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.
I begin by reminiscing and projecting into the future—which seems an odd way to begin my message for the fiscal year 2013 annual report. It was nineteen months ago that the new one hundred and fifty thousand square foot Min H. Kao Electrical Engineering and Computer Science building opened; and the new one hundred and ten thousand square foot John D. Tickle Engineering Building (housing the Department of Civil and Environmental Engineering and the Department of Industrial and Systems Engineering) just opened this week as I am writing this message. Neither of these events occurred if FY12 had not had a profound transforming effect on our college during that time. We are deeply appreciative to the two gentlemen for whom those two buildings are named and to the investments that they have made and continue to make within our college and university. They, along with others who helped make this happen, have made a significant difference in our programs, and have provided a foundation for our college for years to come. As we continue this effort, I believe we can take pride in our ability to achieve our vision of providing the highest quality education to our students. It is also befitting that this year, 2013, is the 175th anniversary of offering engineering courses at the university.

As I reminisce over the last five years, I must also stop and say “Thank you from the bottom of my heart” to our faculty and start by thanking you from the bottom of my heart for your devotion and dedication to our students, our nation, and our economy. Since the Great Depression, three areas with no issues for faculty and staff and a significant burden on our university and its colleges/departments. Yet through the efforts of our faculty and staff during the same period, our college’s undergraduate enrollment increased thirty-seven percent and our PhD enrollment increased by only two percent; which is substantially greater than the national average growth of twenty-four percent in these areas, respectively. The significant increase in PhD students is a direct result of the increased efforts of our faculty in seeking and obtaining a sixty percent increase in external research funding—funding that directly supports the majority of our graduate students and a number of our undergraduate students.

Based on the outstanding growth of our college, the strong demand for engineering graduates, the quality of our students, and the need for faculty/staff growth to meet those demands, FY12 was a pivotal year for our college during which the university administration submitted a proposal to Governor Haslam’s office to provide a matching request for recurring funds to be provided over the next five years. This commitment is being matched by combined funds from the chancellor’s office, the college, and from the UT Foundation (development) over the next several years to allow the college to continue its momentum. In anticipation of these funds, the college is able to move forward with additional faculty searches for the next two years, and is also moving forward on a number of capital improvement projects that will benefit the majority of our students.

This year’s annual report also features a faculty member from each of the departments within our college, an update of our Governor’s Chair Program, our success in hiring a much more diverse faculty, and the leveraging power of the investments being made by our friends and alumni. Hopefully, you will agree with me that the last several years have been truly transformational for our college—and the best is yet to come! Please enjoy reading about the exciting things that are occurring in our college.

Sincerely,
Wayne T. Davis
Dean of Engineering
175 Years of Engineering Instruction at the University of Tennessee

The 1800s

The University of Tennessee College of Engineering was founded in 1807, and by the 1860s, it was one of the largest technical institutions in the U.S. In 1862, the college was closed due to the Civil War, but it was the Union Army that now occupied the campus. By 1868, one hundred and twenty-two students were enrolled, eleven of which were freshmen. The college was renamed East Tennessee College of Civil Engineering and Mechanic Arts.

The first engineering class, surveying, was offered in 1868. East Tennessee College of Civil Engineering and Mechanic Arts was expanded to include the college’s first civil engineering course in 1877: Agriculture and the Organic Arts; and Languages and Fine Arts. Courses in civil engineering, science, and mathematics were offered for the first time.

The University of Tennessee College of Engineering had been renamed East Tennessee College of Civil Engineering and Mechanic Arts. Professor Nathan Dougherty, next door to the UT campus. Tau Beta Pi still has offices at the college's Engineering Diversity Center in 2007 and persuaded the leadership of the UT mechanical engineering department in 1957. The college’s Engineering Diversity Center was established, with Dr. Pete Pasqua as head, in 1957.

In 1965, the university built another academic building, which was named after President Abraham Lincoln. It was successfully completed in 1880, four years after the Lincolns graduated. The building was dedicated in 1880.

Students enrolled in engineering studies. As for the future of engineering at UT, it looks very exciting. A total of seven students were enrolled in engineering studies. The college both academic and professional departments.

The 1900s-1920s

The 1900s

The first Engineers Day in 1912 was for students to combine both academic and professional departments.

Research became an increasingly important part of the college’s mission, and the Engineering Experiment Station was established in 1922. The Cooperative Engineering Program (now known as the Cooperative Engineering Program), founded in 1926, offered a way for students to combine both academic study and professional work experience.

The 1940s-1970s

In the 1950s, the college’s Engineering Experiment Station was established, with Dr. Pete Pasqua as head, in 1957. The college’s Engineering Diversity Center was established, with Dr. Pete Pasqua as head, in 1957.

Dougherty was appointed as chairman of the faculty in 1897. The first Engineers Day in 1912 was for students to combine both academic and professional departments.

Dean Fibbee established the Minority Engineering Scholarship Program (MESP), which was established to become one of the college’s most influential deans, and the Minority Engineering Scholarship Program (MESP), which was established to become one of the college’s most influential deans.

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The 1980s-2000

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In 1985, an interdisciplinary doctoral program in engineering officially incorporated into the University of Tennessee. The construction of a new facility, the ECE department

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While she was growing up in Kingsport, Tennessee, Adele Poole’s parents were adamant that her college education should be rooted in an applied field. She listened to their advice, and it has paid off. “When the time came to choose a major, industrial and systems engineering caught my attention because the career possibilities are endless,” said Poole, who also wasted little time in taking advantage of co-op opportunities. “Already my work experience spans eight years, three industries, six organizations, and ten jobs.”

In addition to gaining work experience as an undergraduate, Poole also earned scholarships and awards along the way. She received the Herschel C. & Louise Runnion Brand Scholarship; the Dwight Kessel Scholarship; the Frederick Vreeland Bickford Scholarship; and a Chancellor’s Award for Extraordinary Professional Promise. She was selected to participate in the Eastman Chemical Company University of Tennessee Leadership Development Program, and is on track to graduate Cum Laude in the fall of 2013.

Outstanding Undergraduate Student: Adele Poole

Poole says her internship and co-op experiences have been key to her learning process, and co-op assignments have been her favorite projects. “During my first term with Eastman Chemical Company, I worked on a project team implementing software,” she said. “Each team member had a different communication style to suit their client’s needs. Seeing that process up close helped me begin to adjust my own communication style. Seeing that process up close helped me begin to adjust my own communication style. In 2012, I had a solo cost analysis project; easily the most valuable takeaway was the importance of defining the scope of a project.”

In 2013, Poole’s fourth and final rotation found her working on a different type of project—with Eastman’s human resources department on the “Talent Management” team. This team is responsible for individual and organizational development across the entire company. “My primary project involved researching ‘Best Place to Work’ lists—and lots.”

Poole feels that this is also reflected in the Department of Industrial and Systems Engineering (ISE). “The Department of Industrial and Systems Engineering is a small community where students really connect with each other,” said Poole. “We travel through the curriculum with all the same faces beside us, and we see many projects coming out of our own. These faces, who are my classmates today, are my friends and colleagues forever.”

In addition to classmates and colleagues, several professors at UT have had a lasting impression on Poole. “Dr. Xueping Li is the model of a great teacher who challenges us to stretch ourselves and steep ourselves in real applications,” she said. “The ISE department also relies heavily on adjunct faculty who choose to take on teaching roles on top of their industry commitments. People like the unforgettable Dave Halstead, who challenge us to think through real-world problems; and Dr. Robert Keyser, who cares so genuinely about his students as people, make the ISE department a rich place to grow.”
Jeffrey Clark set his sights as a high-school teen on the University of Tennessee for his continued education. “I bleed Big Orange,” said Clark, a graduate student working on his PhD in chemical and biomolecular engineering. “I have lived in Knoxville for nearly all my life and love the atmosphere and the history of the University of Tennessee. More importantly, UT is a highly regarded university with an excellent engineering program.”

Clark enjoyed math and science classes in high school, so it seemed logical to him to work toward an engineering degree. His interest grew after talking with professional engineers and other students. “I was drawn in by the intellectual challenge and the diversity of the engineering fields,” he said.

Clark’s first-year experience in the Engage Engineering Fundamentals program steered him into the field of chemical engineering. He met with Dr. Brian Edwards, associate head of the Department of Chemical and Biomolecular Engineering (CBE), who filled him in on the degree requirements and the career possibilities. “I knew by his description that it was the right fit for me,” said Clark. “His enthusiasm enhanced my interest. I declared my major that day.”

Clark’s academic career has proceeded full-steam since then. As an undergraduate, he was awarded the Eastman Chemical Company Engineering Scholar Award (2007) and the American Chemical Society Engineering Scholar Award (2008). He worked at internships with Eastman Chemical and Kimberly-Clark, and enjoyed seeing the department grow along the way.

As an undergraduate, I witnessed the Department of Chemical Engineering evolve into the Department of Chemical and Biomolecular Engineering, adding diversity to the department and enhancing both its curriculum and its dedication to research,” said Clark. “The increased focus on research and the growing national reputation of the CBE department at UT is an attractive choice for graduate school.”

As a graduate student in 2009, he was granted a National Science Foundation (NSF) Integrative Graduate Education and Research Traineeship (IGERT) in the Sustainable Technology through Advanced Interdisciplinary Research (STAIR) program that he is still involved in.

Clark also maintained the energy to participate in various campus and research programs. He was the president of the CBE Graduate Council from 2010-2011, and is currently the graduate student representative for the College of Engineering to the Dean of Libraries’ Student Advisory Committee. He also actively participates with the STAIR program in community outreach activities focusing on sustainability.

“I personally enjoy the challenge and the opportunity,” said Clark. “Chemical and biomolecular engineers are elite individuals who apply high-level critical thinking and creative problem-solving skills to develop and enhance a wide range of products and processes.”

In his graduate research, Clark uses ab initio molecular modeling techniques to explore the local microstructure and proton transfer properties of proton exchange membrane (PEM) ionomers for fuel cell applications. He has several technical papers currently published in peer-reviewed journals.

“I have also written a book chapter pertaining to ab initio modeling of transport and structural properties of solid-state proton conductors,” said Clark. “This was a major project that required a great deal of work and expanded my knowledge in the field immensely.”

Outside of his studies, hometown boy Clark spends time with his wife, Lindsey, golf, football, sports, and looks for new experiences, such as recent adventures with skydiving and horseback riding.

“I believe it is our responsibility as engineers to use our knowledge and abilities to enhance technologies and to develop new ones in attempts to improve the world in which we live,” said Clark. “It is my goal to apply what I have gained from my experience at UT and expand upon it in a career as a research engineer in industry.”
Engineering Outreach.

impressive fashion,” said Dr. Roger Parsons, the director of studying abroad.

Opportunities for students to take engineering courses while

Outreach began a targeted effort to increase engineering-student

across campus, throughout the community, and around the world

The Office of Engineering Outreach works with organizations

Hussaini, Kyle Leinart, Josh Penney, Brandon Hotsinpiller, Brittani Erwin, Andy Mihalik, Shelby Dreifke, and Carl Britt.

Matt McCammon, Ryan Weiss, Austin Wyer, Jason Rizk, Trey Twickler, Tyler Buckelew, Aaron Young, Sarah Combee, James Allred, Jahan

Students in the “Engineering in London” class visit the Royal Institution in London, England. From the bottom of the stairs going up are:

support for their study-abroad programs.

year thirty engineering students received $30,000 of financial

obtained from Alcoa, plus $20,000 from URS Corporation. This

students participated, with forty-seven taking engineering courses.

In the 2009-2010 school year, eighteen students participated in

A new course for 2013 was

farms as part of the curriculum.

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In 2013, the University of Tennessee College of Engineering celebrated 40 years of engineering diversity programs at UT in its forty-second year of co-education. The diversity program’s fortieth anniversary celebration was marked by a special luncheon and program on September 12, 2013, at the dedication ceremony of the J. D. Tickle Engineering Building.

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The Department of Chemical and Biomedical Engineering

Dr. Brian Edwards, professor and associate head in the CBE department, is an acknowledged scholar in both teaching and research.

Over the past twelve years, Edwards has taught more course sections than almost anyone else in the department. Edwards sees both teaching and research as part of his goal to reach out to students and understand the needs of today’s engineering field. “As a state institution, our primary mission is to educate students to become leaders and innovators through the science and technologies in the chemical, biomolecular, and energy sciences and technologies in the chemical, biomolecular, and energy sciences and technologies in the chemical, biomolecular, and energy sciences and technologies in the chemical, biomolecular, and energy sciences and technologies in the chemical, biomolecular, and energy sciences and technologies in the chemical, biomolecular, and energy sciences and technologies in the chemical, biomolecular, and energy sciences and technologies in the chemical, biomolecular, and energy sciences and technologies in the chemical, biomolecular, and energy sciences and technologies in the chemical, biomolecular, and energy sciences and technologies in the chemical, biomolecular, and energy 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Edwards commented, “However, we also have an expanded view of education. This is more than classroom teaching, but also to teach our students how to think, which is often the overlooked component of education. I mentor my classes and research groups to think critically about their work and to be effective process engineer or research engineer requires imagination.”
The Department of Civil and Environmental Engineering

The Department of Electrical and Computer Engineering

The Department of Environmental Engineering

The Department of Electrical Engineering

For almost a quarter of a century, Dr. A. Michael Langston has been working on problems in energy, climate change, and energy security. “Many things make the College of Engineering (COE) a great place to work,” Langston said. “I envision the students as the drivers of the new buildings, so we keep the new buildings on the cutting edge.”

Burdette and his students also collaborate with domain scientists from many application areas, most of which are related to the graduate foundations course, which he has taught for nearly 20 years. “The banner tends to carry the PhD on experience and computational biology, to extremal graph theory, and to both real and applied research domains.”

A research team led by Dr. Robert E. Bock has been working on the development of new methods for the design and analysis of composite materials. "Our research has shown that these new methods can significantly improve the performance of composite materials," Bock said.

Electrical and Computer Engineering (EECS) was awarded a $18.5 million NSF/DoE Research Center grant for CURENT, an NSF Engineering Research Center in August 2011 to study the wide area network and computational biology, to extremal graph theory, and to both real and applied research domains. Langston believes that the department’s foundational work in these areas will continue to have a significant impact on society.

The department’s research efforts have been acknowledged by national organizations, including the National Academy of Engineering and Computer Science (NSF), which has recognized the department’s contributions to research and education in electrical and computer engineering.

The department also has received several grants from the National Science Foundation (NSF), including a $5 million grant for the development of new methods for the design and analysis of composite materials. This grant will support the research efforts of Bock and his team, as well as other researchers in the department.

The department’s faculty members have been recognized for their contributions to the field of engineering, including the IEEE’s Distinguished Lecturer Program and the American Society for Engineering Education (ASEE) awards.

The department has also been involved in several outreach and engagement activities, including partnerships with local schools and community organizations.

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The Department of Industrial and Systems Engineering

Dr. Rupy Sawhney, Heath Faculty Fellow in Business and Engineering

Year established: 1993.

Dr. Rupy Sawhney has been an integral part of the Department of Industrial and Systems Engineering (ISE) since 1993. He joined the University of Tennessee in 2001, bringing with him a wealth of experience in teaching and research.

Sawhney graduated with a B.S. in Engineering from the University of California, Berkeley, and a Ph.D. in Industrial Engineering from the University of Wisconsin, Madison. He has also served as a consultant for a number of companies and organizations.

Sawhney has been a faculty member at the University of Tennessee for twelve years, joining the ISE in 2001. He earned a Ph.D. in Industrial Engineering from the University of Wisconsin, Madison, and has worked as a consultant for a number of companies and organizations.

Sawhney has been recognized for his contributions to the field of industrial and systems engineering, including winning the Allen & Hoshall Engineering Faculty Award. He has received national recognition for his work on human thinking and movements, enabling UT to become a Top 25 university in its fields. Our department is part of a team at ORNL.

Sawhney's research area is broadly focused on the relationships between composition, structure, and properties of materials. One of the fundamental goals of materials science is to illuminate the nature of materials, to understand how they have been formed, and to develop a global perspective for problem solving.

Rack has received a number of awards during his career at UT, including the 2012 Research Excellence Award, the 2017 Chancellor's Award for Research and Creative Achievement; and the 2011 COE Creative Achievement Award. Rack was named a fellow of the American Ceramic Society, the American Institute for Materials Research and the American Ceramic Society, and is also the deputy director for science on Materials , and Dr. Ramamoorthy Ramanathan are the deputy director for science on Materials and technology at ORNL and is a member of the prestigious National Academy of Engineering.

His research focuses on the development of thin films and nanomaterials, and the study of the fundamental properties of these materials. Rack's research area is broadly focused on the relationships between composition, structure, and properties of materials. One of the fundamental goals of materials science is to illuminate the nature of materials, to understand how they have been formed, and to develop a global perspective for problem solving.

The Department of Materials Science and Engineering

Dr. Philip Rack has been a faculty member of the Department of Materials Science and Engineering for ten years, since joining the department in 2001. Rack joined UT as a young assistant professor, and the close proximity to Oak Ridge National Laboratory (ORNL) has received national recognition for its work on human thinking and movements, enabling UT to become a Top 25 university in its fields. Our department is part of a team at ORNL.

Rack's research area is broadly focused on the relationships between composition, structure, and properties of materials. One of the fundamental goals of materials science is to illuminate the nature of materials, to understand how they have been formed, and to develop a global perspective for problem solving.

Rack's teaching activities rotate through undergraduate and graduate courses. "The undergraduate courses I teach include a well-rounded and relevant curriculum for our bachelors, masters, and PhD students. These innovative programs allow alumni to reconnect with the department and to better integrate the knowledge and skills they have gained as part of this effort."

The overall intent is not just to teach students in these fields. Our department is part of a team at ORNL. ORNL is widely acknowledged as the world's premier center for materials research and development.

The Tennessee Manufacturing Extension Program (TMEP), with the primary focus on materials processing and nanofabrication, is also the deputy director for science on Materials and technology at ORNL and is a member of the prestigious National Academy of Engineering.

His research focuses on the development of thin films and nanomaterials, and the study of the fundamental properties of these materials. Rack's research area is broadly focused on the relationships between composition, structure, and properties of materials. One of the fundamental goals of materials science is to illuminate the nature of materials, to understand how they have been formed, and to develop a global perspective for problem solving.

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Rack has received a number of awards during his career at UT, including the 2012 Research Excellence Award, the 2017 Chancellor's Award for Research and Creative Achievement; and the 2011 COE Creative Achievement Award. Rack was named a fellow of the American Ceramic Society, the American Institute for Materials Research and the American Ceramic Society, and is also the deputy director for science on Materials and technology at ORNL and is a member of the prestigious National Academy of Engineering.

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The Department of Mechanical, Aerospace, and Biomedical Engineering

Department Head: Dr. Mohamed Mahfouz (tenured 8/16)

Faculty:

Dr. Jafar Babu, and establishment of a major research thrust area in Advanced Manufacturing. This includes the new Advanced Manufacturing Laboratory and the Biomedical Engineering Faculty and students are involved in a wide range of research activities ranging from fuels, hybrid vehicles, robotics, and emerging nano sciences. The department has a strong record of research and educational programs for both faculty and graduate students.

Major Research Areas:

The Department of Nuclear Engineering

Department Head: Dr. Woody James

Faculty:

Research Expenditures: $6,564,622

AV 2012 Enrollment:

TOTAL: 197

PhD: 14

BS: 153

FACILITIES: The Nathan W. Dougherty Home Facility: Dr. William Hamel/Arnold Engineering Development Center.

Space Institute in Tullahoma, Tennessee.

Dr. William Hamel/Arnold Engineering Development Center.

The Department of Nuclear Engineering includes an outstanding faculty, all of whom are productive researchers, in areas such as traditional nuclear engineering, a concentration in nuclear safety, and various applications of nuclear technology.

In August of 2008, Dr. Lawrence Heilbronn became an assistant professor in the Department of Nuclear and Radiological Engineering. He was appointed as a nuclear engineering research group leader at Oak Ridge National Laboratory (ORNL). His research interests are in the area of nuclear chemistry and radiochemistry, particularly the analysis of uranium and plutonium isotope ratios.

Heilbronn has two ongoing projects out at ORNL, one deals with the production of medical isotopes and radioisotopes, and the other looks at the effects of background neutrons on the health of medical and diagnostic personnel.

Heilbronn has in the past been involved in many interdisciplinary projects, working with other departments and organizations to tackle issues they find interesting and worth solving.

Heilbronn said, “What I stress in the classroom are the many interdisciplinary approaches that can be used to tackle nuclear and radiological problems. We look at the big picture and try to develop solutions that can be applied to a wide range of issues. It is also important to emphasize the importance of collaboration and teamwork in these projects.”

In his research, Heilbronn has focused on the importance of understanding the long-term impact of nuclear waste on human health and the environment. He is working on developing new methods to monitor and evaluate the safety of radioactive substances.

Heilbronn’s research is also reconsidering how the federal government can improve the effectiveness of nuclear waste management. He is working on developing new methods to evaluate the safety of radioactive substances and the impact of nuclear waste on human health and the environment.

Another new research initiative that has been initiated is the measurement of the dose received by workers engaged in the handling of radioactive materials. This includes the development of new dosimeters and the use of advanced technologies to monitor radiation exposure.

Heilbronn is also working on developing new methods to evaluate the safety of radioactive substances and the impact of nuclear waste on human health and the environment.
said she appreciates the equal opportunity and the supportive culture for female faculty within the college.

"I think the presence of accomplished women who are serving as faculty in the college’s departments and minority faculty members is an important goal for the College of Engineering Works to Increase Female Engineers.

Dr. Lyonne Parker, the first female associate dean and a professor in the Department of Materials Science and Engineering, is currently working on a proposal with the Provost’s office to get a grant from the National Science Foundation (NSF) to increase participation and advancement of women in academic science and engineering careers.

"The NSF grant would be aimed at attracting and retaining female faculty at the tenure track level in the Science, Technology, Engineering, and Math fields (STEM)," Keppens said. "The multi-million dollar proposal would be used for recruiting, mentoring, leadership development, and retention efforts for female engineers.

"It would be wonderful for UT’s College of Engineering to be known nationally as a leader in the recruitment and retention of female engineers and computer scientists," Parker said. "It will take a lot of dedicated attention by the college’s leadership, faculty, staff, and students to envision and pursue new initiatives that we can take to help us reach that distinction.

During academic year 2012, the college had four hundred and nineteen female undergraduate students enrolled, up from three hundred and twenty in 2008. Although statistically the share of women engineering students has not drastically increased (from 5.0% in 2008 to 7.2% in 2012), the larger number of females enrolled through the growth of the college’s undergraduate programs is promising.

The college also has an enrollment of twenty-nine women in master’s degree programs, and it has four female Ph.D. students in the MSE programs in the academic year 2012. The latter group in particular have shown significant growth, up from a total of only four women participants in 2008.

Dr. Veerle Keppens, the college’s first female associate dean and a professor in the Department of Materials Science and Engineering, is currently working on a proposal with the Provost’s office to get a grant from the National Science Foundation (NSF) to increase participation and advancement of women in academic science and engineering careers.

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The College of Engineering Research Fellow Awards are presented to faculty members with an exceptional record of research activity, whose efforts clearly contribute to the overall mission of the college in terms of external funding, publication record, and supervision of undergraduate and graduate research. The awards were presented at the college’s annual Faculty and Staff Awards Dinner. This year’s event took place on April 4, 2013, at the Crowne Plaza where the awards were presented to the following faculty members:

- Dr. Joshua Fu, Department of Civil & Environmental Engineering
- Dr. Yanfei Gao, Department of Materials Science & Engineering
- Dr. Peter Liaw, Department of Materials Science & Engineering
- Dr. Matthew Mench, Department of Mechanical, Aerospace & Biomedical Engineering
- Dr. Philip Rack, Department of Materials Science & Engineering
- Dr. Leon Tolbert, Department of Electrical Engineering & Computer Science
- Dr. Lawrence Townsend, Department of Nuclear Engineering
- Dr. Mingjun Zhang, Department of Mechanical, Aerospace & Biomedical Engineering
- Dr. Fred Wang, Department of Electrical Engineering & Computer Science

A new award, the Translational Research Award, was presented to Dr. Xueping Li in the Department of Industrial & Systems Engineering.

The 2013 COE Teaching Fellow Awards were presented to Dr. Lee Han, Department of Civil & Environmental Engineering and Dr. Brad Vander Zanden, Department of Electrical Engineering & Computer Science, at the 2013 Faculty and Staff Awards Dinner.

Dr. Lee Han
Department of Civil & Environmental Engineering

Dr. Brad Vander Zanden
Department of Electrical Engineering & Computer Science
The College of Engineering Governor's Chairs

Dr. Howard Hall
Governor's Chair Professor for Global Nuclear Security

Dr. Howard Hall joined the Department of Nuclear Engineering in May of 2009, following a twenty-year tenure at Lawrence Livermore National Laboratory in northern California. His research involves developing computer models to predict how advanced materials are used in the nuclear industry and applications. Hall also serves as Director of the UT Institute for Environmental Technology and Deputy Director of the UT Bredesen Center for Interdisciplinary and Graduate Education (CIRE). He is also a Senior Fellow in Global Security Policy at the Howard H. Baker Jr. Center for Public Policy and serves as Director of the Baker Center's Global Security Policy Program.

"The College of Engineering Governor’s Chairs allows me to work in the capacity as a UT faculty member and as an external technical expert,” said Hall. “The unique position of the Governor's Chair allows me to work in the capacity as a UT faculty member and as an external technical expert. My students' work with UT and Oak Ridge National Laboratory (ORNL) focusing on design, materials science, processing, characterization, and when found, more readily analyzed to understand their origins. My students' work with UT and Oak Ridge National Laboratory (ORNL) focusing on high-performance computational modeling to accelerate the rate of discovery and development of advanced manufacturing techniques, including additive manufacturing (also known as 3D printing).

"I am passionate about developing the next generation of engineers, leaders, and scientists who are capable of producing revolutionary discoveries and solving the more challenging problems we face today," said Hall. "The whole is greater than the sum of its parts, so it is imperative that we use a systems biology approach to study all environments from the ecosystem to the molecular level," he added. "My students' work with UT and Oak Ridge National Laboratory (ORNL) focusing on high-performance computational modeling to accelerate the rate of discovery and development of advanced manufacturing techniques, including additive manufacturing (also known as 3D printing).

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They are the key players in our research endeavor," said Liu. "We hope to be the Liu’s research team of graduate and undergraduate students, and post-doctoral senior scientist in the Materials Sciences Division at Lawrence Berkeley National Laboratory. Ramesh comes to UT from the University of California, Berkeley, where he will continue multiplied energy storage, and many other magnetoelectric materials. The goal is to promote energy efficiency in products and devices.

Part of this research is focused on the studies of ion-solid interactions, particularly the electronic transport of ions in solid electrolyte, their electronic theory is Aligned, and the ions effect on the 

Dr. Ramamoorthy Ramesh
Governor’s Chair Professor for Nanomaterials Engineering
Dr. Ramamoorthy Ramesh, the Walter E. Gehring Chair Professor in Materials Engineering at the University of California, Berkeley, is currently the deputy director for science and technology at ORNL. His research group works to develop the next generation of nanotechnology for use in solid-state and computer memory devices. His research is focused on understanding the relationship between structure and property, and how to control structure and property at the atomic scale. His research group is interested in understanding the relationship between electricity and magnetic materials. His work is centered on developing and understanding electronic and magneto-electronic materials. The goal is to provide energy-efficient and field-driven devices.

Dr. Brian Wirth
Governor’s Chair Professor for Nanomaterials Engineering
Dr. Brian Wirth research involves combining computational methods and experimental characterization techniques to better understand the changes that occur in materials under extreme environments. The research is focused on understanding the relationship between electricity and magnetic properties. His team develops advanced computational methods for use in materials science.

"We hope to use this knowledge to develop predictive models of soft materials to increase the accuracy of materials science and engineering results over the coming decade. The goal is to provide better understandings and validated models of the response of materials to extreme radiation environments.,” said Liu.

Dr. William J. Weber
Chair Professor for Radiation Effects on Materials
Dr. William Weber, also director of the Ion Beam Materials Laboratory (IBML), works on the continued development of new ion-beam techniques to study the radiation damage characteristics of advanced materials. The field of ion-beam techniques is using ion beams to create advanced materials and study defects in materials in order to gauge their effect on materials. The goal is to develop real-time materials that are resistant to properties degradation.

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Wirth believes UT offers a great environment for discovery, with the university’s reputation on the rise for its quality of research and educational enterprise.

"Through leading science and technology programs, UT is becoming recognized as a true world-class research university," said Wirth. "I am excited to be a Governor’s Chair Professor and I have high expectations of what UT can achieve in the future."
The John D. Tickle Engineering Building

The building was substantially completed in the summer of 2013, and the Department of Civil and Environmental Engineering and Department of Industrial and Systems Engineering moved into the facility just prior to the start of the fall semester. The move included relocation of faculty, student and administrative offices, instructional laboratories, classrooms, student work spaces, research laboratories, and departmental workshops from their previous locations in Perkins, Estabrook, Berry, and East Stadium Hall.

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Dougherty Laboratories

The laboratory renovations that were funded by a $1.8 million grant from the National Science Foundation, plus an additional $1.5 million from the UT administration, are now complete. The labs focus on interdisciplinary energy projects and are used for both undergraduate and graduate research projects.

“This project, with funding of about $600,000, modernizes the lab for student learning and updates its functionality with respect to current safety codes,” Dunne said.

Perkins Hall

Work is just about complete for the instructional environmental engineering laboratory in Perkins Hall.

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New Building

The college has secured $10 million in alumni support for the construction of three new buildings that will probably be built on the current sites of Estabrook and Pasqua Hall or on the Perkins real estate. The facility will house the Engineering Outreach, the Department of Nuclear Engineering, the Perkins Hall site. The facility will house the Jerry E. Stoneking Freshman Engineering Program, the Engineering Honors Program, and possibly other sectors within the college.

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$13 Million Raised in 2013

When you consider it, every gift is a vote of confidence. And for fiscal year 2013 the College of Engineering has $13 million to prove it. More than 900 individuals and organizations gave to the college for a grand total of $13.2 million. The college surpassed its goal of $9.3 million set two years ago and has become a major player in the generosity of our graduates, friends, and corporate partners. And for 2013 the college has raised $13 million for the first time.

Highlights of this very strong year include:

- Annual gifts to the College fund and capital project funds, which topped $13 million.
- Over $3 million designated for faculty positions and fellowships, including a large anonymous estate gift.
- Support for the Jerry and Stirling Shanks Engineering Science Scholars program continues to provide intellectual stimulation to the student-freshman experience.
- A gift from Houston is establishing the John C. Houston Endowed Chair in Engineering.
- A $15 million commitment from Jim Gibson (BS/Industrial Engineering '71) upon establishing the Gibson Endowed Chair will be a tremendous energy challenge.
- The ability for the college to grow and better serve our students is inextricably linked to the value of teaching and research. We are grateful to each donor-partner; individually and together they have expressed their confidence in the college and our potential to inspire, Samsung.

A well-timed challenge from Chancellor Jimmy Cheek has stimulated a number of gifts that are making an immediate impact.

Recognizing the need to expand the faculty strength, Chancellor Cheek set aside a pool of funds that would be available for a limited number of endowed faculty positions. These endowed faculty positions would be supported by corporate entities, gifts, and foundations. We are grateful to each donor-partner; individually and together they have expressed their confidence in the college and our potential to inspire, Samsung.

Dr. Stephen Paddison has been named the Heath Family Charitable Fund of the UT Foundation of Engineering.

A $1.5 million commitment from Jim Gibson (BS/Industrial Engineering '71), upon establishing the Gibson Endowed Chair will be a tremendous energy challenge. The Gibson Chair will be a higher level. I believe that inspired faculty, talented students, and facilities will help the college create new clusters of excellence.

Over the past several years I have met some of UT’s incredible young graduate students and have seen their research and presentations. Their enthusiasm and dedication gives me great hope for the future. They inspire me and my intent is to help the college bring in more great professors who will continue to inspire students.”

- Jim Gibson (BS/Industrial Engineering ’71) upon establishing the Gibson Endowed Chair

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Dr. Mongi Abidi was named the Coke-Evenson Professor, supported by an endowment created through the generosity of Dr. Robert Cooke, former head of Yaskawa Electric Corporation and graduate student advisor for many UT graduates. The college has named the position after its benefactors, Dr. Coke Cooke, past chair and current member of the Board of Advisors, is president of Mountain Cooke Capital in Nashville. Eversole is president of Mountain Cooke Capital in Nashville. Eversole is president of Mountain Cooke Capital in Nashville. Eversole is president of Mountain Cooke Capital in Nashville. Eversole is president of Mountain Cooke Capital in Nashville. Eversole is president of Mountain Cooke Capital in Nashville. Eversole is president of Mountain Cooke Capital in Nashville. Eversole is president of Mountain Cooke Capital in Nashville. Eversole is president of Mountain Cooke Capital in Nashville.
Dougherty Award Winner: Mr. John D. Tickle

Mr. John D. Tickle, a University of Tennessee alumnus and the chairman of Strongwell, is the 2013 winner of the Dougherty Award. Established by the College of Engineering in 1957, the Dougherty Award is presented to individuals who have demonstrated exceptional commitment to the University of Tennessee and its engineering programs.

Tickle graduated with a bachelor’s degree in industrial engineering from UT in 1965. He joined Strongwell in 1967, and currently serves as its chairman. Tickle has been a member of the UT College of Engineering’s Board of Advisors and was a member of the UT College of Engineering’s Executive Committee.

Tickle has been the recipient of numerous local, regional, and national business and philanthropic awards, including having The Hall of Honor at Bristol Motor Speedway named in honor of Dr. Dougherty. Tickle has also provided generous support for the John D. Tickle Engineering Building, which opened in the fall of 2012. The beautiful contemporary facility, located at 851 Neyland Drive, houses the Department of Civil and Environmental Engineering and the Department of Industrial and Systems Engineering and is the university’s most prestigious building.

Today, Strongwell is a worldwide operation, with the Bristol division serving as its headquarters. Tickle has been the recipient of numerous local, regional, and national business and philanthropic awards, including having The Hall of Honor at Bristol Motor Speedway named in honor of Dr. Dougherty. Tickle has also provided generous support for the John D. Tickle Engineering Building, which opened in the fall of 2012. The beautiful contemporary facility, located at 851 Neyland Drive, houses the Department of Civil and Environmental Engineering and the Department of Industrial and Systems Engineering and is the university’s most prestigious building.

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Vision Statement

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

Fiscal Year 2013

Total Expenditures & Carryover
$107.8 Million

Resources: Recurring & Nonrecurring State Funds
$44.8 Million

Gifts, Grants & Contracts by Department/Center
$62.9 Million

Externally Funded Gifts, Grants & Contracts
$62,945,726

Recurring & Nonrecurring State Funds
$44,843,374

Salaries & Benefits
$31,075,067

Miscellaneous Operating Expenses
$11,559,433

Equipment & Software
$2,208,874

Administration
$1,251,241

Chemical & Biomolecular Engineering
$4,181,778

Civil & Environmental Engineering
$8,619,064

Electrical Engineering & Computer Science
$14,333,603

Engineering Fundamentals Division
$434,039

Industrial & Systems Engineering
$1,546,973

Materials Science & Engineering
$10,037,139

Mechanical, Aerospace & Biomedical Engineering
$6,564,622

Nuclear Engineering
$8,128,700

Research Centers
$7,586,567

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