bridge wear and decay in attempt to avoid repeats of bridge collapses like the one in Minneapolis-St. Paul

National Science Foundation-Critical Zone Observatories: Studying the effects of human activity on the first few layers of the earth and predicting ways of developing a sustainable future

Highlighted by a pair of tractor-trailer-sized water flumes, the lab also features a rain station, sedimentary tools and gauges, and about seventy-five other pieces of lab equipment.

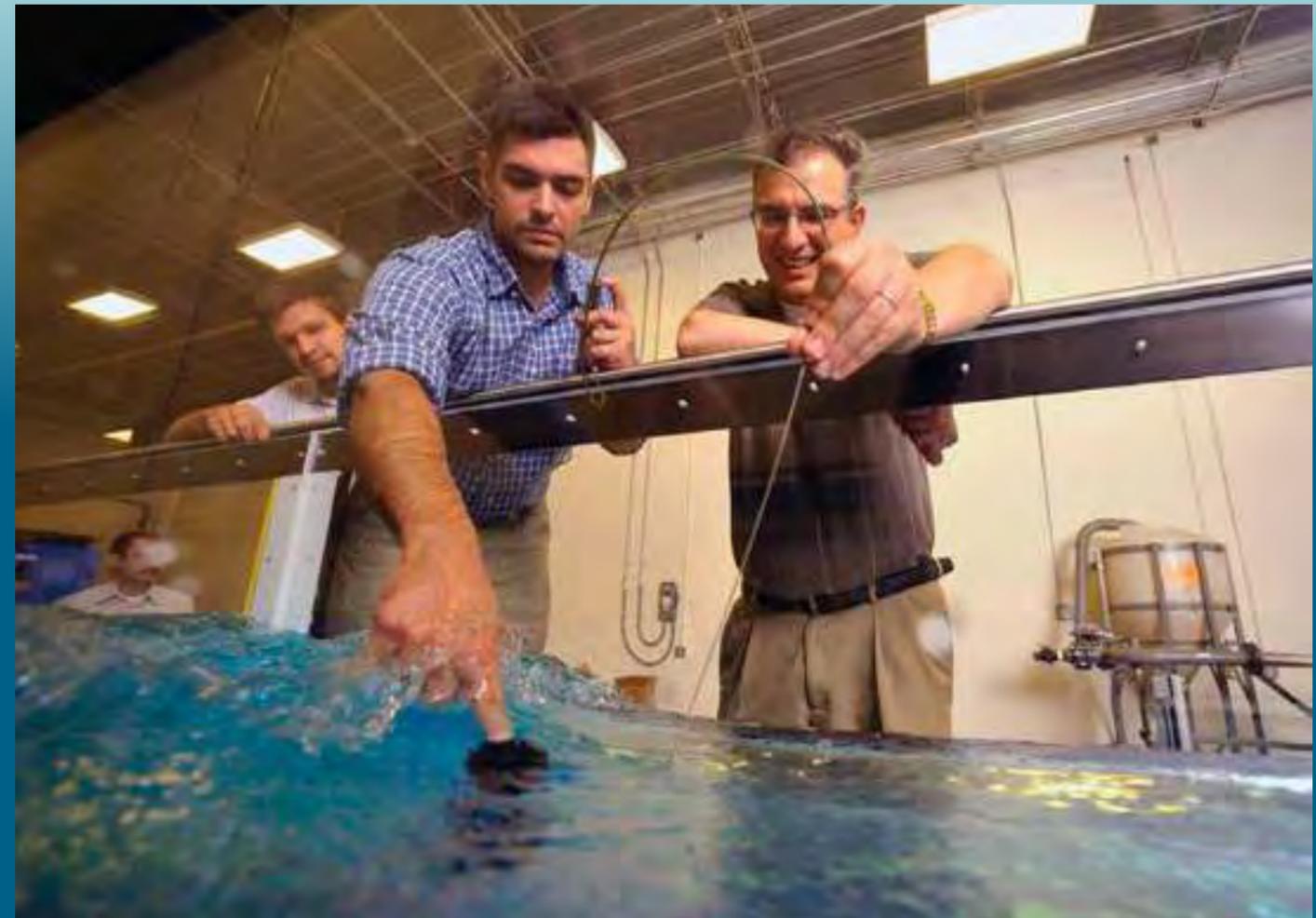
The group has received numerous grants from NASA, the Tennessee Valley Authority, and the US Departments of Energy, Transportation, Agriculture, and Defense, many of which had representatives on hand for the lab's opening.

Papanicolaou stressed the importance of such studies and research, noting that the projects weren't based on the hypothetical but on current real-world needs.

For Dr. Chris Cox, the new head of the CEE department, the lab's opening served as a reminder of the latest development in a recent surge of progress for the department.

"This gives us unique capabilities that we've never been able to offer before," said Cox. "In the last few years we've added two Governor's Chairs (a joint UT-Oak Ridge National Laboratory program), four senior faculty members and several other faculty members, and we've moved our department to the state-of-the-art John D. Tickle Engineering Building. This just adds momentum to our upward trajectory."

For more information on the lab, visit <http://tpapanicolaou.engr.utk.edu>.



Postdoctoral research associate and lab manager Achilleas Tsakiris (center) assists Dr. Thanos Papanicolaou (right) in a demonstration of the large flume at the Hydraulics and Sedimentation Laboratory as (from left) Dr. Mohamed Elhakeem and civil engineering graduate student Micah Wyssman look on.



Achilleas Tsakiris demonstrates the large flume to visitors during the Hydraulics and Sedimentation Laboratory open house.

College of Engineering Research Center Spotlight: The Scintillation Materials Research Center

From left, Scintillation Materials Research Center research associate Merry Koschan and director Dr. Chuck Melcher.



The Scintillation Materials Research Center (SMRC) at the University of Tennessee is an internationally recognized facility for the discovery, synthesis, and characterization of new scintillation materials for use in a variety of radiation detectors. Such detectors are a critical need in medical imaging systems, homeland security inspection and monitoring systems, neutron and high-energy particle physics experiments, and remote exploration for new energy resources.

Scintillators absorb energetic radiation—such as gamma rays, X-rays, or neutrons—and convert that energy into short bursts of visible photons. These photons are then converted into electrical pulses by photo-detectors.

“The SMRC carries out research that addresses important issues in our society, including healthcare, security, and energy,” said Dr. Chuck Melcher, director of the SMRC.

“In general, I think the SMRC has become quite well-known in our field as a leading research center for scintillator discovery, crystal

growth, and materials characterization,” said Merry Koschan, SMRC research associate.

The center was founded in 2005 as an industry-university partnership with a grant from Siemens Medical Solutions. Support from Siemens has been continuous since then, totaling \$5 million so far. Related research focuses on developing the next generation of radiation detection materials for medical imaging. Melcher is the principal investigator (PI) for this project, and Koschan has worked with him on it since the center was founded. Dr. Mariya Zhuravleva, assistant professor in the Department of Materials Science and Engineering (MSE), also works on this project.

Siemens uses scintillators in three types of medical imaging: positron emission tomography (PET); single-photon emission computed tomography (SPECT); and X-ray computed tomography (X-ray CT). The company’s PET unit is centered in Knoxville.

“Not surprisingly we are most closely aligned with this unit,” said Melcher, who invented the scintillator that Siemens currently uses commercially in PET. SMRC research also benefits Siemens’ SECT unit, headquartered near Chicago; and the X-ray CT unit, centered in Germany.

Two grants from the Department of Homeland Security (DHS) also fund research at the center. Zhuravleva is the PI for one five-year, \$2 million project that focuses on increasing scintillator crystal growth to sizes needed in practical applications.

“There tends to be a gap between the millimeter-size laboratory-produced samples that researchers usually study and the inch-size and larger crystals that are needed in real applications,” said Melcher. “It is notable that this program is the only one of its kind in the DHS research portfolio.”

“This project has been highly lauded by the DHS, and referred to by them as a model project,” said Koschan.

Melcher is PI for the other DHS project, a five-year program with \$1.75 million in funding total, that focuses on the potential of recently discovered ternary metal halide scintillators for applications in homeland security. A special focus will be on evaluating the effect of the intrinsic radiation associated with the potassium contained in the matrix material. Dr. Eric Lukosi, of the Department of Nuclear Engineering (NE), collaborates as co-PI,

and Zhuravleva and SMRC graduate student Luis Stand originally conceived the project.

“Both of the DHS projects are very heavy on education and training of both graduate and undergraduate students, as this is very important to the DHS program,” said Melcher. “Mariya teaches a cross-listed graduate level cross on scintillators with NE.”

Adam Lindsey, an MSE graduate student, is heavily involved with the scale-up project led by Zhuravleva.

“Performing research at the SMRC has provided vast hands-on experiences with synthesis and characterization methods available all in one lab space,” said Lindsey. “The access to nearly all the necessary research tools has accelerated progress towards publication, and having the opportunity to really build and develop something such as a crystal growth furnace and use it for my research has cultivated my ability to operate independently towards results. The diverse experiences available at the SMRC is what attracted me to begin with and that exposure has helped me understand what my research interests truly are and how they could be turned into a career after graduation.”

The SMRC has had fifteen graduate students since 2005, with eight students earning MS degrees, five of which continued on toward PhDs. Six students working with the center earned PhDs, with more at varying stages of their doctorate work. Twenty-four undergraduate students have worked in SMRC labs at various points in time, either on a part-time basis during the academic year or during the summer, plus two high-school students.

SMRC principal researchers maintain involvement with related professional societies. Melcher served on the organizing committee for the SCINT 2015 conference in June, and will also be editor of the conference proceedings. Koschan was elevated to the grade of IEEE Senior member in 2015. Zhuravleva was elected secretary of the executive committee of the American Association for Crystal Growth (AACG). Koschan, Zhuravleva, and Stand serve on the executive committee of the local Southeast section of AACG, which Koschan also founded.

The SMRC has enjoyed a number of collaborations with various College of Engineering faculty members due to the interdisciplinary nature of scintillator research. In particular, there are funded projects with Dr. Bin Hu and Dr. Philip Rack in the Department of Materials Science and Engineering; Dr. Larry Miller and Dr. Jason Hayward in the Department of Nuclear Engineering (NE); and Dr. Dayakar Penumadu in the Department of Civil and Environmental Engineering (CEE).

“Looking forward, we have recently joined with Dr. David Mandrus and Dr. Veerle Keppens in MSE on a \$23 million NSF proposal to establish a crystal growth user facility in the Joint Institute for Advanced Materials (JIAM),” said Melcher.

The SMRC has collaborators at several national labs, including Oak Ridge National Laboratory, Brookhaven National Laboratory, Lawrence Livermore National Laboratory, Lawrence Berkeley National Laboratory, and Y-12. Another major use of scintillators is in high-energy particle physics experiments, such as at the Large Hadron Collider at the CERN laboratory in Switzerland that recently discovered the long-theorized Higgs boson, as well as ongoing searches for dark matter. The SMRC has collaborated on occasion with scientists at CERN to look at the properties of new scintillators relevant to applications in this area.

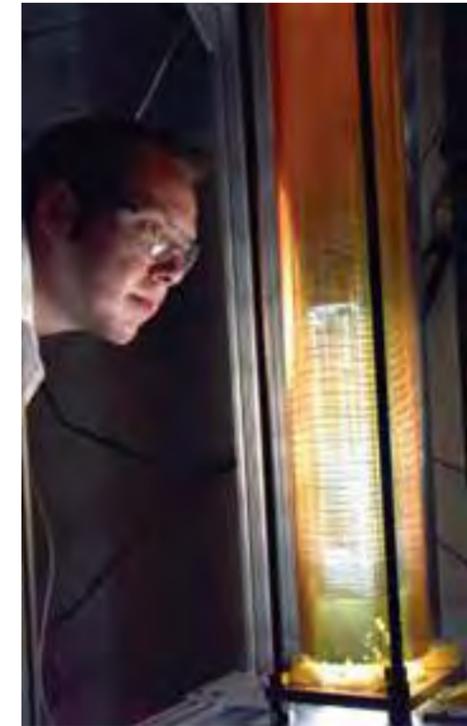
“We also have had funded projects with some companies in addition to Siemens, namely NuSAFE; Radiation Monitoring Devices, Inc.; and Materials Modifications, Inc.,” said Melcher. “We have also just joined with the University of California, Berkeley, on a \$25 million consortium proposal to DOE/NNSA on nuclear nonproliferation research and education.”



Graduate student Adam Lindsey works with crystals in a vacuum hood in a lab of the Scintillation Materials Research Center.



Graduate student researchers prepare equipment for processing scintillator crystals in the Scintillation Materials Research Center.



Graduate student Chris Hobbs checks on the progress of materials in a transparent furnace in the Scintillation Materials Research Center.



Graduate student Adam Lindsey (left), discusses research with Dr. Mariya Zhuravleva (right) in the Scintillation Materials Research Center.



Graduate student Jesse Johnson prepares testing equipment in the Scintillation Materials Research Center.



Lab-grown crystal scintillators, excited here by fluorescent light, can take various shapes.



From left, research associate Merry Koschan and graduate student Camera Foster examine a sample crystal in the Scintillation Materials Research Center.



Graduate student Camera Foster (left), and research associate Merry Koschan (right), load a sample into a furnace in the Scintillation Materials Research Center.

Special Feature: The College of Engineering Distinguished Lecture Series

The College of Engineering's Distinguished Lecture Series brings nationally renowned engineers, engineering educators, and engineering innovators to speak at the college. Faculty, staff, students, and the engineering community from around the world can take advantage of these lectures in person, via live web-cast, or through archived videos.

"Providing the access to our lecture series is our gift to our alumni and other colleagues across the world," said Dr. Wayne T. Davis, dean and Wayne T. Davis Endowed Dean's Chair in the College of Engineering (COE).

The lectures encompass the spectrum of engineering disciplines, are eligible for professional development hours (i.e., continuing education credits), and are free to all.

"This provides opportunity for us to feature and host prominent experts in the engineering field on our campus," said Davis. "It also provides simultaneous access to our lecture series at no cost to other colleges of engineering, to licensed professional engineers and Engineers-in-Training, and others that might seek continuing education or professional development hours, including our alumni who now reside in all fifty states and some seventy-plus countries around the world."

The unique component of a live webcast makes it possible for individuals to experience the lecture without having to travel to the campus.

"While we have had a Dean's Distinguished Lecture Series for a number of years, it was always an on-campus 'attend in person' type of event," said Davis. "We are enthusiastic about the opportunity to broaden the college's Distinguished Lecture Series from being just a campus event to one that is a live webcast with access from wherever a person might reside."

Viewers of the webcast also have an opportunity to submit questions and/or comments to the speaker via email. During each lecture, the e-mails are monitored and select e-mail questions and/or comments are presented to the speaker. Questions and/or comments can be sent to coelect@utk.edu.

The on-campus location for the lectures is Room 622 of the Min H. Kao Electrical Engineering and Computer Science Building. Lectures are held at 4:00 p.m. on the scheduled days. Most lectures are archived within about forty-eight hours, with permission from the speaker.

For more information on the Distinguished Lecture Series, visit www.engr.utk.edu/distinguished_lecture.

The fall 2015 series of speakers includes Dr. Katherine Kuchenbecker, University of Pennsylvania; Dr. James McLurkin, Rice University; and Dr. William H. Sanders, University of Illinois Urbana-Champaign.

In upcoming lectures, Dr. Francisco Valero-Cuevas will speak on January 27, 2016. Cuevas is a professor of biomedical engineering and biokinesiology and physical therapy at the University of Southern California. Les Johnson will speak on April 4, 2016. Johnson is the deputy manager in the Advanced Concepts Office at NASA's Marshall Space Flight Center.



Dr. Katherine Kuchenbecker, an associate professor in mechanical engineering and applied mechanics and computer and information science at University of Pennsylvania, delivered the first talk for fall 2015 in the Distinguished Lecture Series.



Dr. James McLurkin, an assistant professor in computer science at Rice University will deliver the second COE Distinguished Lecture on Monday, October 5, 2015.



Dr. William H. Sanders, Department Head and Donald Bigger Willett Professor of Engineering, Department of Electrical and Computer Engineer at the University of Illinois Urbana-Champaign will deliver the third COE Distinguished Lecture on Monday, October 26, 2015.



Dr. Francisco Valero-Cuevas will speak on January 27, 2016, as part of the Distinguished Lecture Series. Cuevas is a professor of biomedical engineering and biokinesiology and physical therapy at the University of Southern California.



Les Johnson, deputy manager in the Advanced Concepts Office at NASA's Marshall Space Flight Center, will speak in April 2016 as part of the Distinguished Lecture Series.



As the Jerry and Kay Henry Professor of Engineering in the University of Tennessee, Knoxville College of Engineering, I have the support to advance my research in creating new materials for post-silicon electronics utilizing a field known as "spintronics." One of the main advantages of spintronic devices is that very little power is needed to run them. Minimizing the power requirements of electronic devices is becoming increasingly important as more and more items are being connected to the Internet. This professorship has also allowed me to offer unique research collaborative projects to both graduate and undergraduate students in the Department of Materials Science and Engineering. I am very grateful for the generosity that Jerry and Kay Henry have shown in establishing this professorship, and appreciate the opportunities it provides for both faculty and students in our department.

Dr. David Mandrus
Jerry and Kay Henry Professor of Engineering
Department of Materials Science and Engineering

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THE UNIVERSITY of TENNESSEE
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Facilities Update

New Landscaping Projects Enhance Appearance, Function of the Engineering Campus

Students, faculty, staff, and visitors to the UT campus will have an opportunity to enjoy two new significant landscaping projects on the engineering campus that are slated to be completed this fall.

The Perkins-Ferris Courtyard

Beginning in May, the courtyard area between Perkins and Ferris Halls and the steps to the Science and Engineering Research Facility were closed to pedestrian traffic as a construction team began demolition on the area. In addition, Middle Way Drive was also closed to motorized vehicle traffic during the project.

The newly landscaped area will feature increased seating, including round tables with chairs and benches, as well as additional bike loop storage and even a bike repair area. A new staircase with seating will lead down from the courtyard area between Dougherty and Ferris to Estabrook Road, making pedestrian access easier to parking behind the two buildings. The wi-fi access in the area will be enhanced and improved during the Fall Semester, allowing students, faculty, and staff the capability to work on laptops and tablets outside.

On Middle Way Drive pavers will be added in a decorative pattern to enhance the appearance of the road. The entrance area for SERF will include new ADA-approved path and the stairs will be landscaped to better blend in with the new design.

Dr. William Dunne, the college's associate dean for research and technology, who is representing the college for the project, added that every effort has been made to preserve the mature trees that are already located in the area, and new vegetation that is indigenous to the East Tennessee climate will also be added. Pavers and shade-friendly groundcovers will be used to fill in the areas under the trees.

Estabrook Road Improvements

A second landscaping and upgrade project is going on along the eastern boundary of campus on Estabrook Road, behind the Dougherty Engineering Building and the Min H. Kao Electrical Engineering and Computer Science Building. The old chain link fence is being torn down, and structural engineers from Barge Waggoner Sumner & Cannon, Inc. (BWSC) along with workers from UT Facilities Services are replacing deteriorating above ground infrastructure (such as the sidewalk, fencing, overhead wires, etc.) and are adding streetscape elements including trees, lighting, seating and new paving to improve the appearance and accessibility for this end of campus.

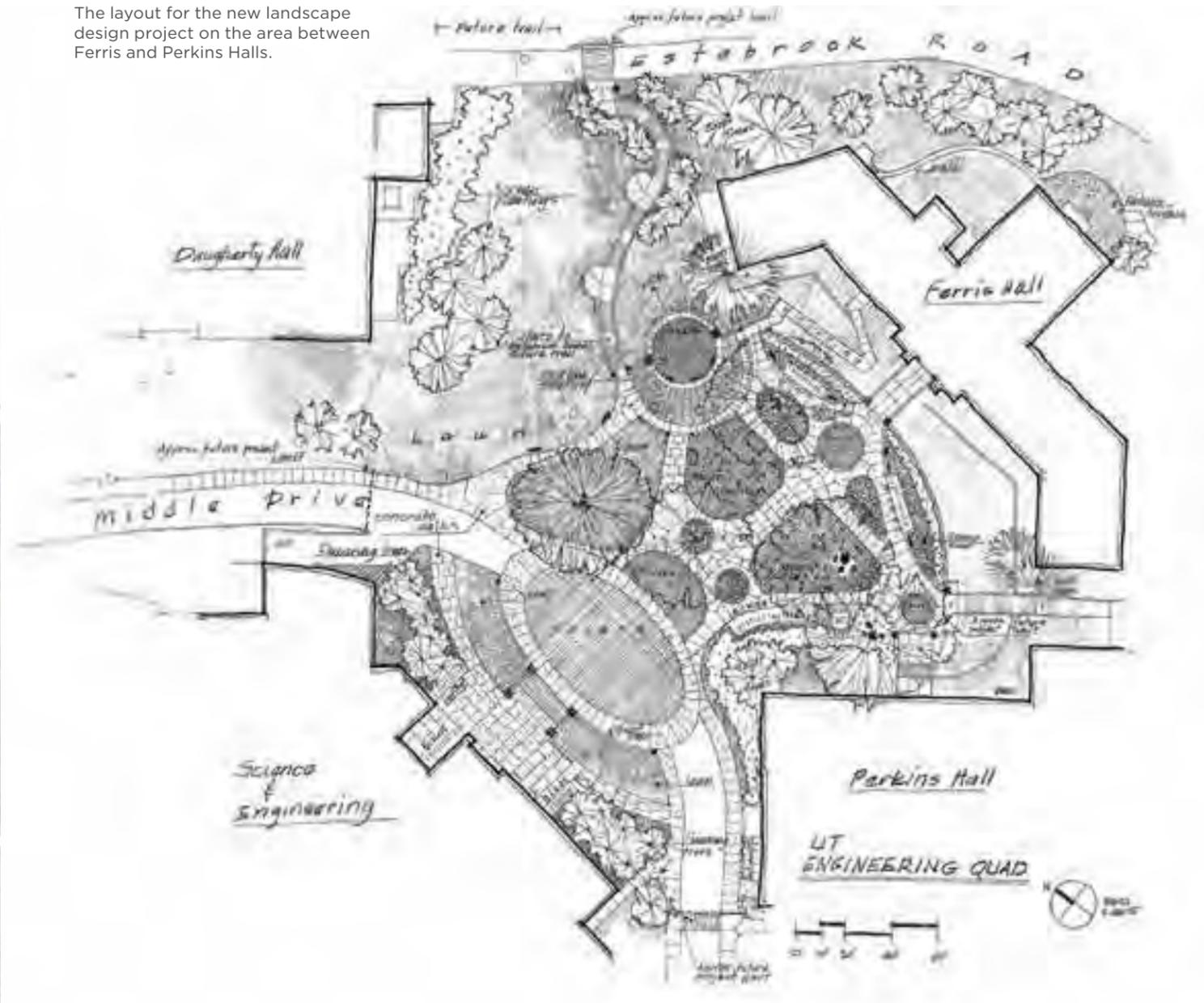
Due to extreme damage from weather, moisture, and vehicles over the years, the infrastructure underlying the area was in very bad shape, so the project has been limited to the area between Cumberland Avenue and the stairs leading to the parking area next to Second Creek. Dunne said that this phase of the project will be completed in time for the football season, with work along the remainder of Estabrook Road up to the John D. Tickle Building continuing after the football season and academic classes have completed.

The current plan is to completely restructure the eastern side of Estabrook Road by early 2016. The university and BWSC are also working with the City of Knoxville to clear out and landscape the bank of Second Creek that is located next to the university's parking lot in order for both areas to provide a consistently attractive and convenient pedestrian area for UT students, faculty, and staff.



Workers install concrete and rebar along a new path that runs between Perkins and Ferris Halls to Estabrook Road.

The layout for the new landscape design project on the area between Ferris and Perkins Halls.



New sidewalks are being installed between Perkins and Ferris Halls.



The engineering campus landscape project as viewed from the front of Perkins Hall next to the Science and Engineering Research Facility.

INTERCOLLEGIATE SUMMER BRIDGE



Students in the 2015 Intercollegiate Summer Bridge Program visited DENSO Manufacturing.

Intercollegiate Summer Bridge Program

The 2015 Intercollegiate Summer Bridge Program (ISB) was held on June 12-July 1, 2015. This second year of the summer bridge program provided the twenty-six participants with opportunities to prepare for the collegiate environment as they develop academic, study, and personal skills while also engaging in career exploration. This residential summer experience offered introductory courses in pre-calculus and chemistry, as well as college life.

The College of Engineering collaborated with the College of Agriculture and Natural Resources and the College of Arts and Sciences to create and host the ISB program, which began in 2014. The focus is to provide a transitional program of study from high school to the university for underrepresented students majoring in science, technology, engineering, and mathematics (STEM). The program is based on an established model initiated by the Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP). ISB offers students an overview of courses required in their freshman curriculum in the STEM areas.

This preliminary exposure to the academic environment of higher education developed academic success skills in the students. The success of the program is measured by testing the students before and afterward, and by the transformation in the students' perception and attitude over the three weeks.

Students who participated in the 2014 ISB improved their chemistry skills by 18% and their pre-calculus skills by 12%. Participating students in 2015 improved chemistry skills by 17%, and pre-calculus skills by 47%.

Several field trips incorporated into the program gave students insight into different aspects of STEM careers, along with leadership and teambuilding experiences. The Mountain Challenge Ropes Course at Maryville College assisted students in building

connections and friendships at the beginning of the program. This trip allowed them to begin acclimating to the new environment while quickly making friends and helping each other succeed.

The ISB group then visited several areas of Oak Ridge National Laboratory (ORNL), including the Oak Ridge Leadership Computing Facility (OLFC), the Spallation Neutron Source (SNS), and the Climate Change Science Institute (CCSI). Dr. Ben Preston gave a presentation on global warming, and the many investigations that the CCSL takes part in concerning this environmental issue. He also told them about summer research opportunities that are available at the institute.

Another trip took students to Sweetwater Valley Farm, located between Philadelphia and Loudon, Tennessee. The farm is known for its agricultural vitality and progress. This particular field trip sparked the interest of the College of Agricultural Sciences and Natural Resources (CASNR) students within the program. Students received insight into how cheese is produced along with learning about varieties of cheese flavors and textures. Students also saw where the cows are milked, and the professional equipment used.

During their last field trip, students toured the DENSO Manufacturing facility in Maryville, Tennessee, and got a glimpse of the engineering employed at the auto-parts manufacturing company. A panel discussion at the end of the tour gave students an overview of the engineering careers at the facility, and also imparted valuable professional development tips for success in their college and professional career. Students walked away with the knowledge of successful professionals in their major, some professional development, and a possible contact for their future endeavors.

For information, visit tlsamp.utk.edu/incoming.html

Students work on improving their library skills during the 2015 Intercollegiate Summer Bridge Program at UT.



Students receive chemistry instruction during the 2015 Intercollegiate Summer Bridge Program at UT.



JOIN THE JOURNEY

Journey to the Top 25. If you've read any UT materials or heard Dean Davis or Chancellor Cheek in the past few years you know we're on a mission to become a top 25 public research university.

It's more than a theme, it's a drive to excellence that motivates our thinking and inspires our actions. **Top 25:** Not just a goal, but a vision that impacts how students and parents think about us, how companies recruit engineering graduates, and how faculty members choose to come here for careers.

Join the Journey is an invitation to our alumni and friends to consider your role in UT's future. It's your future, too. You joined the journey the day you set foot on the University of Tennessee. So tell us your journey stories.

Send us updates on your careers for the alumni segment of this magazine. I suspect you have journey stories with friends, too, because every journey is made a lot more fun with the friends we've made and kept over the years. Do you gather regularly somewhere? Do you come each year to a football or basketball game? Do your families get together? Or do you just have a great photo with those friends? Share them with us and we'll print a photo and quote in one of our engineering publications!

Be Proud! Be Involved! Be Invested! Join the Journey. It's one exciting ride.

To get your photo and quote or a sentence about the friendships you have with other UT engineering graduates, contact Juliette McClure at jmcllu10@utfi.org



(From left to right) Ken Brown (BS/CE '82); Greg Richard (BS/AE '83); Grover Allen (BS/EE '84) and Elijah Durant (BS/ME '83) with the UT cheerleaders.

"Being part of the Minority Engineering Scholarship program is similar to being in a fraternity. The friendships that I made at Tennessee have followed me throughout both my professional and personal career. Wherever I go throughout the country I know I have friends that share a common experience with me that began at the University of Tennessee."

Greg Richard



(From left to right) Kioumars Dawallu (BS/EE '85), Mike Zill (BS/IE '85), Joe Fareed (BS/IE '85).

"It's always great to reconnect with college friends who you shared so much with while back on campus. We shared so many special times and memories while at UTK, including countless hours studying together to achieve the same goal of graduating."

Joe Fareed



I chose the University of Tennessee for its excellent education at a price that would not demand years of my life to pay back. The Tummins Scholarship has helped me accomplish graduating in four years with no student loan debt-enabling me to look at future plans without restriction, and I am very grateful for the support it has provided.

This scholarship also offsets costs in a way that has allowed me time to focus on my degree, research projects, and to serve as a College of Engineering Student Ambassador. In that position, I have been able to tell the UT engineering story to talented high school students from Tennessee and beyond. I want young students to understand that the University of Tennessee is more than athletics-it is a great place to start your academic career!

Gregory Tate '16
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Alumni Profile

Jim Flood, Vice President, Arctic Project Development for ExxonMobil



Jim Flood (right) with UT Chancellor Jimmy G. Cheek (left) at the college's fall 2015 Board of Advisors meeting.

"It was great having my brothers on campus and we took advantage of all of the great outdoor activities around Knoxville and the Smoky Mountains," Flood commented.

Flood also valued his time working in the concrete testing laboratory, where veteran UT professor Dr. Ed Burdette was a mentor and role model for the young students.

"Dr. Ed Burdette taught all of us that the engineering education is about independent, critical thinking and you need to understand the engineering principles vs. memorizing formulas," Flood said. "This understanding has stayed with me for over thirty-five years in the oil and gas industry and has helped me develop a philosophy that 'we don't have problems, we only have solutions' which has helped me work with project teams around the world to develop sound engineering solutions."

After Flood joined ExxonMobil, his first project was the Lena Guyed Tower offshore platform, a one-thousand foot compliant tower, which when installed in 1983 set an industry record for deepwater platforms. His next major project was the Mobile Bay Project, a gas plant and three offshore platforms, in Mobile Bay, Alabama. Flood also worked in

various production operation assignments, including Operation Superintendent positions in Midland, Texas, and LaBarge, Wyoming. When the Exxon and Mobil merger occurred in 2000, Flood moved to the ExxonMobil Development Company where he has helped manage major upstream projects in Chad and Angola Africa; Sakhalin, Russia; South Korea; offshore Newfoundland; and in Alaska.

"I have worked on the Sakhalin Russia Project—three major offshore fields since 2002 and actually lived on Sakhalin Island for four years during the Phase I development," Flood said. "I moved into the Arctic Vice President job in 2010 and I cover three regions: Russia, Newfoundland, and Alaska and currently have six active projects with a total gross capital cost of over \$35 billion."

Flood sees continued success in the future for ExxonMobil, since the energy industry is a growth industry as his company and the other oil and gas companies continuously seek new supplies of energy to meet the ever increasing world demands for clean energy sources.

"The price of oil is low at this time but we have seen many cycles during my thirty-five years in the industry, and you learn to take a long-term approach and continue to work a robust and diversified portfolio to ensure you stay competitive and build tools so when you realize price growth you are ready to move forward," Flood commented. "There is still plenty of growth potential for all of the major oil and gas companies and especially in the Arctic Regions where we believe a very high percentage of the undiscovered oil and gas reserves are still to be found."

Flood enjoys working on major projects and plans to continue his work with ExxonMobil for several more years before considering retirement.

"I have one project in Alaska in the early development phases where we are looking to monetize gas from the North Slope which could be one of the largest major infrastructure projects in North America with costs over \$60 billion. I would like to get this project started and ensure it is on as solid foundation before going into retirement," Flood added.

Flood lives in Magnolia, Texas, with his wife Kate. He has three daughters, Shelbi, Darbi, and Maya and enjoys all of the activities that go along with parenthood: helping the girls with their homework, coaching soccer, and watching UT sports and NFL football with his family.

"I'm a huge UT fan so as you would guess I'm super excited about the program Coach Jones is building and look forward to this season," Flood said. "Go Vols!!"

A "practice interview" with ExxonMobil led Jim Flood to a successful career with the international corporation, supervising projects with total costs in the billions of dollars.

Flood (BS/CE '80), now the Vice President, Arctic Project Development for ExxonMobil, was considering several different civil engineering firms to start his engineering career after receiving his bachelor's degree. He decided to meet with Exxon to brush up on his interviewing skills, and instead ended up accepting a position with the company, starting on April 20, 1980, in New Orleans with the Offshore Drilling Department.

Flood was born in Germany into a military family, but the Floods returned to the US when he was



UT Alumnus Jim K. Flood (right) Vice President, Arctic/Eastern Canada, ExxonMobil, with Jim Taylor (left), ExxonMobil's Production Manager in Russia.

four and Flood grew up in Clarksville, Tennessee. The family came over on the USS Darby, which at that time was still moving military officers and their families from overseas to the US by ship. Flood saw photos of his dad, John, who started his career in the Army Corps of Engineers, building bridges and roads, which sparked his interest in civil engineering.

"I wanted to build projects around the world," Flood said. "My dad's work was in part why I decided to go into engineering."

He attended Austin Peay University in Clarksville, which was an affordable option, but as he was pursuing an engineering degree, he transferred to the University of Tennessee, Knoxville to complete his civil engineering studies.

"UT offered the best balance between costs and academic quality," Flood said. "The university also had a civil engineering program with an excellent reputation."

Flood had plenty of friends from Clarksville at the University, and settled in easily, enjoying his studies and campus activities such as UT Vols football and basketball games and intramural sports. One of the most exciting events was when Flood's team won the football intramural championship with several of his friends from Clarksville.

Flood's two brothers, John and Larry, also attended UT and graduated with engineering degrees.

Alumni News

1960s



J. Ross Greene's historical novel A Fortress and a Legacy



J. Ross Greene

J. Ross Greene (BS/CE '62, MS/CE '64) earlier this year published the historical novel *A Fortress and a Legacy*. The book is a fact-based story set during World War II, inspired by the discovery of 1,000 letters written to each other by Greene's uncle and aunt, Ross and Thelma Perrin; his mother and grandmother; and himself.

Greene researched the history surrounding his family's personal story, including visits to Germany and interviews with historians and veterans, some of who served with his uncle. Greene taught in the civil engineering department while working on his master's degree in 1963-1964.

He now lives in Atlanta, Georgia, and is the founder and CEO of Greene Consulting. For information on his novel, visit afortressandalegacy.com.



Dewey Hodges

Dr. Dewey H. Hodges (BS/AE '69) has been chosen to receive the 2015 Spirit of St. Louis Medal from the American Society of Mechanical Engineers (ASME). Hodges is currently an aerospace engineering professor at the Georgia Institute of Technology (Georgia Tech). A longtime Fellow of ASME, AIAA, AHS and AAM, Hodges will formally receive the medal and a \$1,000 honorarium during ceremonies to be held at the group's Mechanical Engineering Congress and Exposition, to be held in Texas this November.

The Spirit of St. Louis Medal was established in 1929 by Philip D. Ball, ASME members, and citizens of St. Louis. It is awarded for meritorious service in the advancement of aeronautics and astronautics.

In announcing Hodges as its 2015 medal recipient, ASME praised him for "developing the theory and methodology for modeling the dynamics and aeroelasticity of composite helicopter rotor blades,

highly flexible slender aircraft wings and wind turbine blades; and its implementation in the VABS software used extensively in research and industry."

Hodges joined Georgia Tech's aerospace engineering faculty in 1986, following a sixteen-year stint as a research scientist at the US Army Aeroflightdynamics Directorate at Ames. He was also a guest lecturer at his alma mater, Stanford University, during that time.

As the 2015 Spirit of St. Louis Medal recipient, Hodges is in rarified company with past winners such as Daniel Guggenheim, Charles Draper, Neil Armstrong, and Robert Loewy. Last year, Hodges was selected to give the much-coveted Nikolsky Lecture by the American Helicopter Society.

1980s

Garrett Skrobot (BS/EE '88) celebrated his fifteenth anniversary this year as an integration engineer at NASA's Kennedy Space Center at Cape Canaveral, Florida. Before working at NASA, Skrobot was employed by General Dynamics as a system engineer for the Atlas/Centaur booster program. During his tenure with General Dynamics, he participated in more than fifty launches while working in the electrical, ground instrumentation, payload mission integration, telemetry, and project management divisions.

2000s



Dr. Amir Haghverdi

Dr. Amir Haghverdi (PhD/AgE '15), a recent graduate in the Department of Biosystems Engineering and Soil Science, accepted a tenure-track assistant professor position in the Department of Biological Systems Engineering at the University of Nebraska-Lincoln (UNL). This is Haghverdi's second doctoral degree.

Heath E. Johnson (BS/ChE '08) earned his PhD in chemical engineering at North Carolina State University on January 5, 2015. His thesis was titled "Cytoskeletal and Signaling Dynamics Underlying Directional Persistence of Cell Migration." Johnson is now working as a postdoctoral research assistant at Princeton University.

Dr. Belle R. Upadhyaya and Dr. Nirmala Upadhyaya Establish Scholarship

Dr. Belle R. Upadhyaya, PhD, PE, and his wife, Nirmala B. Upadhyaya, MD, MPH, have strong ties to the University of Tennessee. Belle is a professor of nuclear engineering and has been working at the University of Tennessee for forty years, while his wife, a UT alumna, has been with the University of Tennessee Medical Center, Knoxville, for her career.

"It has been a privilege working at the university, and we appreciate very much the support given to us by colleagues, students, and staff over the years," the Upadhyayas explained.

During his time at UT, Belle's research and teaching have focused on nuclear system dynamics, instrumentation and control, next generation reactors, power plant monitoring and diagnostics, advanced information processing, and reliability and maintainability engineering. He has enjoyed his time with the Department of Nuclear Engineering and finds the opportunity for interaction with students and professionals both internal and external to UT rewarding.

This past spring, the Upadhyayas created the Upadhyaya Family Endowed Engineering Scholarship. This scholarship is available to juniors and seniors in the Department of Nuclear Engineering who have demonstrated successful academic performance.

Belle and Nirmala wanted to give back to the institution that has been so good to them. They chose to create an engineering scholarship for nuclear engineering students because they wanted to support deserving students in the College of Engineering in achieving their goals.

"The students in engineering have to dedicate their efforts and spend long hours to excel in their technical areas of interest," explains Belle.

The Upadhyayas hope this scholarship will encourage and help promising nuclear engineers to complete their degrees in good standing.

As the nuclear engineering graduate program currently ranked #4 among all nuclear engineering programs at public universities in the United States, it is a great time to be involved with the department. Belle plans to continue teaching and researching in the department. He hopes to develop new areas of research for the future, complete a textbook focused on Nuclear System Dynamics, Instrumentation, and Controls, and continue to impact our future engineering leaders.



Dr. Belle Upadhyaya and Dr. Nirmala Upadhyaya

Memorials

Faculty

Dr. David Rosenberg, professor emeritus in the Department of Electrical Engineering and Computer Science, died on March 2, 2015, at the age of 86. He was a resident of Knoxville, Tennessee. Rosenberg was born August 26, 1928, in Brooklyn, New York. He worked as an electronics technician for the US Coast Guard from 1946-1949. He received his Bachelor's of Electrical Engineering (Cum Laude) in 1953 from New York University (NYU). He received the S.B. Duryea Graduate Fellowship for graduate school and received his Master's of Electrical Engineering in 1954 from NYU, with a thesis titled, "Wide Band Voltage (Current) Regulation of Transmission Lines."

Rosenberg worked as an instructor in electrical engineering at NYU from 1954-1962. He received his Doctorate of Engineering Science in electrical engineering from NYU in 1964 with a dissertation titled, "Fields in a Closed, Periodically Thin Iris Loaded, Uniform Waveguide."

He came to the Department of Electrical Engineering at The University of Tennessee in September 1965 as an assistant professor and was promoted to associate professor in 1968. He retired from UT in December 1996.

Rosenberg developed several graduate courses in electromagnetics, microwaves, and fields at UT. He also taught circuits, electronics, antennas, and fields at the undergraduate level. He did consulting work for the Army Research Office and for the US Air Force Systems Command in Tullahoma and for NASA in Huntsville, Alabama. He was a member of the Institute of Electrical and Electronics Engineers (IEEE), American Society of Engineering Educators (ASEE), American Association of University Professors (AAUP), and American Mathematical Society (AMS). He also was a member of the following honor societies: Tau Beta Pi, Eta Kappa Nu, and Sigma Xi. He received a NASA Apollo 10 Flight Contribution Award.

Alumni

Ronald B. Alley (BS/EE '66) died on August 1, 2015. He was a resident of Fort Wayne, Indiana.

Paul T. Artis (BS/EE '58) died on February 24, 2015. He was a resident of Huntsville, Alabama.

John V. Barnette (BS/CE '49) died on September 13, 2014. He was a resident of Greensboro, North Carolina.

Joseph Albert Brake (BS/ChE '48) died on June 7, 2015. He was a resident of Maryville, Tennessee.

Denson Burnum Broadfoot (BS/EE '50) died on July 31, 2015. He was a resident of Chattanooga, Tennessee.

Ronald L. Davis (MS/ME '74) died on May 12, 2015. He was a resident of Jackson, Tennessee.

Bradley Jacob Eckel (BS/ME '13) died on April 6, 2015. He was a resident of Houston, Texas.

Wayne Scott Estes (BS/EE '65) died on April 24, 2014. He was a resident of Nashville, Tennessee. Estes worked for NASA in Houston and was a member of the National Society of Professional Engineers. He held at three patents registered in the Library of Congress. As an avid environmentalist, he helped address technical issues with the Alaskan pipeline to aid with caribou migration. He also worked on movement-dynamic designs for Cerebral Palsy patients, including his daughter.

Virgil W. Farmer (BS/CE '49) died on August 4, 2015. He was a resident of Springfield, Oregon.

Warren Lee Franz (BS/ChE '62, MS/ChE '65, PhD/ChE '68) died on April 13, 2015. He was a resident of Missouri City, Texas.

Lewis Thomas Hardin III (BS/ISE '57) died on April 30, 2015. He was a resident of Chicago, Illinois.

John Warren Headrick (BS/MetE '68) died on April 6, 2012. He was a resident of Knoxville, Tennessee.

Helen Henson (MS/MetE '79) died on May 4, 2015. She was a resident of Clinton, Tennessee.

Charles Steven Lowe (BS/EE '74) died on June 2, 2015. He was a resident of Springtown, Texas.

Duane May (BS/EECS '72) died on November 17, 2012. He was a resident of Pasco, Washington.

Fred Allen Mayse (BS/EE '57) died on May 18, 2015. He was a resident of Farmington, Missouri.

Jack McAllister (PhD/AE '68) died on July 19, 2015. He was a resident of Midland, Texas.

Ray L. McLoud (BS/EE'46) died on July 24, 2014. He was a resident of Arlington, Texas.

Herbert Carl Morris (BS/CE '51) died on March 16, 2015. He was a resident of Knoxville, Tennessee.

John Wallace Mottern (BS/ChE '55, MS/ChE '57, PhD/ChE '60) died on November 6, 2014. He was a resident of Colfax, North Carolina.

Gene Palmer (BS/ChE '55) died on June 16, 2015. He was a resident of Lumberton, Texas.

Jonathan Frederick Quarles (BS/ChE '65) died on June 24, 2015. He was a resident of St. Louis, Missouri.

Thomas Warren Scandlyn (BS/EE '49) died on July 23, 2014. He was a resident of Florham Park, New Jersey.

Robert Watson Schwartz (BS/ME '56) died on May 31, 2015. He was a resident of Germantown, Tennessee.

Col. Barnett J. Sledge Sr. (BS/ME '36) died on January 9, 2012. He was a resident of Hamilton, Ohio.

Wade W. Smith (BS/CE '43) died on April 21, 2015. He was a resident of Knoxville, Tennessee.

Thomas Murrell Snodgrass (BS/CE '50) died on June 2, 2015. He was a resident of Rockford Tennessee.

Alexander Stevenson (BS/CE '40) died on February 2, 2015. He was a resident of Fall River, Massachusetts.

John C. Van Hooser (BS/EE '66) died on November 22, 2013. He was a resident of Merritt Island, Florida.

James Lee "Pete" Van Horn (BS/ME '57) died on August 2, 2015. He was a resident of Brunswick, Georgia.

James Albert "Al" Wood (BS/ChE '92) died on February 7, 2014. He was a resident of Tomball, Texas.

Events & Awards

College of Engineering Celebrates Opening of New Eastman Unit Operations Laboratory

Eastman in Kingsport, Tennessee, has long been a strategic partner for UT's College of Engineering.

The new Eastman Unit Operations Laboratory was officially dedicated on Thursday, April 9, 2015, at 10:30 a.m. in a ceremony that took place in a tent just outside the Nathan W. Dougherty Engineering Building.

The event celebrated the latest example of the Eastman-College of Engineering partnership, bringing business and education together to enable students to be successful in the workforce and to allow faculty to conduct valuable innovative research.

Alvin and Sally Beaman Professor and Head Dr. Bamin Khomami welcomed guests. After remarks by COE and Eastman officials and dignitaries, guests enjoyed conducted on tours of the laboratory, followed by a luncheon in the Neyland Stadium East Skybox on the seventh floor.

"Eastman's support of our college is certainly important to our growth and success," said Dr. Wayne Davis, dean of the college. "The opening of this lab is a key moment for us, one that would not have

been possible without this partnership."

The lab offers state-of-the-art facilities for engineering students to learn real-world practices.

Unit operations labs are often used to help chemical engineering students take theoretical knowledge from the classroom and put it to use under monitored conditions.

In particular, students can go through the process of converting raw materials into finished products, something that helps them prepare for employment after college.

"Having a lab such as this will allow us to expose our students to the practices and experience that are so critical to success after college," said Khomami, professor head of the Department of Chemical and Biomolecular Engineering.

For a Fortune 300 company like Eastman, being approximately one hundred miles away from UT has provided them with one of their most critical resources: people.

While funding and mentoring provided by Eastman help the college, having such a highly skilled group of graduates in their backyard is one of the significant ways that the COE returns the favor.



"Having the best engineering college possible benefits the region, not just Eastman," said Etta Clark, Eastman's vice president for global public affairs and policy. "Our relationship is about collaboration and teamwork, and developing a solid foundation for students to succeed in the workforce. When those students secure local jobs, it benefits everyone."

In addition to the lab itself, Eastman also has sponsored a commons area in Dougherty, where students study or relax; three professors of practice positions; and the HITES—High School Introduction to Engineering Systems—camp. The company's contributions to UT total over \$6 million.



The ribbon-cutting team for the dedication of the Eastman Unit Operations Laboratory in the Dougherty Engineering Building (left to right): COE Board of Advisors Member and Vice President and General Manager, Manufacturing Support and Quality, Eastman, J. Parker Smith; UT alumna and Strongwell Chairman John D. Tickle; Vice President, Human Resources, The Americas, Eastman, Edna Kinner; Senior Vice President and Chief Technology Officer, Eastman, Steve Crawford; COE Dean Wayne T. Davis; CBE Professor and Department Head Bamin Khomami; Senior Vice President and Chief Manufacturing and Engineering Officer, Eastman, Mark Cox; and Vice President, Global Public Affairs and Policy, Eastman, Etta Clark.



COE Dean Wayne Davis addresses the crowd at the Eastman Unit Operations Laboratory dedication.



Alvin and Sally Beaman Professor and Head of the Department of Chemical and Biomolecular Engineering Dr. Bamin Khomami greets guests and dignitaries at the dedication of the Eastman Unit Operations Laboratory in the Dougherty Engineering Building.



Steve Crawford, Senior Vice President and Chief Technology Officer, Eastman, speaks at the lab dedication.



COE donor and supporter John Tickle discusses the importance of the new Unit Operations Laboratory at the dedication event.

IACMI, ACMA, UT and ORNL Meet with COE Alumnus and Donor John D. Tickle



John Tickle (center, in orange and blue striped tie) meets with representatives of UT, ORNL, ACMA, and IACMI including Governor's Chair Dr. Suresh Babu (far left), UT's Vice Chancellor for Research Taylor Eighmy (far right), and Department of Civil and Environmental Professor Dayakar Penumadu (left of Tickle), the co-principal investigators of the IACMI project, during a recent visit to the university.

One of the critical elements for the success of the Institute for Advanced Composites Manufacturing Innovation, or IACMI, announced by President Barack Obama in January, is collaborating with some of the leading institutes, research centers, and companies around the world.

Led by UT and Oak Ridge National Laboratory (ORNL), the group has built a number of relationships and recently welcomed one such partner, the American Composites Manufacturers Association (ACMA) to campus.

ACMA leadership got to learn firsthand about advanced manufacturing taking place at UT and ORNL. They also got to visit with one of their former leaders.

John D. Tickle (*BS/IE '65*)—a longtime supporter of UT and a member of the College of Engineering's emeritus board of advisors—is past chairman of ACMA, and was on hand to meet IACMI and ACMA members.

ACMA recently honored Tickle for his fifty years of service to advanced composites manufacturing, in addition to previously having awarded him the 2012 Lifetime Achievement Award and the 2009 Chairman Award.

"John Tickle has had an incredible influence on ACMA," said Jay Merrell, current chair of the ACMA board and Vice President of Norplex-Micarta. "Many of his efforts and ideas are still in place in our organization today. He has also been an important driver in the development of the composites industry throughout his fifty years."

Strongwell, the company Tickle bought in 1972 when it was known as the Morrison Molded Fiber Glass Company, is a resource member of the IACMI consortium.

According to Cliff Berle, ORNL expert in carbon fiber and composites, Strongwell's pultrusion expertise and equipment are part of the support they are providing IACMI.

"John's involvement in IACMI shows his ongoing commitment to driving innovation in our industry," said Merrell. "We look forward to John continuing to help guide ACMA and the composites industry with his insight and good counsel."

Tickle's visit also gave IACMI a chance to thank him for his service.

"It was special to recognize John Tickle and Strongwell Corporation this way," said Dr. Taylor Eighmy, UT's vice chancellor for research and engagement. "John is a national leader in the composites industry and has served ACMA. It was great to meet with ACMA, introduce them further to IACMI, and have a chance for all of us to recognize John's contributions and celebrate Strongwell's leadership in pultrusion. They will be a key partner for us in IACMI."

The visit also showed the importance of composites research and the strength of the UT-ORNL partnership.

Since UT joined with Battelle Memorial Institute to jointly manage ORNL in 2000, the two institutions have forged ahead with some of the leading composites-related research in the country.

In addition to IACMI, the partnership has led to the Joint Institute for Advanced Materials, the Nonwovens Research Laboratory, Manufacturing Demonstration Facility, and the Governor's Chairs Program and sharing of joint faculty.

Research areas including low cost carbon fiber, pultruded composites, modeling of materials and the recycling and characterization of reinforced plastics, polymers and fibers—all of which are important to IACMI and ACMA—have also taken great leaps forward under the partnership.

COE's EcoCAR Team is On Exhibit at Earth Week Celebration

The UT Department of Mechanical, Aerospace, and Biomedical Engineering's EcoCAR3 and the automotive team that helped to design it was featured, along with Knoxville Mayor Madeline Rogero and Knox County Mayor Tim Burchett, at the Knoxville Earth Fest celebration at the World's Fair Park on Saturday, April 18, 2015. The official 2015 Earth Day was Wednesday, April 22.

The team answered questions related to the program, which is part of a twenty-six-year effort known as the Advance Vehicle Technology Competition (AVTC), under the US Department of Energy (DOE).

"We talked to people, addressed any interests they have in the Camaro, in the program, or in the environment," said UT team media representative Elizabeth Floyd. "We had giveaways and opportunities for people—including the mayors—to get their pictures taken with the car."

EcoCAR 3, the current level of the competition, is trying to leverage the "muscle power" of the iconic Chevrolet Camaro while at the same time reducing its impact on the environment via hybrid power capabilities.

GM donated a Camaro to each of the sixteen university teams to experiment with for the competition.

The AVTC has had a series of competitions over the years with the goal of increasing efficiency in vehicles, moving toward hybrid power systems, and exploring fuel options. Each team is made up of students from engineering, businesses and communication programs, with the idea being to not only produce a more efficient vehicle but market it as well.

The DOE, through Argonne National Laboratory, helps with logistics and testing, while Siemens donated software that the team uses.

In addition to altering the environmental impact of the car itself, the team is committed to providing outreach about the program, visiting the Science Café at Ijams Nature Center, STEM training at Holston Middle School, and several other events at UT, as well as the recent FIRST Robotics competition.

The team also took part in Sevierville's Earth Day celebrations at the Sevierville City Park Pavilion and UT's Earth Day celebration hosted by the Office of Sustainability at the Humanities Amphitheater. The team also met with students from Austin-East High School and the L&N STEM Academy.

For more information about the EcoCAR3 program, visit <http://ecocar3.org/tennessee/about-us/>

For more information about Knoxville's Earthfest, visit <http://www.knox-earthfest.org>.



The EcoCAR 3 Team (left to right): Team faculty advisor Dr. Butch Irick; Grace McGinnis; Chris Woudstra; Sarah Zimmerman; Preston Jacobson; Ellie Boehmer; Alex Cox; Michael Potts; Dean Wirth; Nick Ponzio; and Ben Allen.



Booths at the Knoxville Earth Day 2015 Celebration highlighted ways to help the planet with conservation and recycling.

COE Board Member and Alumnus is Honored by ISE Department

Terry K. Begley (*BS/ChE '69*), the retired Vice President, Global Supply Chain and Chief Procurement Officer for Eastman Chemical Company, and a member of the UT National Board of Directors and the College of Engineering's Board of Advisors, was honored by the Department of Industrial and Systems Engineering (ISE) for a generous gift to the ISE department's Excellence Endowment with the naming of the Terry K. Begley Faculty Office. The office is located in Room 522 on the fifth floor of the John D. Tickle Engineering Building and is currently occupied by ISE professor Dr. Xueping Li. Dr. John Kobza, professor and head of ISE, presented the plaque and expressed his appreciation on behalf of the department.

Terry Begley (right) and his wife, Connie (left), with a plaque commemorating the naming of the Terry K. Begley Faculty Office in the John D. Tickle Engineering Building.





A group of excited engineering graduates at the COE's 2015 commencement ceremony.



COE Dean Wayne Davis (right) presents a plaque to UT engineering alumnus Ken Huntsman (left) in honor of Huntsman serving as keynote speaker for the college's 2015 commencement.



Lt. Col. Brian J. Lancaster (far left) swears in graduating engineering students (left to right) Charles Bolen, Alex Oakley, Samuel Jacob, Jacob Bouck, and Zachary Rutledge during a military induction ceremony at the end of the commencement event.



Graduates get ready to receive their engineering degrees at the college's 2015 commencement event.

College of Engineering Celebrates Commencement 2015

The University of Tennessee College of Engineering held its spring 2015 Commencement Ceremony at Thompson-Boling Arena on Friday, May 8.

Keynote speaker for the event was Ken Huntsman, one of the founders of American Online, who earned his master's degree in computer science at UT in 1977. Huntsman related his story to students, encouraging them to excel as they begin the next part of their journeys through life, whether they plan to continue their education or enter the workforce.

Huntsman helped create one of the first e-mail systems before going to work for a company that helped download video games to the Atari VCS, the grandfather of home video game systems.

He and others from that group later founded Quantum Computer Services, which is now known as America Online. For his contributions there, he was named an AOL Fellow before retiring in 2007.

Huntsman serves on the College of Engineering Board of Advisors at both UT and Penn State, where he earned his undergraduate degree.

In his address, Huntsman told graduates to find ways to help society.

"The world is dependent on technology, and our collective mission as engineers is to ensure that technology is used to better humankind," said Huntsman. "And remember that no one you admire would have gotten where they are without pushing the boundaries- whether they were technological, practical, or even social.

Associate Dean Masood Parang emceed the ceremony, in which more than three hundred students received their diplomas, while Dean Wayne Davis addressed the graduates and Dr. Richard Bennett, director of the Engineering Fundamentals Program, read the names as the students crossed the stage. UT Provost and Senior Vice Chancellor Susan Martin also took part in the processional and ceremony.

The college's top students, chemical engineering's Tyler Sprouse and civil engineering's Karen Lee, were recognized, while chemical engineering's Chris Ludtka was honored as the National Academy of Engineering Grand Challenge Scholar.

Special recognition was also given to the college's graduating ambassadors—Michael Hutton and Amanda P. Williams of aerospace engineering and Sarah Fervan, Tyler Rowe, and Cassandra Smith of nuclear engineering.

Following the conclusion of the conferral of degrees and the reading of names, Air Force Lt. Col. Brian J. Lancaster swore in engineering graduates Charles Bolen, Jacob Bouck, Samuel Jacob, Alex Oakley, and Zachary Rutledge to the Air Force as the conclusion of their time in ROTC. All enter their respective branches as second lieutenants.

The ceremony concluded with the UT Alma Mater.

International Space Station Commander and Astronaut Butch Wilmore Visits UTSI



Captain Wilmore poses with some of the UTSI graduate students and former graduate students at the vacuum chamber. Left to right: Matt DiMaiolo, David Surmick, Julie King-Swofford, Astronaut Wilmore, Will Stevens, E. Lara Lash, and Jonathan Kolwyck.

NASA astronaut and US Navy Captain Barry "Butch" Wilmore, a 1994 graduate of the University of Tennessee Space Institute, captivated an audience of more than four hundred people as he talked with students, faculty, and board members about his recent mission to the International Space Station (ISS). Attendees also included approximately one hundred and twenty local middle and high school Science, Technology, Engineering, and Math (STEM) honor students.

Wilmore graduated from Mt. Juliet High School before receiving an Electronic Engineering degree from Tennessee Tech and then earning a Master's degree in Aviation Systems in 1994 from the University of Tennessee Space Institute. He went on to become a Navy Pilot before being selected as a NASA astronaut in 2000.

During his recent visit to UTSI, he shared pictures and highlights from his one hundred and sixty-seven day ISS mission. He talked about his responsibilities during a typical day onboard the orbiting laboratory, including his two-hour daily exercise program to maintain muscle mass due to zero gravity.

As part of his Expedition 42 responsibilities, he completed three space walks that lasted several hours each. He described how physically and mentally challenging they can be.

As part of his presentation at UTSI, Wilmore showed a nineteen-minute video with footage shot aboard the space station. Much of it was time-lapse video of Earth with unique images of countries around the world, lightning storms, aurora borealis in the north, and wind swept deserts.

In addition, he displayed a replica of the first functional socket wrench he printed in space using a 3D printer. He explained that 3D printer technology could be vital in the future of space exploration to make what cannot be taken into space with the astronauts. Due to weight limits for cargo, deep space missions will not be able to carry all the spare parts and tools crews may need along their journey. This game-changing technology would allow future space explorers to "print" critical tools and parts on an as-needed basis, thus freeing up cargo space for life-sustaining consumables.

After his presentation, Wilmore answered questions from the audience before visiting the vacuum chamber at the Space Institute and attending a luncheon in his honor. He also presented UTSI with an autographed picture commemorating the 42nd ISS expedition.

COE Dean Wayne Davis and his wife, Sylvia, attended the event and enjoyed talking with the astronaut about his experiences in space. Wilmore had addressed potential engineering students from the ISS during the 2014 COE Engineers Day.



Barry Wilmore wears a UT College of Engineering T-shirt while spinning a football aboard the International Space Station. Wilmore earned his master's in aviation systems from UT's Space Institute in 1994.



COE Dean Wayne Davis (right) and wife Sylvia Davis (left) meet Astronaut Butch Wilmore.



Outstanding Engineering Faculty and Staff Recognized at the COE 2015 Faculty and Staff Awards Dinner

A recent night of recognition for outstanding achievement for the College of Engineering culminated with James B. Porter Jr. receiving the Nathan W. Dougherty Award—the college's highest honor—at the Holiday Inn World's Fair on Thursday, April 9, 2015, during the college's annual Faculty and Staff Awards Dinner.

College faculty, staff, and current and former Board of Advisors members were on hand to hear Porter, who earned his degree in chemical engineering at UT, accept the award while praising the college's progress in recent years.

The college established the Dougherty Award in 1957 to pay tribute to the man who served as its dean from 1940-1956, and to honor engineers whose

accomplishments have brought UT recognition.

After graduating from UT, Porter joined DuPont in 1966 and remained with the company, aside from a stint in the US Army, until retiring in 2008 as the company's Vice President for Engineering and Operations.

In addition to his work with DuPont, Porter served on the college's Board of Advisors—including as its president—as the chairperson for the Construction Industry Institute and the of United Negro College Fund of Delaware, and on the boards of the American Institute of Chemical Engineers, FIATECH, the Mascaro Sustainability Initiative, and the Fieldbus Foundation, as well as the advisory board of AIChE's Center for Chemical Process Safety.

He received FIATECH's inaugural award for technology leadership in 2008, which was named in his honor, as well as the 2007 Society of Women Engineers Rodney D. Chipp Memorial Award, the 2005 Engineering and Construction Contracting Association Achievement Award, and CII's 2004 Carroll H. Dunn Award of Excellence.

Porter currently serves as founder and president of Sustainable Operations Solutions, which helps promote safer, more efficient, more productive work environments.

Additional award recipients at the college's Faculty and Staff Awards Dinner included:

Outstanding Support Staff Awards:

Brad Kiser, Data Analyst, Engineering Research Office

Tonya Brewer, Account Specialist, Department of Materials Science and Engineering

Jeff . and Janet P. Davis Outstanding Faculty Advisor:

Dr. Ben Blalock, Blalock, Kennedy, Pierce Analog Electronics Professor, Department of Electrical Engineering and Computer Science

Moses E. and Mayme Brooks Distinguished Professor:

Dr. Stephanie TerMaath, Department of Mechanical, Aerospace, and Biomedical Engineering

Allen and Hoshall Engineering Faculty Professor:

Dr. Jens Gregor, Department of Electrical Engineering and Computer Science

Leon and Nancy Cole Superior Teaching Award:

Dr. Robert Bond, Department of Mechanical, Aerospace, and Biomedical Engineering

Charles Edward Ferris Faculty Award:

Dr. Christopher Cherry, Department of Civil and Environmental Engineering

Teaching Fellow Awards:

Dr. Lawrence Heilbronn, Department of Nuclear Engineering

Dr. Mingzhou Jin, Associate Head, Department of Industrial and Systems Engineering

Dr. Jeffrey Reinbolt, Mechanical, Aerospace, and Biomedical Engineering

Professional Promise in Research Awards:

Dr. Yanfei Gao, Department of Materials Science and Engineering

Dr. Gong Gu, Department of Electrical Engineering and Computer Science

Dr. Lawrence Heilbronn, Department of Nuclear Engineering

Dr. Fangxing Li, Department of Electrical Engineering and Computer Science

Research Achievement Awards:

Dr. Ben Blalock, Blalock, Kennedy, Pierce Analog Electronics Professor, Department of Electrical Engineering and Computer Science

Dr. Dayakar Penumadu, Fred N. Peebles Professor, Department of Civil and Environmental Engineering

Dr. George Pharr, Chancellor's Professor, Director of the Joint Institute for Advanced Materials, Department of Materials Science and Engineering

Dr. John Schwartz, Department of Civil and Environmental Engineering

Dr. Kevin Tomsovic, Director of CURENT, Department of Electrical Engineering and Computer Science

Dr. Lawrence Townsend, Department of Nuclear Engineering Translational Research Award:

Dr. Jie (Jane) Wu, Department of Electrical Engineering and Computer Science



COE Dean Wayne Davis (left) presents the Nathan W. Dougherty Award to UT alumnus and former COE Board of Advisors Chair Jim Porter (right) at the Faculty and Staff Awards Dinner.



Dean Davis (left) and Associate Dean Keppens (far right) present the Teaching Fellow Awards to (left to right): Dr. Jeffrey Reinbolt, Dr. Mingzhou Jin, and Dr. Lawrence Heilbronn at the Faculty and Staff Awards Dinner.



Tonya Brewer, Accounting Specialist III, Department of Materials Science and Engineering (center), receives the Outstanding Support Staff Award from Dean Wayne Davis (left) and Associate Dean for Academic and Student Affairs Masood Parang (right).



Dean Wayne Davis (left) and Associate Dean for Research and Technology William Dunne (right) present the Professional Promise in Research Awards to (left to right) Dr. Fangxing Li; Dr. Lawrence Heilbronn; and Dr. Gong Gu. Not pictured: Dr. Yanfei Gao.



Brad Kiser, Data Analyst for the Engineering Research Office (center) receives the Outstanding Support Staff Award from Dean Davis (left) and Associate Dean Parang (right).



Dean Davis (third from left) and Associate Dean Dunne (right) present the Research Achievement Awards to (from left) Dr. Ben Blalock; Dr. George Pharr; Dr. Lawrence Townsend; Dr. John Schwartz; Dr. Dayakar Penumadu; and Dr. Kevin Tomsovic.



Dean Wayne Davis (left) and Associate Dean for Faculty Affairs Veerle Keppens (right) present the college-wide faculty awards to (left to right): Dr. Jens Gregor; Dr. Chris Cherry; Dr. Robert Bond; Dr. Stephanie TerMaath; and Dr. Ben Blalock.



Dr. Jane Wu (center) receives the Translational Research Award from Dean Davis (left) and Associate Dean Dunne (right).

Calendar

Fall 2015		Spring 2016	
Classes Begin	Aug 19	Classes Begin	Jan 13
Labor day	Sept 7	2nd Session Begins	Mar 3
Fall Break	Oct 15-16	Spring Break	Mar 14-18
Classes End	Dec 1	Classes End	Apr 29
Study Day	Dec 2	Study Day	May 2
Exams	Dec 3-4, 7-10	Exams	May 3-6, May 9-10
Graduate Hooding	Dec 10	Graduate Hooding	May 12
Commencement	Dec 11	Commencement	May 11-14
Official graduation Date	Dec 11	Official graduation Date	May 14

Contact Information

Senior Administration		Communications	974-0533
Dr. Wayne Davis, Dean of Engineering		Dean's Office	974-5321
Dr. Bill Dunne, Associate Dean for Research & Technology		Development	974-2779
Dr. Veerle Keppens, Associate Dean for Faculty Affairs		Engineering Advising Services	974-4008
Dr. Masood Parang, Associate Dean for Academic & Student Affairs		Engineering Diversity Programs	974-1931
Departments		Engineering Fundamentals	974-9810
Chemical & Biomolecular	974-2421	Engineering Professional Practice	974-5323
Civil & Environmental	974-2503	Engineering Research	974-8360
Electrical & Computer Science	974-3461	Engineering Student Affairs	974-2454
Industrial & Information	974-3333	Finance & Admin. Affairs	974-5279
Materials Science	974-5336	Research Centers	
Mechanical, Aerospace &		Materials Processing	974-0816
Biomedical	974-2093	Maintenance & Reliability	974-9625
Nuclear	974-2525	Scintillation Materials	974-0267
Administration & Programs		Transportation Research	974-5255
		Intelligent Systems and	
		Machine Learning	974-5803
		CURRENT	974-9720
		Innovative Computing Laboratory	974-8295

Engineering Professional Practice Cookout Draws More than 1,400



COE Dean Wayne Davis (2nd from left), and EPP Director Todd Reeves (4th from right), along with Josh Dobbs (center, in back), welcome students to the Engineering Professional Practice welcome back cookout.

The Office of Engineering Professional Practice recently held its seventeenth annual welcome back cookout, its largest yet with more than 1,400 participants.

Office director Todd Reeves kicked off the event with the help of College of Engineering Dean Wayne Davis and UT quarterback and aerospace engineering student Joshua Dobbs.

According to Reeves, the idea behind the cookout is threefold: to welcome students back to campus in a fun way, to introduce them to his office, and to offer companies and students a chance to visit with one another.

This year's event was sponsored and attended by nine companies: Altec, DENSO, Duke Energy, Eastman, Garmin, International Paper, MAHLE, Shaw Industries, and Southern Company.

While it was hosted with engineering students in mind, faculty, staff and students from any discipline were welcomed to a Buddy's BBQ spread of sandwiches, sides, and desserts.

In addition to thanking sponsors, Reeves made a special point to single out the efforts of UT's Facilities Services, as well as others within the college and the university for setting up the event.