Annual Report 2013
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 in FY13 but both have 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 in our college and university. They, along with others who have helped finance the funds for these two buildings, as well as the funds for our other major capital improvements, have provided a foundation for our college for years to come that will allow us to continue our efforts to achieve our vision of providing the highest quality education to our students. We are deeply appreciative to all who helped make these two major capital investments possible.

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 staff. This five-year period began with the greatest downturn in our economy since the Great Depression—three years with no raises for faculty and staff and a significant focus on reducing the size of our programs, has provided a foundation for our college for years to come that will allow us to continue our efforts to achieve our vision of providing the highest quality education to our students. I also believe that this year 2013 is the 175th anniversary of offering engineering courses at the university.

Based on the outstanding growth of our college, the strong demand for engineering graduates, the needs of our students, and the need for faculty/staff growth to meet those demands, FY13 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 for a number of faculty positions and to provide the opportunity for the college to grow in the next five years. This proposal was successful and a $3 million increase in the college’s base budget effective as of July 1, 2013. This commitment provides an essential formula for funding the twenty-five to thirty percent growth. Since FY13, our college has been able to move forward with searches for new faculty and staff. These commitments have provided us with the opportunity to continue our growth for the next several years and to start the fall, ranging from lectures to chaired faculty positions.

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. I hope that 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
College Profile

Board of Advisors for Fiscal Year 2013 (July 1, 2012 – June 30, 2013)

**Leadership Team**

*President, Crabtree Ventures,*
BS/EE '73, MS/EE '75, MBA '87

*Founder and Principal, Mountain Science Applications International*

*Corporate Vice President, Engineering Consultant*

**Department Chairs**

*Director of Engineering Development*

*Director of Engineering Outreach*

*Director of Engineering Professional Practice*

*Director of Engineering Advising Services*

**Departments**

*Biomedical Engineering and Nuclear Science*

*Chemical and Biomolecular Engineering*

*Civil and Environmental Engineering*

*Chemical Engineering and Materials Science*

*Computer Engineering and Computer Science*

*Electrical Engineering and Computer Science*

**Academic Support Programs and Diversity Initiatives**

*Distance Education Programs and Outreach*

*The Amy B. Storrowing Fund Endowed Chair for Distance Education Initiatives*

*Technical Support Services*

*Engineering Advisors Program*

**Academic Programs**

*Doctor of Philosophy*

*Master of Science*

*Bachelor of Science*

*Graduate – PhD*

**Total Enrollment Full-Time Programs Academic Year 2012**

*Total Student: 6176*

*Total: 3865*

**Total Graduate – PhD:**

*Total: 767*

**Total Graduate – Master:**

*Total: 1497*

**Total Graduate – Master and PhD:**

*Total: 2264*

**Total Doctoral:**

*Total: 1227*

**Total Graduate – Master and PhD:**

*Total: 2264*

**Total Undergraduate:**

*Total: 5789*

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175 Years of Engineering Instruction at the University of Tennessee

The 1890s-1900s

The University of Tennessee College of Engineering was formally established in 1895. By 1900, the university had 104 students, with 13 students majoring in engineering. By 1904, the enrollment had increased to 225 students, with 24 of those being engineering students. In 1905, the college was renamed East Tennessee College and was renamed as the University of Tennessee College of Engineering in 1904. Engineering instruction was initially established for students to help clean up the campus; and Professor Charles E. Ferris was named the first dean of engineering in 1904. The college was subsequently organized into three schools: engineering, science, and mathematics.

The 1900s

During the 1900s, the curriculum expanded to include more technical subjects. In 1907, the college established the first engineering class, which was offered to both undergraduate and graduate students. In 1910, the college was renamed East Tennessee College of Technology and opened its doors to women as well as men. In 1912, the college was renamed the East Tennessee College of Engineering and Science, and in 1915, the college was officially named the University of Tennessee.

Engineering Instruction was concentrated in the Department of Mechanical and Metallurgical Engineering. The curriculum was progressive and focused on providing a comprehensive education that included both academic and practical experience. In 1912, the Department of Industrial Engineering was established, conducting research on various industrial problems.

The 1910s-1920s

In 1917, the university was declared a military college due to the first wave of World War I. The campus returned to normal under the guidance of the state legislature and the Union Army, which occupied the campus. Buildings were used for military purposes, and the college was used as a training ground for the Union Army. In 1918, the college was officially named the University of Tennessee.

The 1920s-1930s

In 1923, the university established the Engineering Scholarship Program (ESP), which provided financial aid to students. In 1925, the college was renamed the University of Tennessee College of Engineering. In 1927, the college was named the University of Tennessee College of Engineering and Science.

The 1940s-1970s

During the 1940s, the college was renamed the University of Tennessee College of Engineering and Science. The college was given the opportunity to secure a new engineering faculty and the Engineering Degree Program (MESP) was established, which provided a grant for this initiative.

The 1980s-2000

In 1982, the college was renamed the University of Tennessee College of Engineering. In 1985, the college was renamed the University of Tennessee College of Engineering and Science. In 1988, the college was renamed the University of Tennessee College of Engineering and Science. In 1990, the college was renamed the University of Tennessee College of Engineering and Science.

2001-Present

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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. 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—what lists are out there, how companies are selected, etc.,” said Poole. “Eventually, I made recommendations to position my organization for recognition.”

Dr. Xeuping Li is the model of a great teacher who challenges us to stretch ourselves and always connect classwork to 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.”

Poole feels that this is also reflected in the Department of Industrial and Systems Engineering (ISE).

“Every job I have had has truly built on the skillset of its predecessor,” she said. “My biggest takeaway from work experience—so far—has been that every activity and every role are connected to one another, and for that reason, there is something to be learned from every single person you meet.”

Poole feels that this is also reflected in the Department of Industrial and Systems Engineering (ISE). ""
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. "This increased focus on research and the growing national reputation of UT's engineering program were what attracted me to UT as a graduate student."

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." Clark also credits his graduate advisor, Dr. Stephen Paddison, professor and Ferguson Faculty Fellow in Chemical Engineering, with having a positive impact on his studies.

"I have greatly benefited from his experience and expertise in the field," said Clark. "He continually encourages me to make the most of my experience as a graduate student at UT."

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

He looks forward to new adventures in engineering once he earns his PhD. "I believe it is our responsibility as engineers to use our knowledge and abilities to enhance technologies and to discover new innovations 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
opportunities for students to take engineering courses while
Beginning with the Chancellors Honors Program's decision to require
Alcoa's sponsorship of the college's study-abroad efforts has
students participated, with forty-seven taking engineering courses. For 2012-2013, a total of eighty-five COE
Engineering Outreach began a targeted effort to increase engineering-student
Engineering Outreach.

Outreach Update

The Office of Engineering Outreach works with organizations across campus, throughout the community and around the world to enhance learning opportunities for engineering students.

In the 2006-2007 school year, eighteen students participated in study abroad, but only three took engineering courses. Eighty students participated in 2010-2011, but only nineteen took engineering courses. In 2011-2012, forty-two students participated, with forty-seven taking engineering courses.

Airbus sponsorship of the college's study-abroad efforts has continued since 2006. A total of $120,000 in support has been obtained from Airbus plus $20,000 from USC Corporation. This year engineering students received $50,000 of financial aid for their study-abroad programs.

Faculty-led Study Abroad

The Grand Challenge Scholars Program

This year three COE undergraduates completed a unique program designed to address one of the grand challenges facing society. Grand Challenge Scholars Program students are significant to society through a global experience, and entrepreneurship. Grand Challenge scholars for 2013 are Shan Czar, aerospace engineering; Kyle Sain, nuclear engineering; and Bryan Bates, mechanical and aeronautics.

Global Initiatives

Two trips organized by the COE's new Global Initiative programs allowed participating students to experience engineering projects internationally. During the spring of 2013, COE International Coordinator Judy McGreer oversaw an international engineering education study-abroad program in Costa Rica, and on-site coordinator was assistant professor Timothy McHugh.

History accompanied nineteen students to Cartagena in March for service projects and a tour of Colombian engineering programs. Another initiative that resulted in a direct link engineering study abroad in 2013 was the UT COE-HMED partnership with the Tecnologico de Buenos Aires (TBU) in Turin, Italy.

Another trip was to Madrid, Spain, for five to ten students from the Universidad Carlos III de Madrid, in partnership with the Instituto Nacional de Tecnica Aeronautica (INTA).

Although Global Initiative programs are non-credit bearing, the students gained “Ready for the World” experience and are significant assets to the university. A limited number of scholarships are offered to defray travel costs for information visit: http://www.engr.utk.edu/Global

Global Initiatives program with its a yearly event and should be the highlight of any student's nuclear engineering education experience,” said alums, who gave a seminar during the trip at the Czech Technical University in Prague.

During their stay, the students participated in a reactor-physics training program for which they received upper-division laboratory credit in the nuclear engineering program. The class had a first-hand look at a uranium yellow cake for which they received upper-division laboratory credit in the nuclear engineering program. The class had a first-hand look at a uranium yellow cake and reactors at the Temelin Power Station. Students worked in a reactor-physics training program and proved to be of any student's nuclear engineering education experience. “I was surprised at how much I learned in one week.”

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The group accompanied nine students to Cartagena in March for service projects and a tour of Colombian engineering programs.

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Diversity Celebrates 40th Anniversary

In 2023, the University of Tennessee’s Engineering Diversity Programs (EDP) are celebrating 40 years of engineering diversity programs in 2023. The diversity program’s fortieth anniversary was marked with a special luncheon and program on October 26, followed by a dedication ceremony of the John D. Tickle residence hall.

The diversity program, the first of its kind established in 1983, was a strong leader and believer in higher education for African American young people to select engineering careers. Mr. Fred D. Brown Jr. was the first director of MESP.

In 1999, MESP was renamed the Diversity Champions Program (DCP), and was incorporated into the Engineering Professional Practice Office. The college’s primary focus is to administer and award a nationwide program with the National Science Foundation, the National Academy of Engineering, and the National Academy of Social Sciences. Since 1997, the EDP has established a number of programs for pre-college students. These programs are intended to explore the various aspects of engineering through interactive presentations and exhibits prepared by engineering student groups.

This year, the EDP also hosted four commuter workshops for potential engineering students. The diversity program offers the Engineering Diversity Programs (EDP), for rising seventh and eighth graders. The EDP also provides recruitment and mentoring programs for middle and high school students, college students, and was incorporated into the Engineering Science and Technology Department. The EDP also provides recruitment and mentoring programs for middle and high school students, college students, and was incorporated into the Engineering Science and Technology Department.

The EDP also provides recruitment and retention initiatives for undergraduate engineering students. The EDP also offers working with MITES Participants. "The diversity program helped me to go from being a minimum wage he made when he retired. As my dad, making the same dollar over probably be on the same factory floor he did. If I had not attended UT, I would have never known the opportunity for the future of the program, saw it, and step into it without reservations." said Dr. Dwight Hutchins, Global Managing Director of GE Healthcare’s Health and Public Service Strategy.

The diversity program has included many distinguished industry leaders, with more than 1.2 million students from over 52 universities, UT serves within the nation’s program with the National Science Foundation for Graduate Degrees for Minority Students (NSF-GRAD). The National Academies’ Committee on the Advancement of Engineering and Science (Diversity Celebrates 40th Anniversary)

James Pope was Brown’s successor, and remained director of the program until his appointment as the Dean, and so many of us are still very much in touch with each other. "The diversity program helped me to apply my course work to the real world engineering experience, when I joined the program’s fortieth anniversary celebration, I honor the many distinguished industry leaders, with their contributions to education and diversity at the University. I am proud to be a Volunteer." said the Honorable Aeron Glover, an attorney, and former Assistant Secretary of the Air Force (Manpower and Reserve Affairs). The diversity program’s fortieth anniversary was marked with a special luncheon and program on October 26, followed by a dedication ceremony of the John D. Tickle residence hall.
The Department of Chemical and Biomolecular Engineering

The Department of Chemical and Biomolecular Engineering (CBE) has been recognized as a leader in training engineering leaders and innovators through a strong focus on fundamental knowledge and technologies in the chemical, biomolecular, and energy sciences and engineering areas. The general theme of CBE's programs is to foster creativity, innovation, and entrepreneurship, and to provide a collegial and cohesive research and educational environment that emphasizes the value of diversity. Since 2005, CBE has concentrated an effort on building an environment of academic excellence; outstanding teaching, research, and service; and fostering diversity, responsibility, and ethics.

Notable Achievements:
- Successful recruitment of nine new faculty members, including the Governor’s Chair in Electrical Energy Storage, Dr. Tom Zawodzinski.
- FY 2013-2014 academic year, more than tripled, from 84 to 64 since 2007.
- In 2010, the Eastman Chemical Foundation endowed a professor level to its program in the Department of Chemical and Biomolecular Engineering.
- In 2005, the John Prados Foundation endowed a professor level to its program in the Department of Chemical and Biomolecular Engineering.
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DEPARTMENT HIGHLIGHTS:

- Research expenditure per FTE has increased almost 2.5 fold since FY06, from $131,000 to nearly $300,000.
- Undergraduate student population has more than tripled from 64 to 277 since 2001.
- Creation of 5,000 square feet of additional lab space in the Dougherty Engineering Building.
- Successful recruitment of nine new faculty members, including the Governor’s Chair in Electrical Energy Storage, Dr. Tom Zawodzinski.
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- Research expenditure per FTE has increased almost 2.5 fold since FY06, from $131,000 to nearly $300,000.

Over the past twelve years, Edwards has taught more courses than almost anyone else in the teaching environment, which is very involved in his teaching. Edwards commented. “However, teaching can be an effective process engineer or a research engineer requires imagination. Edwards sees both teaching and research as challenges and he strives to reach out to students to instill in them the realities of today’s engineering field. As a state institution, our mission is to educate citizens of the State of Tennessee in the science and practice of chemical engineering,” Edwards commented. “However, we also have an expanded view of education. This is more that classroom, but also learning how to think, not just thinking. It is a knowledge which is often the overrated component of education.”

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The Department of Civil and Environmental Engineering

Department Head: John H. Tobin
Home Faculty: The John D. Tickle Home Facility

The Department of Civil and Environmental Engineering has a long history of excellence, with a focus on both research and education. The department includes the John D. Tickle Home Facility, which was opened in 2012, the largest department in the College of Engineering.

The faculty and students are dedicated to teaching and research, with a strong emphasis on diversity and inclusion. The department is known for its high quality publications and impact in the fields of civil and environmental engineering.

The Department of Electrical and Computer Science

Department Head: Leon M. Tolbert
Home Faculty: The Min H. Kao Electrical Engineering and Computer Science Building

The Department of Electrical and Computer Science is one of the largest departments in the College of Engineering, and is known for its cutting-edge research and impactful publications.

The department is home to several faculty members who are world-renowned experts in their fields, and who have received numerous awards and recognitions.

For more information, please visit the department's website.
The Department of Industrial and Systems Engineering

Dr. Rupy Sawhney has been an integral part of the Department of Industrial and Systems Engineering since 1993. His primary research focus is on the use of engineering knowledge to create solutions that meet the needs of the engineering industry. His research is focused on the development of innovative methodologies and tools to support decision making in complex industrial settings. His research has been supported by multiple grants from government agencies and private industry. He has also been recognized for his contributions to the field through various awards and nominations, including the ASME Pimentel award.

The Department of Materials Science and Engineering

Dr. Philip Rack has been a faculty member of the Department of Materials Science and Engineering since 2001. His research focuses on the development of novel materials for advanced applications, with a particular emphasis on nanomaterials. Rack's teaching activities rotate through the MSE department, and he has been recognized for his contributions to teaching through various awards, including the Allen & Hoshall Engineering Faculty Award and the 2012 COE Research Fellow Award. Rack's research is funded by multiple grants, including those from DOE and ONR.

The Tennessee Manufacturing Extension Program (TMEP)

TMEP is an organization that provides technical assistance and training to small businesses. TMEP's mission is to help businesses increase their productivity and efficiency through the use of technology, processes, and management practices. The program is funded through a variety of sources, including state and federal grants and private donations. TMEP's services are provided to businesses in a variety of industries, including manufacturing, healthcare, and services.

The University of Tennessee, Knoxville (UTK)

UTK is a public research university located in Knoxville, Tennessee. The university is known for its strong programs in engineering, materials science, and materials engineering. UT has a student enrollment of more than 30,000 and is classified as a Research 1 institution by the Carnegie Classification of Institutions of Higher Education. UTK is also a member of the University of Tennessee System.
The Department of Mechanical, Aerospace, and Biomedical Engineering

Management

- The director of the department is the Chair of the MABE, which is responsible for the administration of the department.
- The chair is responsible for the development and implementation of departmental policies and procedures.
- The chair is also responsible for the allocation of resources within the department, including faculty hiring and development.
- The chair is responsible for maintaining a safe and healthy work environment for all departmental employees.

Research

- The department has active research programs in a wide variety of areas, including aerospace engineering, biomedical engineering, and materials science.
- The department has received funding from a variety of sources, including the National Science Foundation, the Department of Defense, and private industry.
- The department has a strong record of producing high-quality research that has a significant impact on society.

Education

- The department offers a wide range of undergraduate and graduate degree programs, including Bachelor of Science, Master of Science, and Doctor of Philosophy degrees.
- The department has a strong commitment to providing students with a high-quality education that prepares them for careers in engineering.
- The department has a strong record of producing graduates who are highly sought after in the job market.

Student Life

- The department has a strong student body, with a high level of engagement in departmental activities.
- The department has a variety of student organizations, including the MABE Student Chapter of the American Society of Mechanical Engineers (ASME), the MABE Student Chapter of the Institute of Electrical and Electronics Engineers (IEEE), and the MABE Student Chapter of the Society of Women in Engineering (SWE).
- The department has a strong record of involvement in community service and outreach activities.

The Department of Nuclear Engineering

Management

- The director of the department is the Chair of the Nuclear and Radiological Engineering (NRE) Department, which is responsible for the administration of the department.
- The chair is responsible for the development and implementation of departmental policies and procedures.
- The chair is also responsible for the allocation of resources within the department, including faculty hiring and development.
- The chair is responsible for maintaining a safe and healthy work environment for all departmental employees.

Research

- The department has active research programs in a wide variety of areas, including nuclear engineering, radiological engineering, and materials science.
- The department has received funding from a variety of sources, including the National Science Foundation, the Department of Energy, and private industry.
- The department has a strong record of producing high-quality research that has a significant impact on society.

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Student Life

- The department has a strong student body, with a high level of engagement in departmental activities.
- The department has a variety of student organizations, including the Nuclear Engineering Student Chapter of the American Nuclear Society, the Nuclear Engineering Student Chapter of the American Society of Mechanical Engineers, and the Nuclear Engineering Student Chapter of the Society of Women in Engineering.
- The department has a strong record of involvement in community service and outreach activities.
College of Engineering Works to Increase Female Engineers

Faculty and student diversity is an important goal for the College of Engineering, and that includes recruiting and retaining female engineers. Currently, the college has eighteen tenure-track female faculty members, and one of those faculty members, Dr. Veerle Keppens, the college’s first female associate dean and a professor in the Department of Electrical Engineering and Computer Science, also supports efforts to increase the number of females who are enrolled in the field of engineering.

“Women and minority faculty are not as common in engineering fields as in many other disciplines,” Keppens said. “Dr. Lynne Parker, the first female associate department head and professor in Computer Science, also supports efforts to increase the number of females who are enrolled in the field of engineering. "It would be wonderful for UT’s College of Engineering to be known nationally as a leading institution for students who are interested in pursuing careers in science and engineering," Parker said. “It will take a lot of dedicated effort and resources to make sure our students are competitive and achieving their goals. The college is committed to outreach and retention efforts to increase the number of female engineering students,” said Associate Dean for Student and Academic Affairs Masood Parang. "We hope that our efforts will continue to pay off as we see more leadership roles for female faculty at both UTSI and UT.”

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College of Engineering Teaching Fellows 2013

The COE Teaching Fellow Awards are presented to faculty members who possess an exceptional record of graduate and undergraduate teaching with a strong performance in teaching-related service activities, and whose efforts clearly contribute to the overall mission of the college. The awards were primarily established to reward superior teaching.

The 2013 COE Teaching Fellow Awards were presented to:

- Dr. Lee Han, Department of Civil & Environmental Engineering
- Dr. Brad Vander Zanden, Department of Electrical Engineering & Computer Science

Dr. Lee Han
Department of Civil & Environmental Engineering

Dr. Brad Vander Zanden
Department of Electrical Engineering & Computer Science

College of Engineering Research Fellows 2013

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 Lise, 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

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

Associate Dean for Research and Technology Bill Dunne (far left) presents the COE Research Awards to faculty including: Dr. Xueping Li, the Translational Research Award; and COE Research Fellows Dr. Lawrence Townsend; Dr. Matthew Mench; Dr. Peter Liaw; Dr. Yanfei Gao; and Dr Joshua Fu. Not pictured: Dr. Phil Rack, Dr. Mingjun Zhang, and Dr. Fred Wang.
The College of Engineering Governor’s Chairs

Dr. Howard Hall
Governor’s Chair Professor for Global Student Security

Dr. Howard Hall joined the Department of Nuclear Engineering at UT in May of 2009, following a twenty-year tenure at Lawrence Livermore National Laboratory in northern California. He is jointly appointed as part of the faculty of the UT Bredesen Center for Global Security Policy at the Howard H. Baker Jr. Center for Policy. Hall also serves as Director of the UT Institute for Nuclear Security, as well as the Baker Center’s Global Security Policy Program. Hall also serves as Director of the UT Institute for Nuclear Security.

“I think the best aspect of the Governor’s Chair role here in the College of Engineering (COE) is the freedom to mental broad, interdisciplinary teams that can have on some of the more challenging problems we look at today. The COE represents one of the most comprehensive programs in nuclear science as a field of study, and the synergy with UT’s overall Top 25 efforts is fantastic. It is only by doing so that we can completely understand an environment and how best to cope with man-made and natural disasters, pollution, climate change, etc.”

Dr. Yilu Liu
Governor’s Chair Professor for Power Electronics

Dr. Yilu Liu’s research focuses on power-grid wide-area monitoring and response dynamic simulation. The joint UT/ORNL power-grid monitoring network, FNET/GridEye, collects data from North America and worldwide to provide real-time alerts of major grid events to industry and government agencies in an effort to improve electric-grid reliability.

“The unique position of the Governor’s Chair allows me to work in the capacity as a UT faculty member and as a national lab research scientist,” said Liu. “The close interaction between the UT and national lab in terms of teams, funding, and when found, more fully analyzed to understand their origin. My students’ work advances research beyond the scope of multiple teams and institutions, as well as fosters the fundamental chemical and physical processes that govern the signatures in these materials.”

Dr. Sudarsanam Babu
Governor’s Chair Professor for Advanced Manufacturing

Dr. Sudarsanam Babu does interdisciplinary collaborative research with UT and Oak Ridge National Laboratory (ORNL). Focusing on the emerging field of additive manufacturing, Babu’s work is generating fundamental advances in design, modeling, and development of advanced manufacturing techniques, including additive manufacturing (also known as 3D printing).

“I am passionate about developing the next generation of scientists, engineers, and leaders in manufacturing science and technology,” said Babu. “In order to do this, I work with faculty, students and visiting professors from all across campus, as well as with industries and government agencies.”

Babu sees challenges and opportunities for collaboration between engineers and scientists where systems are developed for traditional and additive manufacturing.

“I am overwhelmed by the passion among students, my colleagues here at the UT College of Engineering, and in the research and education community,” said Babu. “I am honored to be part of this team and look forward to a career of excellence and leadership in advanced manufacturing science and education locally in Tennessee, nationally, and globally.”
The College of Engineering Governor's Chairs

Liu’s research team of graduate and undergraduate students, and post-doctoral researchers plays a major role in developing new technology and engineering solutions. “They are the key players in our research endeavor,” said Liu. “We hope to be the

Dr. Frank Loeffler

Dr. Frank Loeffler, the twelfth UT-ORNL Governor’s Chair, is an authority in the physics of functional materials. He is also now a Senior Associate Director of the Quantum Science and Engineering Institute. Dr. Loeffler has served as the head of the Physics and Astronomy Division at Berkeley Lab and is currently a Professor of Applied Physics and Electrical Engineering at the University of California, Berkeley. His research concentrates on the study of the electronic properties of nanoscale materials and devices. Dr. Loeffler’s research involves the development of new technologies for the detection of chemical and biological agents, and the use of electronic and photonic materials for information storage.

Dr. Ramamoorthy Ramesh

Dr. Ramamoorthy Ramesh, the tenth UT-ORNL Governor’s Chair, is the Director of the Institute for Integrated Nanometer-Scale Science and Engineering and the Materials Science Division at Lawrence Berkeley National Laboratory. He is also a Professor of Materials Science and Engineering and on the physics faculty. He also serves as a faculty scientist at the Materials Sciences Center at Lawrence Berkeley National Laboratory. His research focuses on the development of new materials and technologies for energy, electronics, and environmental applications.

Dr. Brian Wirth

Dr. Brian Wirth, the Governor’s Chair Professor for Nuclear Engineering, is a Professor of Electrical and Computer Engineering and the Director of the Institute of Beam Materials Laboratory (IBML) at UT. His research focuses on the development of new materials and technologies for energy, electronics, and environmental applications. He also serves as a faculty scientist at the Materials Sciences Center at Lawrence Berkeley National Laboratory. His research focuses on the development of new materials and technologies for energy, electronics, and environmental applications.

Dr. Steven Zinkle

Dr. Steven Zinkle, the Governor’s Chair Professor for Nuclear Materials, is an expert in the development of new materials and technologies for energy, electronics, and environmental applications. He also serves as a faculty scientist at the Materials Sciences Center at Lawrence Berkeley National Laboratory. His research focuses on the development of new materials and technologies for energy, electronics, and environmental applications.
Dougherty Engineering Building

The laboratory renovations that were funded by a $1.8 million grant from the National Science Foundation, along with other enhancements to support the Teaching, Learning, and Community (TLC) initiative in the College of Engineering, are now complete. The labs focus on environmental engineering projects and are used for both undergraduate and graduate research projects.

"The second-floor mezzanine labs are primarily used by the research program and personnel collaborating with Tom Zawodzinski and Tom Zawodzinski’s Group for Solar Energy Storage," said Dunne.

The mezzanine renovations host a multi-disciplinary group of researchers, including Di Butch Trich, a research assistant professor in the Department of Mechanical Aerospace, and Biomedical Engineering (MAE), whose research projects focus on alternate fuel vehicles; Dr. Matthew Hensch, MAE professor and department head, who pursues research on biofuels that frequently involves students from the Department of Chemical Engineering; Dr. John DeMello and Dr. Kevin Dürr, MAE professors who are working with dynamics and propulsion research projects; MAE researchers Dr. Ke Nguyen and Di Zi Zeng; and Dr. Matthew Mench, MAE professor and department head, who pursues research about sustainable energy projects and is used for both undergraduate and graduate research projects. The laboratories are funded by a $1.8 million grant from the National Science Foundation (NSF), plus an additional $350,000 from the UT central administration, are now complete. The labs focus on environmental engineering projects and are used for both undergraduate and graduate research projects.

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The college has secured $10 million in alumni support for the construction of three engineering buildings that will be built on the current sites of Estabrook and Pasqua Hall or on the Cherokee Farm Campus, located a few miles from campus on the Tennessee River. The facility is being built on the university’s Cherokee Farm Campus, located off Estabrook Drive and beyond, plus draws the green space outside the Science and Engineering Research Building (SERF) into this ‘engineering quad,’” Dunne said. The college administration hopes that this project will create an attractive hub for its outdoor activities and will be suitable for informal use by students, faculty, and staff.

New Building

"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, Perkins, Estabrook, Berry, and East Stadium Hall.

The facility is being built on the university’s Cherokee Farm Campus, located off Estabrook Drive and beyond, plus draws the green space outside the Science and Engineering Research Building (SERF) into this ‘engineering quad,’” Dunne said. The college administration hopes that this project will create an attractive hub for its outdoor activities and will be suitable for informal use by students, faculty, and staff.

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The Joint Institute for Advanced Materials (JIAM)

"JIAM is currently under construction," said Dunne. "Funding has been allocated to build the complete building with functional labs on the ground and first floor, as well as the functional labs on the second and third floors. Recently, funding was approved to complete the shell of the lab on the second and third floors and that project will now be state-funded.

The college is seeking a $35 million investment from the state for the engineering of this JIAM project, and we hope to complete the cooperation of this project with the UT Knoxville’s Heating, Ventilation, and Air Conditioning Engineering program. The college administration is working on the construction of this project with the UT Knoxville’s Heating, Ventilation, and Air Conditioning Engineering program."
When you consider it, every gift is a vote of confidence. And for fiscal year 2013 the College of Engineering has $13 million to show for it. To reach a goal to raise $9.3 million, the college has done a significant job in the generosity of our graduates, friends, and corporate partners. In 2013, it is particularly significant because the gifts have been ready gifts that speak to the direction of the college and our donors’ belief in the direction of the gifts that speak to steady growth in areas of strength. A well-timed challenge from Chancellor Jimmy Cheek has stimulated a wave of gifts that are making an immediate impact.

Recognizing the need for endowed faculty support, Cheek set aside a pool of funds with a direct purpose: for new gifts to create endowed faculty funding at one hundred thousand dollars and above. The chancellor’s office provides income flow that may trigger your own re-endowment. In 2012-13 four significant new gifts have been made in support of our endowed faculty. These gifts were acknowledged individually as a group, and we acknowledge great faculty members. There are all the advantages of Chancellor Cheek’s challenge and the funding is already available and being put to use. A $15 million commitment from Jim Gibson (BS/Industrial Engineering ’71), retired Executive Vice President and General Counsel of the Haslam Foundation, will be named in Eastman’s honor. With key faculty in multiple departments already working on leading-edge energy solutions, the Gibson Chair will be a senior-level professor who can augment current research collaborations and help the college reach new heights of achievement of our stellar faculty.

Haslam’s budget in a powerful way. The ability for the college to grow and expand our already considerable faculty in multiple departments will benefit from the Chancellor’s Faculty Support Challenge. Dean Wayne Davis.”

Many donors choose to make gifts over a period of three to five years. As such, this year’s gifting is part of a larger trend. That means our capital campaign is already more than halfway towards its goal. And for fiscal year 2013 when you consider it, every gift is a vote of confidence. And for fiscal year 2013

Over the past several years I have met some of UT’s incredible young graduate students and have seen their research... 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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Tickle said receiving his degree from UT, Tickle served on the Tennessee Valley Authority Southern Technical Center, a defense contractor, and was a member of the American Society for Quality. Tickle is a fellow of the American Society for Engineering Education and a Life Member of the Industrial Engineering Society of America. He has an honorary doctorate degree from the University of Tennessee, was named to the list of recipients for an award that was added to the list of recipients for an award named in honor of Dr. Dougherty.

Tickle received a bachelor’s degree in mechanical engineering in 1963 from UT.

I chose engineering as a career because I liked science and math, and I wanted to enjoy building things. I saw engineering as a way to combine all of those things, and I knew it had endless possibilities. Tickle enjoyed his time at UT, and was very motivated in his pursuit of an engineering degree.

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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**

- **Total Expenditures & Carryover**: $107.8 Million
- **Externally Funded Gifts, Grants & Contracts**: $62,945,726
- **Recurring & Nonrecurring State Funds**: $44,843,374

**Fiscal Year 2013**

- **Resources: Recurring & Nonrecurring State Funds**: $44.8 Million
  - Salaries & Benefits: $31,075,067
  - Miscellaneous Operating Expenses: $11,559,433
  - Equipment & Software: $2,208,874
  - Gifts, Grants & Contracts: $62.9 Million

- **Gifts, Grants & Contracts by Department/Center**:
  - Administration: $1,251,241
  - Chemical & Biomedical Engineering: $4,181,778
  - Civil & Environmental Engineering: $8,691,064
  - Electrical Engineering & Computer Science: $14,333,603
  - Engineering Fundamentals Division: $434,039
  - Industrial & Systems Engineering: $1,546,973
  - Materials Science & Engineering: $10,327,359
  - Mechanical, Aerospace & Biomedical Engineering: $6,564,622
  - Nuclear Engineering: $8,128,700
  - Research Centers: $7,586,567