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.
Dean’s Message

In a recent meeting of the Chancellor’s Associates, Chancellor Cheek indicated that the university’s Journey to the Top 25 translated on a daily basis to our being better today than we were yesterday and better tomorrow than today. I couldn’t agree more! Fiscal year 2014 was a whirlwind year for the College of Engineering. The year was filled with many significant transformative events that occurred, many of which are summarized in our report. In the fall semester, we celebrated our 175th anniversary of engineering instruction at the University of Tennessee and the opening of the new John D. Tickle Engineering Building that now houses the Departments of Civil and Environmental Engineering and Industrial and Systems Engineering. That same week, we celebrated the 40th anniversary of our engineering diversity programs. There were many other new firsts that occurred this year, including the largest ever freshman class with a 15% increase over the previous year, graduates of one hundred and one PhD students (a 42% increase over the previous year and one third of the PhD students graduated from UT this year), and our highest ever ranking of 36th within the U.S. News & World Report graduate rankings for public colleges of engineering in the United States. It is notable that our ranking has increased from 43rd to 36th in the last five years.

Clearly, it was an exciting year for engineering, but we are optimistic that the future will be even brighter. Two of our alumni and their families made a commitment of $10 million dollars last year that provides our college’s match needed to move forward with planning for a new $100 million engineering complex that, once designed and built, will replace the current Pasqua Hall (former NAB steam plant) and Estabrook Hall (1899). The new complex is now number two on the campus’ new building list, and once constructed, will be the home of our 4th nationally ranked Department of Nuclear Engineering and our freshman engineering programs. On the faculty side, and as a result of commitments from the governor and the state legislature, our Office of Engineering Development and alumni/friend commitments, a record number of twenty-nine new faculty came onboard this year (including three tenure-track faculty members), and faculty searches were conducted and completed this year for an additional twenty-seven faculty who will be part of our team this coming year. Our annual report also features several of our outstanding faculty, students, and alumni, and I hope you will enjoy reading about their successes. We are optimistic that next year will be even better than this year!

Wayne T. Davis
Dean of Engineering
Leadership Team

Dean of the College of Engineering

Association Dean for Research and Technology

Association Dean for Academic Affairs

Associate Dean for Faculty Affairs

Director of the Engineering Panoramas Office

Executive Director of Engineering Communications

Director of Engineering Diversity and Inclusivity

Director of Finance and Administrative Affairs

Director of Engineering Outreach

Director of Engineering Honors Program

Director of Engineering Professional Practice

Director of Engineering Advising Services

Departments

Bioscience Engineering and Biotechnology

Biomedical Engineering

Chemical Engineering

Civil and Environmental Engineering

Computer Engineering

Electrical and Computer Engineering

Materials Science and Engineering

Mechanical, Aerospace, and Biomedical Engineering

Mechanical Engineering

Nuclear Engineering

Degrees Offered

Biomedical Engineering

Chemical Engineering

Civil Engineering

Computer Engineering

Electrical and Computer Engineering

Materials Science and Engineering

Mechanical Engineering

Nuclear Engineering

Academic Programs and Diversity Initiatives

The College of Engineering offers a wide range of undergraduate and graduate programs, including minors and certificates in various fields. The college is committed to diversity and inclusion, with initiatives aimed at increasing minority participation in STEM fields. For more information, please visit the college's website or contact the Director of Engineering Advising Services.

Student/Faculty Ratio

2013

For FY 2014

(July 1, 2013 - June 30, 2014)

Judy Moore/Kimberly McCullock

Technical Support

Dorothy Barkley Bryson

Office Manager

Judy Moore/Kimberly McCullock

Technical Support

Dorothy Barkley Bryson

Office Manager

Judy Moore/Kimberly McCullock

Technical Support

Dorothy Barkley Bryson

Office Manager


depttext:p01
Emma Hollmann describes attending the University of Tennessee as a family tradition. When the time came for her to choose a university, it was high on the list. A visit to campus during her senior year of high school cinched the deal. “I left that day excited about all that UT, particularly the College of Engineering, had to offer,” said Hollmann, a Cookeville, Tennessee, native.

Hollmann, a senior in the Department of Chemical and Biomolecular Engineering (CBE), has kept that excitement working for her, earning a series of awards and honors. She is a member of both the Haslam Scholars and Neyland Scholars programs. She also received the Eastland Family Scholarship; the Jones & Foster Scholarship; the CBE Encore Outstanding Senior Chemistry Student; the Shell Chemical Company Design Competition Award; and the Horner Johnson Scholarship in Chemical and Biomolecular Engineering.

Most recently, she was named a 2014 Goldwater Scholar and received the Dow Outstanding Junior award from the CBE department. Along with her own enthusiasm, Hollmann credits the sense of community in the College of Engineering (COE) as a foundation for success.

“It doesn’t take long for you to get to know most of your fellow students,” she said. “No one in engineering succeeds alone. We pull each other through and, towards the end, I think we all begin to realize how interesting and meaningful the experience has been.”

Hollmann’s motivation to contribute to this experience began early on. “I have had a passion for renewable energy technologies since middle school,” she said. “Once I entered high school, I developed a passion for chemistry.” Chemical engineering allowed Hollmann to combine these interests. She found the COE pace invigorating from the start.

“Honors Engineering Fundamentals with Dr. Chris Pionke and Dr. Roger Parsons set the tone of my time at UT,” said Hollmann. “We had a constant stream of homework, group projects, and tests. Somehow, though, we all managed to have quite a bit of fun along the way.”

Pionke helped Hollmann stay on course amid the heavy first-year workload. “Like many students, I questioned my choice of major during my freshman year,” she said. “Dr. Pionke and I had many discussions about my future with engineering.” Hollmann stayed with engineering, and continued to excel in her studies. She found further encouragement from multiple faculty members along the way.

“The strength of the faculty in the COE is rather impressive,” she said. “I think something more noteworthy, though, is the extent to which the faculty supports its students.”

This support has greatly enhanced Hollmann’s undergraduate studies and research efforts.

“Dr. Thomas Zawodzinski, known as Dr. Z. to CBE students, is the best research mentor for whom I could’ve found,” she said. “His continued support has taught me to be a confident engineer.”

Zawodzinski is the UT Governor’s Chair Professor for Advanced Energy Storage, researching advances in fuel-cell technology. Hollmann says that being in the “Z Group” has been vital in building her research, especially with the guidance of research associate Dr. Douglas Aaron.

“His introduction to Dr. Z. my sophomore year, and his support of my Goldwater application, have been pivotal in my career,” she said.

The Goldwater Scholarship brought rewards to Hollmann even before she received it. “The application process for the Goldwater Scholarship taught me to communicate a technical topic in a way that it is accessible by a general audience,” she explained. “The process, with the help of Dr. Zawodzinski, helped me to think more about the ‘big picture’ of my work.”

An engineering service trip to Costa Rica in 2013, organized by the Global Initiatives Program, showed Hollmann ways to connect the “big picture” on an international scale. “I was better able to understand how what I learned in class could help make a true difference in the world,” she said.

Hollmann also went to Perus, Italy, for research during the summer of 2014, mixing her engineering studies with her passion for travel. “As she continues her family tradition at UT, she has found many ways to balance life in and out of the lab.”

“I love practicing yoga, especially after stressful days on campus,” she said. “Ultimately, it is spending time with my loved ones (pets included) that I enjoy the most. Without their support, I wouldn’t be where I am today.”

After graduation, Hollmann plans to pursue her chemical engineering PhD, continuing her investigation of redox flow batteries and fuel cells.

“Outside of class, I hope to fully enjoy all that UT and East Tennessee have to offer during my last year here,” she said.
The College of Engineering draws outstanding students to the University of Tennessee through an array of attractive elements. For some it might be UT’s reputation for competitive research excellence; for others it might be a deep connection to the Volunteer tradition.

Shima Mohebbi, a PhD student in the Department of Industrial and Systems Engineering (ISE), set her sights on the college after doing some careful investigation. She discovered a faculty member whose focus matched her own.

“I read an interesting paper by my current advisor, Dr. Xueping Li,” she said. “I checked out his personal website to get more information about his research projects, his graduate students, and their research/thesis titles. This encouraged me to apply at UT for my PhD studies.”

Li remains a strong influence for Mohebbi. “His proactive and enthusiastic attitude in pursuing research projects always inspires me,” she said.

Mohebbi was born and grew up in Tehran, Iran. She undertook her earlier graduate studies at K.N. Toosi University of Technology and the University of Tehran. There, she earned the National Outstanding Student award in 2009, and was honored by the president.

She has continued to earn accolades since joining the UT community. In 2013, Mohebbi received the Chancellor’s Extraordinary Professional Promise award in recognition of her academic and research achievements. In 2014, she received a Graduate Student Senate (GSS) travel award to attend the Industrial and Systems Engineering Research Conference (ISERC) in Montreal, Canada, and presented two papers in an invited session. She was also recently nominated as a finalist for the prestigious Gilbreth Memorial Fellowship from the Institute of Industrial Engineers (IIE) for 2014-2015.

The recognition Mohebbi has received reflects her enthusiasm for her chosen area. “Due to my interest in applying mathematical approaches to real-world problems and industries, I chose the field of industrial and systems engineering,” she said. “Work on optimization techniques, simulations, and game theory with application in supply networks and healthcare systems.”

Mohebbi views classes that offer a balanced focus on both theoretical approaches and practical implementation, such as Li’s Advanced Information Systems Analysis and Design and Dr. Oleg Shylo’s Stochastic Programming. Likewise, she likes projects that allow her to practice applying techniques in the field.

“The project I did for IE526, Advanced System Modeling and Simulation, has been the most exciting one,” she said. “It provided the opportunity to work with College of Nursing students in a multidisciplinary environment.”

Mohebbi has published extensively on her research, including one edited book, four book chapters, eight peer-reviewed journal papers, and fourteen refereed conference papers. “My main goal is to pursue my on-going research projects in the dynamic field of industrial engineering. As part of meeting these goals and developing connections, Mohebbi serves on the editorial board of the International Journal of Applied Logistics and as a reviewer for the International Journal of Production Research. She also served as a guest referee in the IEEE Transactions on Systems, Man and Cybernetics and Expert Systems with Applications.”

Recently, Mohebbi was invited by the graduate school to serve on a panel of three experienced graduate teaching assistants (GTAs) during the new GTA orientation. She gave a talk on the perspective of international students on GTAs.

In addition to her engineering studies, Mohebbi enjoys playing the piano, sometimes visiting a practice room in the UT School of Music. She also likes to get outdoors for biking and fishing. “The atmosphere in the ISE department contributes to my ability to keep pace with such a full roster of activities.”

“My favorite experience about the ISE department, as a part of the COE, is its flexible environment,” she said. “Indeed, it enables students to choose their research topic/project from their keenness from support and advice from their advisors, thereby allowing me to move on the right track.” Once she achieves her PhD, Mohebbi plans to stay on that track, exploring opportunities to make positive change through an ISE approach.

“With my professional career to pursue research in a scholarly environment as that the obtained results of my studies can be applied for solving industry and service sectors’ real problems,” she said.
actually realizing what needs to be accomplished in Engineering (ISE). "Taking the textbook knowledge to the professor in the Department of Industrial and Systems," said Blache, who is also a research.

It was rewarding to observe the growth in student work, fieldwork, and lectures helped reinforce lessons on engineering.

In Munich, Germany. Blache is the director of the COE New for 2014 was "Global Perspectives on Lean, UT engineering courses as part of five faculty-led study.

Students received credit for a junior level nuclear engineering laboratory course for participating in a satellite testing in a clean room environment, and visiting the Zeppelin airship facilities.

"Our unique program in London combines the historical development of computer science with the core material traditionally classroom foundations in engineering.

For the summer of 2015, all of these programs are destined to continue, with the addition of ME 472, Development of Computing, and ECE 301, Circuits for student reports and information on future trips, visit www.engr.utk.edu/global.

Students helped in the construction of a new dormitory for an elementary school established in the 1850s. The project consisted of constructing an observation platform for bird-watching, and also toured a coffee reserve and the Poaz Volcano, and also toured a coffee.

"The feeling of camaraderie at the work site was significant," and chemical engineering major, Dolly Costa. "We worked with Projects Abroad volunteers from Belgium, Germany, and Denmark, and we soon learned to join in the banter with them and with our supervisor, it was actually realizing what needs to be accomplished in Engineering (ISE)." Taking the textbook knowledge to the professor in the Department of Industrial and Systems," said Blache, who is also a research.

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Diversity Update

National Society of Black Engineers Chapter Wins National Acclaim

UT’s chapter of the National Society of Black Engineers (NSBE) was recognized as the 2014 National Medium Chapter of the Year and senior Tiffany Sithiphone became the first female regional chairperson. These accolades represent a significant milestone in the chapter’s trajectory. The UT chapter is comprised of students from various engineering disciplines, including mechanical, civil, and electrical engineering.

UT chapter president Diamond Wallace, from Memphis, was equally enthused about the chapter’s success. “I am proud of our last year, as we continue to excel and take on new challenges,” said UT Engineering Diversity Programs Director Travis Griffin. “They have a keen vision to fulfill the NSBE’s mission and are making significant contributions.”

The UT chapter was presented with the Golden Torch as winner of the Dr. Janice A. Lumpkin Educator of the Year Award. Sithiphone, an industrial engineering major, said that as nice as the award was for her personal achievement, it meant even more to her as a Board of Corporate Affiliates Fellow Scholar, a Lockheed Martin Scholar, and a Major Gifts Scholar. “It was just such an incredible feeling when they called my name,” said Sithiphone. “As I stood there talking to the people there I was like ‘Wow! I can’t believe this is happening.’ I hope I never lose this feeling.”

Sithiphone’s win is a testament to the continued success of UT’s engineering diversity programs and the support of students, faculty, and alumni. The UT chapter has consistently been recognized for its contributions to research and education, and it has become an example to other universities and institutions.

EDP Celebrates 40th Anniversary

On Friday, October 4, 2013, at noon after the dedication ceremony for the John D. Tickle Engineering Building, a group of engineering alumni, faculty, students, and special guests gathered at The Foundry, where the College of Engineering (COE) hosted a luncheon honoring the 40th anniversary of its Engineering Diversity Engineering Programs (EDP).

Dr. Mark Dean was honored with the distinguished alumnus award, and Chancellor Jimmy G. Cheek also offered remarks recognizing the 40th anniversary of the college’s diversity initiatives. Rodney Brooks (BS/EE ’79, Group 8), a mechanical engineering alumna and vice president of Abby in Alamo, Tenn., also spoke, recognizing the origins of engineering diversity initiatives that began with the Minority Engineering Strategies Program (MESP), which was established by the college in 1973 under the direction of the late Fred Brown, Jr.

“The university has shown its greatness in the College of Engineering through its commitment to the diversity program over the past forty years. To be able to celebrate forty years of diversity demonstrates the unwavering commitment by the leadership at UT,” said Brooks. “You’re theft is bright through the efforts of the engineering leadership, along with the campus administration. You’re now Fred Brown Jr. Residence validate its efforts to provide opportunities to many students whose lives were impacted in a very positive manner by being a part of the College of Engineering. I am very proud to be a Vols.”

Special tributes were given to the National Society of Black Engineers; the National GEM Consortium; the EDP summer pre-college programs; the Society of Hispanic Professional Engineers; and the Tennessee Louis Stokes Alliance for Minority Participation (TSAMP). Dr. Denise Jackson, founding Principal investigator for TSAMP and the two previous directors of the program, Brown and James Phippen, also received distinctive recognitions.

The luncheon was an opportunity to reflect on the college’s diversity programs and the progress made over the past four decades. The college’s diversity initiatives have been instrumental in creating a more diverse and inclusive campus, providing opportunities for underrepresented students to succeed, and inspiring future generations of engineers.

“An exciting event to behold was the return of the first group of students recruited by Mr. Brooks and those whom I recruited when they converged for the 40th Anniversary Celebration of the Minority Diversity Engineering Programs,” Phippen said.

Special guests at the event included Cleavenger Brooks (BS/EE ’86, Group 9), a nuclear engineering graduate and president of the Ut Alumni Board of Directors, and his wife, Tellicia and Dr. Mark Dean (BS/EE ’79, Group 2), co-inventor of the personal computer, former UT Vice President and Fellow, and the John Fitter Operating Distinguished Professor in Computer Science, and his wife, Denise, along with his parents James and Barbara Dean.

“Dr. Mark Dean today at 40th anniversary luncheon.

Dr. Mark Dean and Denise Dean at the 40th anniversary of EDP with (left to right) Dr. Greg William, Mark Dean’s parents, James and Barbara Dean, and Angela Tickle. Enjoying the 40th anniversary luncheon (left to right): Trevor Williams, Tiffany Grant, former IBM Vice President and Fellow, and the John Fisher Distinguished Professor in Engineering, Dr. Mark Dean and Denise Dean (center) at the 40th anniversary of EDP with (left to right) Angela Blakely.
Degrees Granted 2013-2014

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Student Body 2013-2014

The 2014 Engineering Ambassadors (from left to right): Abbigail Link, Duncan Grewey, Katie Borth, Kristen Miranda, Jerrod Edmewod, Sarah Fanvar, Austin Fullbright (back), Gil Est Grewey (front), Henry Whltzken, Amanda Williams, Jemamne Chomis, Tora Akeputto-Olu, Tyler Rose, Casey Smith, Stephen Aven, Melissa Smith, and Greg Tate.

Engineering Enrollment Trends by Academic Year

College of Engineering 2014 Teaching Fellows

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

Dr. Edwin Burdette
Department of Civil and Environmental Engineering

Dr. Hahn Choo
Department of Materials Science and Engineering
Dr. Jeremy Holleman, Assistant Professor, Electrical Engineering & Computer Science, has initiated a stimulating research project focused on the development of efficient analog computational systems for data analysis. His research team, composed of a mix of students, including UTSI engineers and an MBA student from UT, is working on designing a simplified amplifier circuit that achieves record-setting efficiency in the signal processing world. This innovative research has applications in other areas, such as implantable medical devices and environmental monitoring.

Dr. Jackie Johnson, Associate Professor, Mechanical, Aerospace, & Biomedical Engineering, UT Space Institute, has been leading efforts in the development of new technologies to improve health care, including pioneering work on neural prosthetics. Her team, consisting of students and medical professionals, has been working on a device that can help to identify a simpler amplifier circuit achieving record-setting efficiency in the signal processing world. This work has applications in other areas, such as implantable medical devices and environmental monitoring.

Dr. Baoshan Huang, Professor, Civil & Environmental Engineering, is now leading a study to assess the safety and sustainability impacts of transportation systems in China. His research has established him as the leader of light electric vehicles (e.g., electric bike) research, focusing on their safety and sustainability impacts to the transportation system. He is the recipient of a DOE Science CAN (CAREER) Award (2012). The 2014 award recipients include:

**College of Engineering 2014 Promise in Research Awards**

**Dr. Christopher Cherry, Associate Professor, Computer Science**

Dr. Cherry's research program encompasses sustainable transportation systems focusing on engineering, economics, and public policy that improve energy efficiency, environmental sustainability, and traffic safety. He is the recipient of a National Science Foundation CAREER award for his proposal, “The Sustainability Implications of Transportation Choice in Urban Environments.” His work has resulted in significant contributions to the field of transportation science and policy, and he is a leader in the development of innovative research in the area of sustainable transportation systems.

**Dr. Nate Han, Professor, Civil & Environmental Engineering**

Dr. Han's research areas broadly cover transportation safety and security, human performance, and traffic management. His work is focused on developing new methods and tools to improve transportation safety and security. He is the recipient of a DOE Science CAN (CAREER) Award (2012). The 2014 award recipients include:

**Dr. Dr. Nate Han, Professor, Civil & Environmental Engineering**

Dr. Han's research has been focused on improving transportation safety and security, and he has made significant contributions to the field of transportation science and policy. His research has resulted in the development of innovative research in the area of sustainable transportation systems.

**College of Engineering 2014 Research Achievement Awards**

The 2014 Research Achievement Award was established to reward senior faculty members who have made substantial and notable contributions to the college's research mission. The 2014 award recipients include:

**Dr. Dr. Nate Han, Professor, Civil & Environmental Engineering**

Dr. Han's research has been focused on improving transportation safety and security, and he has made significant contributions to the field of transportation science and policy. His research has resulted in the development of innovative research in the area of sustainable transportation systems.
The John D. Tickle Engineering Building is Dedicated

October 4, 2013

On the evening prior to the dedication ceremony of the John D. Tickle Engineering Building, an elegant pre-dedication affair took place on the seventh floor of the Neyland Stadium East Skybox, a location that boasted a magnificent view of the Tickle building, dramatically lit for the evening by Bandit Lites. The evening included a reception, dinner, and a spectacular fireworks display provided significant funding for the facility: Chad Holliday, chairman of Strongwell and representatives from professional engineering organizations including: Jim Froeha, executive director Emeritus and Curt Samuelski, executive director of Tau Beta Pi, the national engineering honor society, which is housed on the UT campus in the Dougherty Engineering Building; Marc Apter, president, the Institute of Electrical and Electronics Engineers, Larry Salter, vice president, the Institute for Nuclear Materials Management; and Stacey DelVecchio, president of the Society of Women Engineers. Numerous members of the college’s Board of Advisors were also in attendance.

After the dedication, the Tickle Building underwent a name change. The building and its occupants moved into the building on October 30, 2013, which predated Sesame Street—Romper Room. The building is particularly significant because it houses the Department of Civil and Environmental Engineering, which is housed on the UT campus in the Dougherty Engineering Building; and the Department of Industrial and Systems Engineering, which anchors a new division serving as its headquarters.

The Tickle building has twenty-four laboratories, three conventional classrooms, one large lecture hall, three student workspaces, and sixty-three faculty and graduate student workspaces, and sixty-three faculty and graduate student workspaces.

During the dedication ceremony, attendees were part of the college’s recognition of 175 years of engineering instruction at the University of Tennessee.

The $23.3 million, five-story, one hundred and ten thousand square foot building is the home of the College of Engineering. The building is named in honor of Mr. Tickle, a UT industrial engineering graduate who received his BS degree in 1965, is the chairman of Strongwell, a UT industrial engineering graduate who received his BS degree in 1965, is the chairman of Strongwell, a worldwide operation, with the Bristol branch opened to students just prior to the fall 2013 semester.

Tickle was president of Morrison Molded Fiber Glass Company in his hometown of Bristol, Virginia, before he purchased it and renamed it Strongwell in 1997. Today, Strongwell is a worldwide operation, with the Bristol division serving as its headquarters.

Tickle graduated with a bachelor’s degree from the College of Education, Health, and Human Sciences.

In his remarks, Davis also recognized three couples who provided significant funding for the faculty: Chuck Mackrell, president and CEO of DuraScan; John Zeanah, president of American Accessories International, a Knoxville-based company; and his wife Elaine.

The Tickle building has twenty-four laboratories, three conventional classrooms, one lecture hall, three student workspaces, and sixty-three faculty and graduate student workspaces, and sixty-three faculty and graduate student workspaces.

On Friday, Tickle helped dedicate the new, state-of-the-art engineering building named in honor of his father, Dr. John Tickle. The Tickle building is named in honor of John Tickle, and his wife, Elaine. The Tickle building has twenty-four laboratories, three conventional classrooms, one lecture hall, three student workspaces, and sixty-three faculty and graduate student workspaces.

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The dedication ceremony and related events were part of the college’s recognition of 175 years of engineering instruction at the University of Tennessee.

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The College of Engineering celebrated 175 years of engineering instruction at the University of Tennessee with a gala event on Friday, October 4, 2013, at the Knoxville Convention Center. A crowd of over five hundred and fifty engineering alumni, faculty, and staff gathered to recognize this significant milestone.

At the elegant reception, guests enjoyed the opportunity to visit with all seven COE department heads and connect with former classmates and professors. Tennessee Governor Bill Haslam dropped by and greeted several attendees, including John and Ann Tickle, who were special guests at the event. The Tickles provided generous support for the new John D. Tickle Engineering Building, which was dedicated earlier that day on an impressive outdoor ceremony.

Other special guests at the event included family and friends of John and Ann Tickle from around the country. Representatives from professional engineering organizations included Jim Froula, executive director emeritus and Curt Gomulinski, executive director of Tau Beta Pi, the national engineering honor society, which is housed on the UT campus in the Dougherty Engineering Building; Marc Apter, president, the Institute of Electrical and Electronics Engineers; Larry Sabatka, vice president, the Institute for Nuclear Materials Management; and Stacey DelVecchio, president of the Society of Women Engineers. Numerous members of the college’s Board of Advisors were also in attendance.

After the reception, guests moved into the main ballroom, highlighted with dramatic lighting donated by UT alumnus Michael Strickland, for the dinner and program. UT Board of Trustees member and industrial engineering graduate Spruell Driver served as master of ceremonies. The event featured remarks from Chancellor Cheek and Dean Davis.

Guest speaker Celeste Baine, a biomedical engineer, director of the Engineering Education Service Center in Oregon, and the award-winning author of over twenty books on engineering careers and education, provided educational entertainment during her presentation, titled “The Wow! Is Engineering.”

A video on the history of engineering, introduced by veteran UT faculty member and chemical engineering emeritus professor Dr. John Prados, received an enthusiastic ovation from the crowd. The surprise came at the end of the evening, when John Tickle took the stage and announced that he and donors Chad and Ann Holliday, Joe and Judy Cook, and Eric and Elaine Zeanah had established the Wayne T. Davis Endowed Dean’s Chair in Engineering. The chair was named in honor of Davis, the current engineering dean.

The gala was the final event in a two-day celebration of engineering that included a dinner with fireworks honoring the Tickles on Thursday, October 3; the dedication and ribbon cutting at the John D. Tickle Engineering Building on Friday; and the luncheon program featuring alumni and students to celebrate the 40th anniversary of Engineering Diversity Programs that same day.

The History of Engineering at the University of Tennessee video can be viewed at https://www.youtube.com/watch?v=MwoZgiFLe0I&feature=youtube.
Dougherty Hall

The most exciting building initiative going on right now is taking place in the Dougherty Engineering Building,” Dunne said. “Since the fire took place in Dougherty, the building has been used as a hub of activity to improve the safety, aesthetics, and function of the building, which was constructed in 1964.

Improvements were done in two phases, with phase one covering the repair of fire damage and improved safety features, and phase two focusing on new laboratory facilities and cosmetic improvements. A side benefit of these renovations was the identification of areas that were not being utilized to the full extent, thus creating new space for the building to be operational. The work to renovate the entire sixth floor of Dougherty will provide state-of-the-art facilities for the College of Engineering's newest Governor’s Honors Program as well as student support programs such as Engineering Advising, Engineering Professional Practicum, Engineering Diversity Programs, and Outreach/Engage™ Fundamentals Program, and the Engineering International Programs. A key theme of the building will be role of design in student learning and professional preparation. The college continues to work with the university on this initiative, particularly in the CEE, EECS, and the MSE and NE department in JIAM," Dunne commented. "Once JIAM is completed, and the design of the facility should occur forward."

Efforts to make this building a reality have begun with the purchase of the property. The building will be a student design, which will be represented by the Min H. Kao Engineering Innovation Lab for freshmen and seniors working in the adjacent lab.

New Engineering Complex

The proposed new engineering complex will serve two critical needs for the College of Engineering: to create new instructional and research facilities and to house the nuclear engineering program and the Joint Institute for Advanced Materials (JIAM). The new nuclear energy program will allow the department to continue as the university's top-tier nuclear engineering program, said Dean Wayne Davis. "Both Estabrook Hall and Berry Hall are old steam plants that were constructed on Neyland Drive in 1966. Pasqua Hall continued as the university's steam plant until a new steam plant was constructed in 1973. The department has greatly outgrown the capacity range of possibilities for Estabrook Hall.

Pasqua Hall was originally constructed in 1925 to accommodate Pasqua and Berry Hall. The building would incorporate Pasqua Hall (the current home of the NE department), Estabrook Hall (the current home of the nuclear engineering program), and Berry Hall. While programming does not decide how the site will be used, it is critical to begin this planning process now to avoid constraining consideration during the next building site evaluation. Current programming recommendations would remove Pasqua and Berry halls from future consideration for use and provide additional space for Estabrook Hall.

Engage™, and Berry Hall. The JIAM building site.

The JIAM building site.

One of the design options for the new engineering complex.
Dr. Stephanie TerMaath, an assistant professor in the Department of Mechanical, Aerospace, and Biomedical Engineering (MABE), may be a relatively new faculty member, but she has already made a remarkable impact during her years at the UT College of Engineering.

TerMaath recently received a $10,000 research grant from the Office of Naval Research (ONR) Young Investigator Program (YIP) for her research in nonlinear structural dynamics and its application to the development of probabilistic, multi-disciplinary design methodologies. The ONR YIP Program is a competitive, open-ended, and highly interdisciplinary program in the field of propulsion and watercraft systems. The purpose of the awards are to fund early-career academic researchers-investigators whose scientific pursuits show promise for supporting the Department of Defense, while also protecting the selected awardees’ professional development. A total of twenty-four YIP winners were selected in 2014 from a competitive, diverse pool of nearly two hundred and eighty candidates. Each selectee receives one hundred thousand dollars over a five year period for their research work.

TerMaath was born in Wichita, Kansas, on Texas Air Force Base, where both of her parents were stationed during her childhood. TerMaath considers herself a native Texan. The time she spent during her early years around aircraft and aeronautic equipment sparked her interest in engineering. “Growing up in an Air Force family, I was surrounded by aircraft,” TerMaath said. “I was always fascinated by the aircraft flying overhead, and airshows were my favorite times of the year. My childhood drawings were always drawings of airplanes. This dream was later fulfilled while I worked at Lockheed Martin Aeronautics as part of the Airframe Certification Team at Carderock Division in Potomac, Maryland.”

TerMaath received her bachelor of science degree in civil engineering with honors from Penn State University, her master of science degree in civil engineering from Purdue University, and her PhD degree in civil engineering at Cornell University. It was during her time as a graduate student at Cornell that TerMaath’s research interests became more focused. “Cornell was founded on the principle that each student could build a unique and individualized field of study. Taking full advantage of this philosophy, I built a multi-disciplinary research program,” TerMaath said. “I was exposed to so many different technical areas by working with researchers from many departments. My research focused on the load-carrying capacity of aluminum ship hulls in collaboration with engineers at the Naval Surface Warfare Center in Portsmout, Maryland.”

“The title of this research program is Probabilistic Multi-Scale Damage Tolerance Modeling for Ventricular Catheter based on Probabilistic Fatigue Assessment. I developed a novel approach for the experimental fatigue testing of composite materials and structures using the methodology of the Fatigue Damage Uncertainty Model. This approach was used to predict failure in the ventricular catheter. This research integrates all of these technical areas, and it is essential to diversify this approach to the students who are performing research titled ‘Supercomputing for Multi-Disciplinary Optimization of Structural Mechanics. Consistent to my belief that many of today’s disciplines that have evolved from the integration of knowledge from diverse fields, I feel our career goal is to integrate our expertise and background in structural mechanics with knowledge from other fields to unravel complex, multi-physics problems whose solutions significantly impact our quality of life.”

“During her free time, TerMaath participates in a competitive Clogging team and plays ice hockey. She also is an advocate for the Student Alumni Association (SAA) at UT. TerMaath has ambitious plans for the future.”

In addition to her busy research and teaching schedule, TerMaath also serves as a faculty advisor for the student chapter of the Society of Women Engineers (SWE) at UT. "I think the biggest progress is the current focus on encouraging girls to participate in science, technology, engineering, and math (STEM). Circa 2000, only 20% of all college students in the STEM fields were women. Today, this has increased to 25% and the more likely that they won’t be distracted by stereotypes later in their careers.”

"During her free time, TerMaath participates in a competitive Clogging team and plays ice hockey. She also is an advocate for the Student Alumni Association (SAA) at UT. TerMaath has ambitious plans for the future.”
In February 2010, Mandrus joined the faculty of the Department of Materials Science and Engineering (MSE) at UT and is presently a tenured full professor. He also retains a joint appointment with ORNL.

“Having a joint faculty position with ORNL is fantastic, both for my ability to carry out multi-scale research and to give my students an unparalleled educational experience,” Mandrus said.

The Jerry and Kay Henry Endowed Professorship in Engineering was awarded in 2009 in recognition of his achievements in research, teaching and publications. The award was created in 2001 by Jerry and Kay Henry.

Mandrus has extensive experience in the synthesis, crystal growth, and electronic properties of high-temperature superconductors, and much of his research took place at Bell Atlantic Network Research.

Mandrus' goals in the future are to continue to teach interesting courses and to stay involved in his extensive research projects.

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Mandrus is married to Dr. Veerle Keppens, the college's associate dean for faculty affairs and a fellow MSE faculty member. The couple has two sons, Max, 18, and Sylvain, 14, and mobile devices the width of a piece of paper. First published in News, the article details how researchers have been able to create devices only very thin atoms wide using an electron beam.

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Mandrus also recently was chosen by the Gordon and Betty Moore Foundation in a Kentucky group on the LEDs. The materials were used to create ultra-thin slab-like devices that require very little power to operate.

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Dr. Christopher Cherry, an associate professor in the Department of Civil and Environmental Engineering and public health in the University of California, Berkeley, in 2011, he joined the UT College of engineering as an assistant professor in 2007. Cherry’s passion in research and education stems from the impact that the transportation on the entire world.

Cherry sees both positives and negatives in the current US transportation system. "The US has some of the best transportation infrastructure in the world, and we eat our fair share of the waste of a depreciating asset, and it takes a lot of valuable infrastructure in the world as the massive urbanization.

Cherry sees the biggest challenge for transportation and infrastructure in the future of transportation will involve a mix of alternative fuels, electric vehicles, and new technologies, along with strong land use planning."

"I don't believe in silver bullets in the transportation field, and I think that there will be a host of strategies to solve our transportation problems," he commented. "I think vehicles that don't require gasoline are going to be very important and I think that we're going to have to reduce emissions significantly."

"I believe that China's pathway focuses on China-specific motorization behavior and safety, motorization, technology, and sustainability. "I am working on several projects that explore sustainability, transportation, and urbanization. I believe that Cherry's passion in research and education stems from the impact that transportation on the entire world.

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Cherry has seen huge increases in LEV sales in the past years. Technologies that fall into this class of vehicle can be found in many places. Howev, it is a huge global market that effects hundreds of millions of people, with only a handful of researchers.

As he settles into his role at UT and in the national and international community of transportation researchers, Cherry looks forward to the future.

Cherry found one of the most exciting efforts to increase a sustainability mindset among the student body, the Student Sustainability Fee. It was ongoing when I came seven years ago and I'm seeing supportive infrastructure for that change coming up in most US cities, including Knoxville."

Cherry received a prestigious National Science Foundation (NSF) CAREER Award in 2011, with research funding to develop and evaluate strategies improving safety, sustainability, and high safety. Because the future is in cities, Cherry's passion in research and education stems from the impact that transportation on the entire world.

In the US, we need to develop and safely integrate viable transportation options, which transcends simply roads and bridges, but also requires strong land use planning.

"I'm also investigating road design," Cherry said. "As a civil engineering student, I started gaining more interest in how the transportation system connects people, or how the transportation system interacts with the built environment."

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A Year of Champions:

$18,000,000 in total commitments received

It has been a banner year—a year where alumni and friends have invested in significant ways to move the college forward. It has been a year of champions who individually and collaboratively are proving the difference philanthropy makes.

Beyond the energy of these numbers is the power of the gifts themselves. We highlight just a few in this report.

Two new and one significantly increased Endowed Professorships and Chairs are accelerating our faculty strength

- Wayne T. Davis Endowed Dean’s Chair $3,000,000.
- Gonzalez Family Professorship in Electrical Engineering & Computer Science $500,000.
- Fisher Family Faculty Endowment $363,000 addition to a $3,125,000 existing endowment.

Eastman’s new commitment totals $2,000,000

- New Unit Ops Lab in Dougherty for Chemical Engineering students under construction now.
- Three Professors of Practice offering instruction by individuals with industry experience.
- HITES summer program for high school students.
- Support for selected engineering student organizations.

Scholarship support is creating new opportunities for students

- Benefiting Industrial and Systems Engineering by Sam & Mary Anne Beall.
- Benefiting Chemical & Biomolecular Engineering by John & Linda Shoemaker.
- Benefiting Tennessee residents college-wide by Sally Green in memory of her husband, Ron Green.
- Benefiting Chemical & Biomolecular Engineering by Dennis & Connie Denihan.
- Benefiting engineering students with financial need by Michael & Meredith Dodd.
- Benefiting mechanical engineers by Bennett & Stephanie Croswell.
- Benefiting mechanical engineers by Bennett & Stephanie Croswell.
- Benefiting any engineering major by Susan Sullivan in memory of her father Donaldson King Barton.
- Benefiting mechanical engineers by Bennett & Stephanie Croswell.
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Giving at all levels made this banner year possible. Annual giving was up 8.4% over fiscal year 2013 and our total donors to engineering were up 20%!

Thank you to our champions at every level.

Annual Giving

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Development Update

Siemens PLM Software gift of $2.7 million is driving excellence in the classroom of Dr. Stephanie TerMaath.

A new Professor of Practice created by Underwriter’s Laboratory, Inc. was funded with a $250,000 commitment providing support for Dr. Dave Bove and his students.

The first Engineering Senior Class Gift Initiative engaged 12.5% of seniors—a remarkable start-up percentage. Dean Davis personally matched every gift made by these committed and outstanding students.
Outstanding Alumnus: Bennett Croswell

Bennett Croswell (B.S./M.E. ’79), the current President, Hersey began at Pratt & Whitney, where he became the engineering director, which is one of the foundations for his career success.

Croswell leads the organization responsible for providing and sustaining propulsion power for the defense, aerospace, and for the country's foreign allies—approximately six thousand engines operated by more than thirty nations. Pratt & Whitney power many of the world's fighter aircraft, including F-15s, F-16s, F-22s, and the F-35 Joint Strike Fighter engines, and the KC-46 tanker. Croswell directs the organization responsible for developing engines that will have a total extended Pratt & Whitney enterprise places his total extended Pratt & Whitney personnel at approximately one thousand employees. These employees are responsible for managing the company’s programs, developing and delivering products, and the freedom of our nation and those of our allies, and it is the employees who do that.

Croswell's direct line organization includes Pratt & Whitney’s military engines business and the KC-46 tanker. Croswell's direct line organization includes Pratt & Whitney's military engines business and the KC-46 tanker.

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Dougherty Award Winner: Mr. Dwight Kessel

Longtime Knoxville and Knox County political icon Dwight Kessel was the guest of honor at the College of Engineering’s Faculty and Staff Awards Dinner on April 3, 2014, receiving the prestigious 2014 Nathan W. Dougherty Award at the event.

The recognition is far from the first for Kessel, as several buildings or spaces—including the auditorium at UT’s Science and Engineering Research Facility—already bear his name. He and his wife, Gloria, also established a scholarship in his name in the Department of Industrial Engineering at UT.

“It’s always been a real pleasure to work with the university,” said Kessel. “It has provided so much for me, I’m just grateful to give back.”

The award was established in 1957 to honor Dougherty, who was the dean of the college from 1940 to 1956. The Nathan W. Dougherty building also bears his name. He was a star Vols football player from 1906 to 1909 and was also credited with helping recruit Robert R. Neyland to coach at UT. He was inducted into the College Football Hall of Fame in 1967.

Kessel, who graduated from UT in 1950 with a degree in industrial engineering, is best known as the first Knox County Executive, serving from 1980 to 1994 after beginning his career on the Knoxville City Council from 1963 to 1966 and then serving as Knox County clerk from 1966 to 1980.

“Dwight Kessel is one of the true success stories from the College of Engineering,” said Dean Wayne Davis. “When you take a look at all he has accomplished, you can see why we’re honored to be associated with him.”

Outside of politics, Kessel helped start one of the first Knoxville-area internet companies—U.S. Internet—and has been involved in various charitable causes such as the Boy Scouts of America, the Kiwanis Club, and the Girls Club, as well as business-related activities like the Greater Knoxville Chamber of Commerce and the Tennessee Center for Research and Development. He also was a member of the executive board of the 1982 World’s Fair.

“He’s used his success to help his community thrive,” said Davis. “Everyone from those of us at the university to the people of Knox County in general have benefited from his generosity and from all he has given back.”

In addition to what he has done for his alma mater and his community, Kessel has contributed to the area where he first made his mark, thanks to an endowment he and his wife established with UT’s Institute for Public Service to assist county governments in the state.

For more on Nathan W. Dougherty and the award, visit engr.utk.edu/give/awards_engineering.html.

COE Dean Wayne Davis (left) presents the Nathan W. Dougherty Award to Dwight Kessel (right).
**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**
  - $114.2 Million

- **Externally Funded Gifts, Grants & Contracts**
  - $63,550,717

- **Recurring & Nonrecurring State Funds**
  - $50,685,776

**Fiscal Year 2014**

- **Resources: Recurring & Nonrecurring State Funds**
  - $50.7 Million

- **Salaries & Benefits**
  - $35,769,923

- **Miscellaneous Operating Expenses**
  - $2,958,250

- **Equipment & Software**
  - $11,957,603

- **Gifts, Grants & Contracts by Department/Center**
  - Administration: $1,440,905
  - Chemical & Biomolecular Engineering: $4,991,740
  - Civil & Environmental Engineering: $2,302,489
  - Electrical Engineering & Computer Science: $14,674,007
  - Engineering Fundamentals Division: $147,127
  - Industrial & Systems Engineering: $1,476,393
  - Materials Science & Engineering: $30,396,354
  - Mechanical, Aerospace & Biomedical Engineering: $5,927,804
  - Nuclear Engineering: $9,557,456
  - Research Centers: $7,938,643