The mission of the University of Tennessee College of Engineering is:

- To provide high quality education in the major engineering disciplines from the undergraduate through doctoral levels through a creative balance of academic, professional, and extracurricular programs;
- To foster and maintain mutually beneficial partnerships with our alumni, friends, industry, and local, state, and federal governments through public services assistance and collaborative research; and
- To be a major contributor to our nation’s technology base through scholarship and research.
Fiscal Year 2016, which ended on June 30, was another excellent year for our college! Our faculty, staff, and graduate teaching assistants were engaged in providing the best education to the largest number of undergraduate and graduate students that we have ever experienced—over 3,000 undergraduate and 1,000 graduate students. We also graduated a record number of almost 800 students. The good news is that 50% of our graduating undergraduates and 65% of our graduate students this past year were employed elsewhere—a very nice balance for a public college of engineering. The median starting salaries of our graduates in FY16 were $60,000 (undergraduate), $67,000 (MS), and $81,000 (PhD). Interestingly enough, almost the same percentage of our 27,250 alumni (50%) live in Tennessee today. The other half live in 49 states and 85+ countries. So, the impact of our college's efforts are felt both in-state as well as around the globe as our students obtain their education; get involved in co-op programs with companies and agencies; participate in humanitarian outreach activities; conduct research with our faculty; and then move into the workforce where they continue to make the world a better place through innovation and development of technology. Our faculty, staff, students, and graduates, more than ever, are addressing the grand challenges that face the world today. In fact, an increasing number of our students are involved directly in programs such as the National Academy of Engineering's (NAE) Grand Challenges Programs, which are addressing the grand challenges that face our nation and the world.

Our enrollment trends continue to increase as shown in this year's annual report. As I write this message, we have just received information indicating that our UG enrollment for Fall 2016 has increased by 7% compared to last fall’s class, and that the percentage of women in the freshman class for Fiscal Year 2016 and for Fall 2016 remains at an all-time high of 22%. The number of women faculty is now at 27—far higher than in years past. We continue to offer programs starting at the pre-college level up to the faculty and administrative level to enhance the diversity of our college and its departments and to provide a more diverse engineering workforce. These enrollment trends, particularly at the graduate level, are also enhanced by the outstanding ability of our faculty and staff to engage our corporate and state partners to provide the funding needed to provide research assistantships/stipends to our students. The very strong support of our donors (both alumni and friends of the college) continues to provide funds for scholarships at the undergraduate level, fellowships, and top-off stipends at the graduate level.

Wayne T. Davis Endowed Dean's Chair in Engineering
Wayne T. Davis
Wayne T. Davis Endowed Dean's Chair in Engineering
Wayne T. Davis
### Academic Support Programs and Diversity Initiatives
- **Academic Advising**
  - On-Campus Tutoring Center
  - Online Tutoring Center
  - Peer Tutoring Program
  - Study Skills Workshops
- **Engineering Bookstore**
- **Engineering Advisory Services**
- **Engineering Lab Services**
- **Engineering Library**
- **Engineering Math Lab**
- **Engineering Writing Support**
- **Student Center**
- **Career Services**
  - Pre-Professional Development
  - Internship Placement
  - Job Fair
  - Career Counseling
- **International Programs**
  - Study Abroad
  - Exchange Programs
- **Multicultural Programs**
  - Diversity Committee
  - Multicultural Student Program
- **Support Services**
  - Disability Services
  - Learning Support Services
  - Veterans Services
  - Health Services
  - Financial Aid
- **Academic Support Programs**
  - Freshman Engineering Program
  - Freshman Engineering Program (to 7/16)
  - Academic Affairs (to 10/16)
  - Academic Advising
  - Academic Support Programs
  - The Jerry E. Stoneking Gibson Chair
  - Dr. Bamin Khomami Kent Chair in Advanced Composites
  - Dr. Eric T. F. toolbox Professor
  - Dr. Kevin Tomsovic CTI Chair in Electrical and Computer Engineering
  - Dr. Mongi Abidi Cook-Eversole Professor
  - Dr. Chris Cox Blalock, Kennedy, Pierce Analog Electronics Professor
  - Dr. Ben Blalock Blalock, Kennedy, Pierce Analog Electronics Professor
  - Dr. Mark Dean Alvin and Sally Beaman Engineering Professor
  - Dr. Steven Zinkle Dr. William Weber Academy of Engineering
  - Dr. Hairong Qi Dr. Hairong Qi, Department of Materials Science and Engineering
  - Dr. Richard Komistek Dr. Richard Komistek, Chair in Microbiology and Civil Engineering
  - Dr. Frank Loeffler Dr. Frank Loeffler, Chair in Environmental Engineering
  - Dr. S. Kamrul Islam Dr. S. Kamrul Islam, Department of Computer Science and Engineering
  - Dr. Dayakar Penumadu Dr. Dayakar Penumadu, Department of Mechanical Engineering
  - Dr. Edwin Burdette Dr. Edwin Burdette, Department of Materials Science and Engineering
  - Dr. George Pharr Dr. George Pharr, Department of Materials Science and Engineering
  - Dr. S. Kamrul Islam Dr. S. Kamrul Islam, Department of Computer Science and Engineering
  - Dr. Peter Liaw Dr. Peter Liaw, Department of Electrical Engineering and Computer Science
  - Dr. Peter Liaw Dr. Peter Liaw, Department of Computer Science and Engineering
  - Dr. V. A. T. Dr. V. A. T., Department of Chemistry and Biomolecular Engineering
  - Dr. Peter Liaw Dr. Peter Liaw, Department of Engineering
  - Dr. Peter Liaw Dr. Peter Liaw, Department of Chemistry and Biomolecular Engineering
  - Dr. Peter Liaw Dr. Peter Liaw, Department of Engineering
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  - Dr. Peter Liaw Dr. Peter Liaw, Department of Materials Science and Engineering
  - Dr. Peter Liaw Dr. Peter Liaw, Department of Electrical Engineering and Computer Science

### Student Faculty Ratio
- 20:1

### Financial Information
- **Expenditures**
  - Gifts, Grants, and Contracts by Fiscal Year

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### College Profile
- University, Kellogg School of Business, Mr. Mark K. Cox, BS/IE '65, Solana Beach, California, Corporation (SAIC), Corporate Vice President (retired)
- Bryce Corporation (Harvard Business School), Owner/President/Management (OPM)
- Eastman Chemical Company, Vice President, Global Supply Chain, Garnet Valley, Pennsylvania
- University), MS/CompSci '77
- Reston, Virginia, Operations Management (to 7/16)
- Wilkes-Barre) of Tennessee Space Institute), Martin), MS/ME '84 (University of Tennessee, Knoxville, Tennessee, President/Owner
- Bristol, Virginia, Executive Vice President (retired)
- Mr. J.D. “Spike” Tickle II, Associate Laboratory Director, (Texas A&M University)
- Eastman Chemical Company, Vice President, Global Supply Chain, Garnet Valley, Pennsylvania
Austin Saint-Vincent came to the College of Engineering (COE) from a career in the US Navy, where he started at age 17 and worked for almost seven years in the reactor controls division. He was a qualified senior reactor operator by age 21, and by 24 was a division supervisor—well-versed in standard maintenance and troubleshooting aspects of PWR instrumentation and controls.

“As one can surmise, I was essentially raised in the bosom of naval nuclear power,” said Saint-Vincent. “I decided to stick with it and pursue nuclear engineering for the intellectual challenge and rich job market for those of my background.”

He has made a strong impression during his time in the Department of Nuclear Engineering (NE), earning the department’s Outstanding Undergraduate Research Award and now being recognized as the COE Outstanding Undergraduate for 2016.

“Austin led our motor accelerated degradation research laboratory,” said Dr. Wes Hines, NE department head. “With his nuclear navy training, he was uniquely qualified to safely manage the experiments in which electrical failures were expected and did occur. Having a student who came from an organization with a mature safety culture was a definite plus.”

Saint-Vincent worked with Hines and Dr. Jamie Coble, an assistant professor in NE, in the prognostics group gathering data from industry-related equipment and systems to identify trends and modes of failure in those components.

“Austin was an outstanding researcher during his time working with me on component degradation data collection,” said Coble. “He fully committed to each task that I assigned him and consistently went above and beyond my expectations.”

Saint-Vincent worked closely with a private company that loaned testing equipment to the team for a brief period. Through his efforts, the group was able to maximize usage of the test equipment and collect useful data to guide the experiment as research moves forward.

“He has been working with the Reliability and Maintainability Center since May, and I’m certain he’s been an asset to them,” added Coble.

Saint-Vincent was not familiar with the East Tennessee region before coming to UT, but quickly grew to appreciate the area.

“This is the third time I have packed all my things and moved to a place with no connections or foreknowledge of the area,” he said. “I hardly struggled in finding a place to live, getting the enrollment process done, and finding some work to do.”

“He chalks up a lot of this success to the quality of people he has encountered as he has gotten settled in at UT.

“Saint-Vincent looks forward to engaging in new NE projects over the semester, and is on the lookout for opportunities to advance, either into graduate school or a career track. Along the way, he enjoys living so close to the Great Smoky Mountains.

“I escape to the mountains for physical and spiritual respite as often as possible,” he said. He also gets solutions to tend his garden.

“I grow tomatoes, onions, spinach, sunflowers, and many weeds,” said Saint-Vincent. “Next year, I will try a much larger variety and possibly add some chickens or an aquaponics arrangement for meat. The goal is to see if I can subsist for one week on my own food.”

Outstanding Undergraduate Student: Austin Saint-Vincent
Hannah Woo, a PhD student in the Department of Civil and Environmental Engineering (CEE), is the 2016 Outstanding Graduate Student in the College of Engineering. Her studies focus on environmental issues while working with Dr. Terry Hazen, Governor’s Chair for Environmental Biotechnology.

“Hannah has demonstrated an awesome ability to maximize her education and research experience at the University of Tennessee, taking every advantage of classes, student and faculty interactions, field studies, outreach, teaching, publications, presentations, colloquia, research and education programs, and scientific meetings,” said Hazen. “She has a resume that already ranks most post doctoral fellows and assistant professors.”

Woo’s interest in environmental engineering and science was originally sparked by curiosity about the bioremediation of radioactive waste. “I wanted to learn more about the technology and new ideas in this field,” she said. “My current PhD project doesn’t involve bioremediation, but I still think it’s fascinating.”

The opportunity to work with Hazen led the San Francisco native to the University of Tennessee (UT). “Dr. Hazen is always studying very unique environments all over the world, where the geochemistry, microbial diversity, and biological processes is going to be intrinsically fascinating,” said Woo. “Right now, I’m studying samples from the eastern Mediterranean sea.”

She uses DNA sequencing technology to identify and investigate microbes with plant-degrading enzymes in the deep ocean. Those enzymes benefit biofuels research by helping break down the waste product—known as lignin—resulting from the manufacture of such fuels. “My project is investigating the microbial ecology of the deep ocean, in particular identifying key bacteria responsible for terrestrial organic carbon degradation,” said Woo. “It has been beneficial for me to learn how to do DNA sequencing using the Illumina Miseq in our lab.”

In the spring of 2016, she was one of 90 students in the United States and Canada to receive a $15,000 Scholar Award from the Philanthropic Educational Organization (PEO) Sisterhood. “This award is an amazing honor,” said Woo. The PEO Sisterhood was founded at Iowa Wesleyan College in 1869 to support higher education for women. “I’ve been fortunate enough to have been awarded some grants and fellowships to support myself through graduate school and fund my research projects.”

Woo is also a National Science Foundation (NSF) Graduate Research Fellow, and was accepted into a unique NSF IGERT Program called SCALEIT (Science, Cyberinfrastructure, and Advanced Learning Environment for Research Training). It’s a unique NSF-EAPSI program that enabled her to visit northeast China to collect soil samples affected by high nitrogen deposition.

“By bringing those samples back to sequence and analyze,” she said, “it’s so great to be able to do this type of work independently and in support of my scientific goals.”

Woo has earned benefits from the Society for Applied Microbiology President’s Fund, and also accolades for numerous presentations. “I’ve received a few awards for several talks and posters given locally and nationally,” she said. “These include second place Best Poster in Environmental Biotechnology at the 2016 UT AgriLife Research Symposium, and winning the Sigma Xi Scientific Paper Presentation Award. She was nominated for the UT extraordinary Professional Promise Citation, and was noted as a Dement Scholar.”

Outside of her graduate studies, Woo enjoys playing guitar, salsa dancing, cooking, and learning new languages. She has also enriched her time on campus by working as a TA for Dr. Joseph Amoah. “CEES has great undergraduate students that are inquisitive and sharp,” she said. “Mentoring undergraduates in the Hazen lab has been an invaluable and rewarding experience.”

For herself, Woo has appreciated the mentoring of faculty members like Dr. Chris Cox, Dr. Qiang He, and Dr. Nicole Labbe. “These are some of the first professors I met my first year at UT,” she said. “I really appreciate their guidance, both technically, and just their general career advice.”

Outstanding Graduate Student: Hannah L. Woo
The College of Engineering (COE) offers two ways for students to experience engineering culture outside the United States. Students can participate in Alternative Winter Break, Outreach via the Alternative Service Breaks program; and Alternative Spring Break, Outreach via Outreach Program. Both options have grown in the last six years, allowing around 100 students to participate in a program each year. The COE’s Global Initiatives program offers four international experiences to students in late January/February, April, and June. Students can participate in Global Initiatives through the Alternative Spring Break program, Outreach Program, International Co-op Program, Study Abroad Program, and study-abroad courses. Outreach Program is a work-based service opportunity for students in their first or second year of training. International Co-op Program is an opportunity for students in their third year of training. Study Abroad Program is an opportunity for students in their third or fourth year of training. The Alternative Winter Break program offers four international experiences to students in late January/February. The Alternative Winter Break program offers four international experiences to students in late January/February. The Alternative Winter Break program offers four international experiences to students in late January/February. The Alternative Winter Break program offers four international experiences to students in late January/February. The Alternative Winter Break program offers four international experiences to students in late January/February. The Alternative Winter Break program offers four international experiences to students in late January/February. The Alternative Winter Break program offers four international experiences to students in late January/February. The Alternative Winter Break program offers four international experiences to students in late January/February. 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The COE Teaching Fellow Award is presented to faculty members who possess an exceptional record of graduate and undergraduate teaching and a strong performance in teaching-related service activities, and whose efforts clearly contribute to the overall mission of the college.

The awards were established to award superior teaching.

The Teaching Fellow Awards were presented at the college’s Faculty and Staff Awards Dinner in April.

### Degrees Granted Academic Year 2015-2016

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<thead>
<tr>
<th>Year</th>
<th>Bachelor of Science (BS)</th>
<th>Master of Science (MS)</th>
<th>Doctorate (PhD)</th>
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<td>2016</td>
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### Engineering Enrollment Trends by Academic Year

#### Undergraduates

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#### Doctorate

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<td>2015</td>
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### Student Body 2015-2016

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<th>Number</th>
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<tr>
<td>Bachelor of Science (BS)</td>
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<tr>
<td>Master of Science (MS)</td>
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</tr>
<tr>
<td>Doctorate (PhD)</td>
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### College of Engineering 2016 Teaching Fellows

The GGS Teaching Fellow Award is presented to faculty members who possess an exceptional record of graduate and undergraduate teaching and a strong performance in teaching-related service activities, and whose efforts clearly contribute to the overall mission of the college. The awards were established to award superior teaching.

Dr. Aly Fathy (left), the James McConnell Professor in the Department of Electrical Engineering and Computer Science, is presented with the Teaching Fellow Award by Dean Davis (right).

Dean Davis (right) presents the Teaching Fellow Award to Dr. Paul Frymier, professor, Department of Chemical and Biomolecular Engineering.

Dean Davis (right) presents the Teaching Fellow Award to Dr. Xueping Li, associate professor, Department of Industrial and Systems Engineering.

Dr. Daniel Costinett (left), an assistant professor in the Department of Electrical Engineering and Computer Science, accepts the Teaching Fellow Award from Dean Davis (right).
College of Engineering 2016 Professional Promise in Research Award

Dr. Wei Gao, Assistant Professor

Dr. Wei Gao’s research interests involve in the areas of mobile systems, wireless networks, cloud computing, cyber-physical systems, sensor networks, and security and privacy. He is currently working on research focused on the design, analysis, and implementation of wireless sensor networks, context-aware computing, and mobile computing. Dr. Gao is also working on the heterogeneous network architectures and applications, his research seeks to improve the efficiency, security, and privacy of mobile computing. He received his Ph.D. in Electrical Engineering from Duke University in 2006, and was a Postdoc Research Associate in the Department of Computer Science at Duke University from 2006 to 2009. In 2010, Dr. Gao worked as a Senior Research Scientist at the Electric Power Research Institute (EPRI) in California. Currently, he is an Assistant Professor in the Department of Nuclear Engineering at the University of Tennessee, Knoxville.

Dr. Jason Hayward, Associate Professor, UCOR Faculty in Nuclear Engineering

Dr. Jason Hayward, UCOR Faculty in Nuclear Engineering at the University of Tennessee, Knoxville, is a leading expert in the field of radiation instrumentation, especially for nuclear nonproliferation and nuclear safeguards. His research focuses on the design, implementation, and validation of radiation detection systems, with a particular emphasis on the development of novel detector technologies and systems for applications in homeland security and safeguards. Dr. Hayward earned his Ph.D. in Nuclear Engineering from the University of California, Berkeley, in 2004, and has held various research and teaching positions at leading institutions, including the University of California, Berkeley, and Lawrence Livermore National Laboratory. He has published extensively in the field of radiation detection and instrumentation, and has received several awards for his contributions to the field.

Dr. Wei Gao, Assistant Professor

Dr. Wei Gao’s research interests involve in the areas of mobile systems, wireless networks, cloud computing, cyber-physical systems, sensor networks, and security and privacy. He is currently working on research focused on the design, analysis, and implementation of wireless sensor networks, context-aware computing, and mobile computing. Dr. Gao is also working on the heterogeneous network architectures and applications, his research seeks to improve the efficiency, security, and privacy of mobile computing. He received his Ph.D. in Electrical Engineering from Duke University in 2006, and was a Postdoc Research Associate in the Department of Computer Science at Duke University from 2006 to 2009. In 2010, Dr. Gao worked as a Senior Research Scientist at the Electric Power Research Institute (EPRI) in California. Currently, he is an Assistant Professor in the Department of Nuclear Engineering at the University of Tennessee, Knoxville.

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College of Engineering Research Achievement Awards

The College of Engineering Research Achievement Awards were established to recognize faculty members whose work is recognized nationally and internationally and who make notable contributions to the college’s research mission. The 2016 award recipients include:

Dr. Baoshan Huang, Edwin G. Burdette Professor

Dr. Baoshan Huang is the Edwin G. Burdette Professor of Civil and Environmental Engineering. He is an expert in the field of water resources and environmental engineering, with a focus on the design, analysis, and implementation of large-scale infrastructure systems. His research focuses on the development of innovative methods for modeling and simulation of environmental systems, with applications in water resources management, urban planning, and climate change adaptation. Dr. Huang received his Ph.D. in Civil Engineering from the University of California, Berkeley, in 2002, and has held various research and teaching positions at leading institutions, including the University of California, Berkeley, and Lawrence Livermore National Laboratory. He has published extensively in the field of environmental engineering, and has received several awards for his contributions to the field.

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The Dean’s Faculty Research Excellence Award recognizes junior engineering faculty who, at the assistant professor level and during their first three years of service to the college, achieve outstanding success in groundbreaking research projects. Outstanding faculty members have not developed their programs to a level of having graduated MS/PhD students or of having established publication levels commensurate with that of more senior faculty, these individuals while achieving success in their research programs, are limited in their ability to be recognized through other award avenues.

The 2016 recipient of the Dean’s Faculty Research Excellence Award is Dr. Steven Skutnik, assistant professor in the Department of Nuclear Engineering. Dr. Skutnik’s research focuses primarily on the intersection of nuclear fuel cycles and nuclear security, employing advanced modeling and simulation tools to the end of developing more sustainable and secure nuclear fuel cycle systems. In addition, his work also focuses on high-fidelity modeling and simulation of safeguards for nuclear fuel cycle processes to ensure the peaceful use of nuclear energy.

In tandem with this research, Skutnik’s work also focuses on high-fidelity modeling and simulation of safeguards for nuclear fuel cycle processes to ensure the peaceful use of nuclear energy. Examples of this include his role in the college’s Global Security Program to develop new process simulation techniques for identifying and evaluating the potential nuclear proliferation resistance, safety, and security of future nuclear fuel cycle designs. He has applied techniques to understand characteristics of the transition to advanced nuclear fuel cycles, fast reactor concepts of using transuranic nuclear waste material as fuel cycles, as well as developing more sophisticated techniques for characterizing used nuclear fuel inventories currently held in long-term storage at reactor sites.

The purpose of the COE Award for Translational Research is to recognize faculty members whose research has achieved societal benefit through the development of intellectual property via licensing agreements, patents, and/or business startups. The 2016 recipients of the COE Award for Translational Research are Dr. Matthew Mench, Thomas Zawodzinski, Governor’s Chair in Electrical Energy Storage from the Department of Chemical and Biomolecular Engineering. Dr. Mench’s research group works at the intersection of transport and electrochemical power generation. Their group has established an international reputation for innovation in quantitative approaches to understanding the transport of ions, electrons, and molecular species. Innovative experimental methods, including advanced nuclear magnetic resonance, and MRI-related studies, other spectroscopic studies and a host of other physical characterization methods, are used and utilized in ways and at depth and precision that no other lab in the world provides in a comprehensive way. Computational models are also used. This fundamental work is used to determine design parameters that we can approach and develop for new commercial applications. They are in the process of developing several new relationships to provide additional unique solutions to industry based on the groups’ innovative approaches. The team also probes the fundamental behavior of those components from the molecular to device scale. They create innovative commercial products, developing new technologies for thermal management, environmentally friendly, and other MEMS related research. At present, Zawodzinski’s team is involved in six different technologies with commercial application (including spin-out companies and licensing agreements). His work has been continually supported for over 15 years through numerous government agencies and domestic and international industrial partners.
An exciting new era in materials science research has begun with the opening of the Joint Institute for Advanced Materials (JIAM) Building on the Cherokee Farm Innovation Campus.

The JIAM building was initially supported by $20 million from the federal government. The university and the State of Tennessee engaged a multidisciplinary team of scientists from UT and Oak Ridge National Laboratory (ORNL). Facilities Update

The JIAM Building Opens

For more information on JIAM, visit http://jiam.utk.edu/index.php

The College of Engineering and the Department of Nuclear Engineering (NE) continue to work with UT administrators and the Tennessee Valley Authority (TVA) to seek State funding of Tennessee to finish plans and time frames for a new engineering complex. Programming for the facility has been completed.

"A Request for Proposals (RFP) was out at the end of September," Dunne said. "The design team for the building should be confirmed during the fall, and we should be well into the design process for the new building by January, 2017."

During the final State of the University presentation on Monday, September 19, Chancellor Joey Combs, Ph.D., announced that the $228 million, 228,000-square-foot engineering building that will house the Engineering programs, computer science, and information technology, will undergo a large-scale upgrade, including extensive improvements to the building's many laboratories, classrooms, and offices.

The university has received donations for the project from Min Kao and John Tickle, each of whom already has an engineering building named in their honor on campus.

Dunne anticipates that this engineering facility, construction activities for the building would begin fiscal year 2018. The building will be sited in the area where Pasqua, Berry, and Dougherty Halls are presently located.

"It has taken the university 22 years to determine the location of this new engineering complex. We have the opportunity to establish the Innovation & Collaboration studio to support interdisciplinary research initiatives, encourage multi-disciplinary research, and take a national leadership position in innovation research."

"We are looking for proposals for the new RFP and the Engineering building," Dunne said. "It is our goal to have the new building open in time for the fall of 2018, and we are planning with the College of Arts & Sciences to locate offices for their science programs that would keep the NE department close to other engineering buildings. This decision will ensure that our students have the best possible students and faculty members from different departments and colleges, and we will be able to move their laboratories into SERF and the JIAM building. The MSE administrative offices will remain in Ferris Hall."
Jalonda Thompson joins the university as the first assistant director for the diversity office. She has already coordinated with the faculty to add a new class to the program.

The Engineering Career and Academic Preparation (ECAP) Living & Learning Community is designed to provide strategic programming for non-admitted engineering students, including engineering awareness, improved academic performance, and program retention for underrepresented student populations studying in areas of science, technology, engineering, and mathematics (STEM). Thompson will also manage the summer pre-college programs and coordinate with the Board of Advisors to establish the WomEngineer’s Leadership Council in April 2016, “Since joining the department, I have worked with faculty in Engineering Fundamentals to establish a First Year Studies (FYS) 101 course for students in the ECAP LLC,” Thompson said. “I continued working in higher education because I feel that my passion is solving the needs of students, and that’s why I chose to join the diversity office.”

“Working in undergraduate admissions was a wonderful experience, but in that particular environment, you are not working with students very long,” Thompson said. “I continued working in higher education because I feel that my passion is solving the needs of students, and that’s why I chose to join the diversity office.”

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Thompson also worked with the College of Engineering, the College of Agriculture and Natural Resources, and the College of Arts & Sciences. The program uses a model established by the Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP) to provide an overview of fundamental academic subjects for STEM majors, particularly in mathematics and chemistry.

She said, “I am very excited about being able to work with undergraduate students who will be attending the university in the next year. I am also very excited about the opportunity to work with faculty and staff to develop programs and services that will support students as they transition to the university.”

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University Hosts Intercollegiate Summer Bridge Program

The University of Tennessee, Knoxville, hosted the 2016 Intercollegiate Summer Bridge Program. As part of the program, students are taken on several STEM site visits. At ORNL, students were able to view several supercomputers. DENSO Manufacturing allowed students to tour the Oak Ridge Leadership Computer Facility that provided a glimpse of the many resources available at UT as well as demonstrating the benefits of fostering interdisciplinarity outside of the engineering discipline to which they usually expose the students.

“Even though some of these students may not have discovered the resources of UT early on in their college careers, it is never too late to introduce them to the opportunities available at UT,” said Fernando Briones, who plans to pursue industrial engineering major with a potential double minor in entrepreneurship and Spanish. “Had it not been for the ISB, I definitely would not have prepared to take on all this work.”

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Outstanding Faculty: Dayakar Penumadu

Dr. Dayakar Penumadu, a Fred H. Perley Professor in the Department of Civil and Environmental Engineering (CEE), came to UT from India to pursue opportunities to collaborate and to be a leader in one of UT’s foremost research programs.

Penumadu was born in Nellore, India, in the South-Central State of Andhra Pradesh. He grew up in that country until he completed his undergraduate degree and moved to the United States for graduate school and then became a US citizen.

Penumadu’s early interest in engineering resulted from his dad’s visits to water-retaining structures as a young boy with his father, who was a civil engineer.

“My dad was a civil engineer and was a senior member handling the Major Irrigation Works for the state,” Penumadu said. “He used to take me on site trips where I was exposed to the miracle of engineering associated with hydraulic structures.”

Penumadu said he was also fascinated with developing a mechanistic understanding of complex natural and advanced materials.

“I am fascinated with developing a mechanistic understanding of complex natural and advanced materials,” Penumadu said. “In 2001, there was strong interest in multi-phase materials; I was very interested in this area, and I have pursued a number of projects over the years since then.”

The importance of work ethic and integrity in their long-term success.

Penumadu said: “I find the diversity of students critical to success of rigorous research, and mentoring them to understand the importance of work ethic and integrity in their long-term success.”

Penumadu also enjoys teaching and interacting with students on research projects.

“I enjoy teaching undergraduates. When I walk into a classroom, regardless of what course I teach, I find the diversity of students critical to success. I find them fascinating to teach. I learn from them as much as they learn from me. I enjoy teaching undergraduates. When I walk into a classroom, regardless of what course I teach, I find the diversity of students critical to success. I find them fascinating to teach. I learn from them as much as they learn from me. I thoroughly enjoy teaching undergraduates. When I walk into a classroom, regardless of what course I teach, I find the diversity of students critical to success. I find them fascinating to teach. I learn from them as much as they learn from me.”

“I was involved with the core team, which was led by the Vice Chancellor for Research. This was a collaboration that developed the pre and full proposal for establishing IACMI after the funding opportunity was released through the Department of Energy Advanced Manufacturing Office,” Penumadu said. “The entire process took almost two years for preparing the pre and full proposal. IACMI after the funding opportunity was released through the Department of Energy Advanced Manufacturing Office.”

Penumadu was the co-Principal Investigator (PI) for the Institute for Advanced Composites Manufacturing Innovation (IACMI), a $259 million public-private partnership developed to facilitate breakthroughs in manufacturing and materials.

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The unique opportunity offered by The Composites Institute—IACMI, a presidential initiative, was the primary reason to come to the University of Tennessee,” Vaidya said. “IACMI, led by UT-ORNL, the overall international reach and presence of the institute in shaping and executing state-of-the-art industry relevant research and development initiatives, was a major draw for me to come to UT.

“The goals of IACMI are very tangible and quantitative, including: reducing cost of carbon fiber composites; reducing the embodied energy of materials and manufacturing of composite productions; and enhancing the recyclability of all types of composites and fiber waste into useful products,” Vaidya commented. “The FCMF will provide turnkey solutions to industry partners in advanced fibers and composite manufacturing. The students also interface with high school students in STEM events and training activities. The FCMF will provide equipment operations, experiments, process, and product development and characterization across length scales. They receive highly practical and industrially relevant experience. The students also interact with high school students in STEM events and training activities.

Outstanding Faculty: Uday Vaidya

Dr. Uday Vaidya, the College of Engineering’s Governor’s Chair in Advanced Composites Manufacturing, was a professor at the University of Tennessee for the new institute for Advanced Composites Manufacturing Innovation (IACMI) initiation and the opportunity to do world-class research that will advance economic opportunities for the State of Tennessee, the Southeast region, and the nation.

Vaidya was born and grew up in Kolhapur, Maharashtra, India. He received his high school degree from M.S. Vidyanagari, Maharashtra, India and his bachelor’s degree from the Karnataka University, Dharwad, India.

Vaidya’s brother was a civil engineer, and growing up Vaidya admired his brother’s work. Vaidya’s career in academia began as an instructor at Tuskegee University in Auburn, Alabama. He was also an assistant professor at Auburn University in Auburn, Alabama.

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Dr. Wei Gao, an assistant professor in the Department of Electrical Engineering and Computer Science, is one of several College of Engineering recipients of the National Science Foundation’s (NSF) prestigious CAREER Awards in 2016. The NSF recognition is presented to promising young faculty members as a way to support specific areas of research. It is considered the highest honor a midlevel faculty member can receive, and is given as a way to support and develop the new ideas of those researchers. NSF CAREER Awards include over $500,000 in NSF funding for research efforts over five years.

Gao received his bachelor’s degree from the University of Science and Technology in China in 2005, and his PhD in computer science from Pennsylvania State University in 2012. “I was attracted to the University of Tennessee’s Department of Electrical Engineering and Computer Science because of the group of world-class researchers in a collection of different research areas,” Gao said. “It is a great honor for me to work with this group of faculty and I received a lot of help from them in the beginning years of my career.”

Gao’s research focuses on the design, analysis, measurement, and implementation of mobile computing and networking systems. Through analytical modeling and systematic designs of mobile system architectures and applications, Gao’s research seeks to improve the efficiency, scalability, generality, and reliability of mobile system operations with respect to the heterogeneous environmental contexts. He finds this area to be interesting because researchers can always be at the very frontier of the mobile technology’s evolution, and the research outcome can be synergistically integrated into industry products.

Gao involves both undergraduate and graduate students in his research projects, and is currently mentoring six PhD students. “I try to create a variety of outreach opportunities to undergraduate students by allowing them to get in touch with the most pioneering mobile computing devices, including smartwatches and mobile VR devices,” Gao said.

Gao also stays involved with professional organizations in his field. He is the Student Travel Grant Chair for the upcoming Institute of Electrical and Electronics Engineers (IEEE) International Conference on Computer Communications (INFOCOM) in 2017 and served as the Symposium Chair, Cloud Computing and Big Data, International Conference on Computing, Networking and Communications (ICNC) in 2016. He has also been on the program committee for several other IEEE conferences and has had numerous papers published with IEEE and other professional organizations.

When not working in the lab or teaching in the classroom, Gao enjoys hiking and soccer. He and his wife recently welcomed a baby girl to their family in June of this year.
Development Update

Journey to the Top 25 and Senior Impact Campaigns Power Philanthropic Year

Philanthropy in fiscal 2016 was defined by the energy of our October 2015 Campaign Launch that announced the College of Engineering’s $150,000,000 goal and the exciting reality that we are well on our way! By the close of FY16 $109,000,000 was committed towards college priorities, which included endowments for professorships, graduate fellowships, and undergraduate scholarships.

“Endowments to support, develop, and encourage our people are first and foremost in our priorities,” asserted Dean Wayne Davis.

When donors choose to make a philanthropic gift the benefits are multiple—the faculty member receives a monetary stipend and the college’s reputation is developing. Much of our students gain from the expertise of the excellent scholars who are in the lab and in the classroom.

Investments in scholarships and fellowships help students realize their academic aspirations by giving them financial encouragement.

“Every gift—of every size—from our donors has impact far beyond the measure of the dollars,” noted Dorothy Bryson, Executive Director of Development. “These gifts literally empower students’ futures.”

Senior Impact, the UT senior class gift program, was inaugurated several years ago but the class of 2016 took this to a new level with participation the goal, an organized and enthusiastic senior class committee. Result: 35% participation (up from 15% in 2015). Students were asked to give $20.16, a symbolic amount, beginning what we hope will become a lifelong habit of giving. As an added incentive and to create a sense of fun, Dean Davis personally matches each gift to any engineering fund. This year he wrote a check for over $2,300. An added challenge: He invites the class of 2017 to surpass this year’s participation, but also that the dean has to match. Go Vols takes on a whole new meaning here!
Outstanding Alumnus: Paul Bunch

Imagine developing a passion for engineering early in life, then overcoming financial constraints to make a commitment taking advantage of UT that prepares you to become an expert in your field. This is the journey of alumnus Paul Bunch (ME ’67), who along with his wife, Madeline, now actively joins UT on its journey to the Top 25 public research institution.

Paul Bunch grew up in Chattanooga and recognized from an early age his interest in engineering. He gave me a tour of the operations at a very early age. I was fascinated by the equipment and thought the engineers who designed that equipment must have one of the best jobs in the world," said Paul Bunch.

While Bunch had long thought about providing support to UT, it was Madeline’s recent passion for helping to locate philanthropic opportunities that first piqued his interest.

“Madeline then became familiar with UT and what the institution means to Paul, which founded philanthropic opportunities to give outcomes on campus that are meaningful to them and the college. As Bunch says, “I know first-hand how much of a struggle it can be to continue a college degree and Paul and I can see that first-hand in those who might otherwise not be able to afford it, that would be of great satisfaction to both of us.”

The Bunches recently established the Paul and Madeline Bunch Fellowship, which provides student-aid for a graduate student pursuing a research topic related to fracture mechanics. Graduated recruiting is a competitive national marketplace and fellowships drive our ability to recruit top-tier students who will assist in advancing UT’s research and thought leadership, Mench explained.

“The Paul and Madeline Bunch Fellowship empowers me and a faculty member to recruit and build on that knowledge. As an engineer, you never stop learning and have been fortunate to continue educating and developing my entire career,” Bunch said, as a testimonial to his education provided by the professors and staff.”

Bunch retired from Cameron International as Director of Worldwide Technical Support and focuses on writing HPHT industry specifications for the American Petroleum Institute. Dr. Matthew Mench, Head of the Department of Mechanical, Aerospace and Biomedical Engineering (MAE), noted that Bunch is a philanthropist and his subsequent involvement that further inspired him.

As Madeline then became familiar with UT and what the institution means to Paul, they discovered philanthropic opportunities to drive outcomes on campus that are meaningful to them and the college. As Bunch says, “I know first-hand how much of a struggle it can be to continue a college degree and Paul and I can see that first-hand in those who might otherwise not be able to afford it, that would be of great satisfaction to both of us.”

In addition to their fellowship, Paul and Madeline have documented their plan to establish graduate student-aid for a graduate student pursuing a research topic related to fracture mechanics. Dr. Matthew Mench, Head of the Department of Mechanical, Aerospace and Biomedical Engineering (MAE), noted that Bunch is a philanthropist and his subsequent involvement that further inspired him.

“Paul and Madeline Bunch Fellowship empowers me and a faculty member to recruit and retain a graduate student that they would not otherwise afford it. If UT had not the Bunch Fellowship Graduate Recruit Program, we would not have this ability to continue our training program,” Mench noted.

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Paul Bunch and Madeline Bunch enjoying a UT football game.

Bunch traveled the globe as a part of his work-related activities and enjoyed many years of running marathons when not writing, which he has held back in his active social life. He enjoys running and spending time at his home in Nashville where he also cultivates his family in Chattanooga. Paul and Madeline are also true dog lovers, with seven dogs in total.
The College of Engineering honored nuclear engineering alumnus Dr. H. M. Hashemian (MS/NE '77) with its most prestigious recognition, the Nathan W. Dougherty Award, at the Faculty and Staff Awards Dinner on Thursday, April 21, 2016.

The award has been given already in honor of Dougherty, who served as dean of the college from 1940 to 1956 and was a captain of UT’s football and basketball teams as a student athlete in the early 1940s. He was inducted into the College Football Hall of Fame in 1967.

Hashemian, who was born and grew up in Tehran, Iran, came to the U.S. in 1974 when he was 24 years old and attended Lamar University. A year after he graduated, he received a master’s degree in nuclear engineering after taking a course in the subject at Lamar. The university did not offer a degree program in nuclear engineering, so Hashemian decided to enroll in the graduate program at the University of Tennessee, Knoxville.

“I chose UT because there was an offering for a master’s nuclear engineering program and connection to Oak Ridge National Laboratory (ORNL),” and the Tennessee Valley Authority (TVA), Hashemian said. “I had a relative in the area, my aunt, Dr. Rondi Massoud, who was working for TVA in Oak Ridge.

When Hashemian, then a recent nuclear engineering graduate, and then IH department head from UT’s College of Engineering, Captain Wes Hines, knew about the program in nuclear energy resulting in a radionuclide source of electricity and problem solving.

In the years since, AMS has become a globally recognized leader in nuclear energy and safety, establishing a connection with many nuclear plants in the United States. The company has developed a number of proprietary technologies and innovations in nuclear power plants. AMS has a worldwide list of clients, and has worked closely with many of the International Atomic Energy Agency and the International Electrotechnical Commission.

“Hash” Hashemian at the college’s Faculty and Staff Awards Dinner. COE Dean Wayne T. Davis (right) presents the Nathan W. Dougherty Award to Dr. H.M. Hashemian at the college’s Faculty and Staff Awards Dinner.
The College of Engineering is resolved to become one of the country’s Top 25 public engineering educational institutions. To bring this vision to reality, our college is committed to these five charges:

Attaining national and international recognition among peer institutions for excellence in both research and teaching;

Assembling a dynamic body of faculty who exemplify excellence and innovation in the pursuit and delivery of knowledge that will perpetuate the highest standards of engineering education for future generations;

Graduating students who are well educated in technical knowledge, with solid communication and teamwork skills, who can compete successfully in the global business world and contribute significantly to the national base of engineering education and technology;

Investing strategically in the college’s most important resources—students, faculty, and programs—through the vigorous acquisition of private gifts from individuals, corporations, and foundations;

Partnering with academic, industrial, and government entities that share and enhance the mission of the College of Engineering so that our educational and collaborative efforts result in the maximum, positive, economic impact locally, regionally, nationally, and globally.

**Financial Information**

**Total Expenditures**

$125.6 Million

**Externally Funded Gifts, Grants & Contracts**

$74,600,264

**Recurring & Nonrecurring State Funds**

$50,973,627

**Resources: Recurring & Nonrecurring State Funds**

$51 Million

**Salaries & Benefits**

$42,325,072

**Miscellaneous Operating Expenses**

$6,736,257

**Equipment & Software**

$1,912,297

**Gifts, Grants & Contracts by Department/Center**

$74.6 Million

**Fiscal Year 2016**

**Administration**

$1,885,524

**Chemical & Biomolecular Engineering**

$5,219,388

**Civil & Environmental Engineering**

$7,957,659

**Electrical Engineering & Computer Science**

$17,721,739

**Engineering Fundamentals Division**

$130,651

**Industrial & Systems Engineering**

$10,946,022

**Materials Science & Engineering**

$10,153,664

**Mechanical, Aerospace & Biomedical Engineering**

$7,807,365

**Nuclear Engineering**

$10,767,453

**Research Centers**

$11,061,099

**Total Expenditures**

$125.6 Million

**External Expenditures**

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**Salaries & Benefits**

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