A Five-Year Analysis: Past, Present, and Future
An Exclusive Interview with Dean Wayne Davis
Welcome to the Fall 2014 edition of Tennessee Engineer! I am not writing a formal dean’s message for this issue since our cover article, “A Five Year Analysis: Past, Present, and Future,” offers an in-depth look at what has been happening in the College of Engineering since I was named as dean in March of 2009. The past five and a half years have been a time of exciting change and progress for the college, and I’m happy to share with you detailed information about our faculty, staff, students, facilities, research, and development efforts. My next five-year appointment as dean was recently renewed, so this article also provides a glimpse at what might happen over the next five years, although the future is impossible to predict in a dynamic college like engineering!

I’ll return to the regular dean’s message format in the Spring 2014 edition. I hope you enjoy this issue and that it will provide you with ideas on how you can be a part of helping us to achieve our college’s vision and goals!

Wayne T. Davis
Dean of Engineering
A Five Year Analysis-Past, Present, and Future

A One-on-One Interview with Dean Wayne T. Davis

Wayne T. Davis was named dean of the College of Engineering in March of 2009 after serving as interim dean from March 2008 to March 2009. During this time, what have some of your greatest challenges been?

WD: This is an interesting one! I became interim dean just a few weeks before the great recession and a thirty percent budget cut at the university, followed by three years with no raises for staff or faculty. Assuming a leadership role under those conditions would clearly have to be the greatest challenge that our college has faced in many years—at least as long as I have been at UT. But engineering is a very resilient profession—one dedicated to solving problems. So, challenges create opportunity and our college chose to accept the challenge. We have excelled in every way, as I will share in my comments. We have also included some graphics and charts to illustrate our progress.

TE: This year, 2014, marks your fortyth year with the University of Tennessee. You began your career at UT as an instructor in the Department of Civil and Environmental Engineering in 1974. What are the most remarkable changes that you have seen at the university, and more specifically, within the College of Engineering?

WD: It hardly seems possible that I have been on the faculty for forty years. Probably one of the most important characteristics of this university is that I was never hampered in my desire to be an excellent teacher and to pursue my dreams as a researcher. I think the university provides an excellent environment for the faculty to achieve their goals—some will choose to do so at UT, and some will choose to leave for other venues.

In particular, for me, I was provided the opportunity to be an associate dean of the UT Graduate School half time relatively early in my career—it was one of my most valuable experiences from an administrative perspective. Throughout my career, UT’s focus on research has expanded. The college was able to anticipate continued growth in the undergraduate student population, and how will the college handle the additional students?

WD: This thirty-four percent increase in the undergraduate student population in the last five years is very typical of colleges of engineering across the country as more and more students have realized the value of engineering education, and math (STEM) degrees. The good news that goes along with this growth is the recognition that engineering disciplines typically have the highest salaries for graduates of all undergraduate engineering programs as well as the lowest unemployment rates for college graduates. This trend has been unusually higher than in past decades, I do anticipate continued growth of our undergraduate programs in the four to seven percent range per year for the next several years. The interest of both high school students and employers remains very strong.

Retention, graduation rates and undergraduate student budgets have increased considerably over the last ten years and all are at an all-time high. One of my responsibilities as dean includes working with the administration, our governments, and our alumni to insure that we have the faculty and staff resources and the high school students to handle the growth in our undergraduate student enrollment. I hope that the day will never come that we have to tell our entering freshmen (who currently have an average high school GPA of 4.0 and a composite ACT score of 29.6) that we cannot accept them due to a lack of resources. These high-achieving students have high aspirations of becoming engineers.

Research Expenditures (FY 2009-2013)

<table>
<thead>
<tr>
<th>Year</th>
<th>Research Expenditures</th>
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<tbody>
<tr>
<td>2009</td>
<td>$36.9 million</td>
</tr>
<tr>
<td>2010</td>
<td>$44.5 million</td>
</tr>
<tr>
<td>2011</td>
<td>$54.5 million</td>
</tr>
<tr>
<td>2012</td>
<td>$571 million</td>
</tr>
<tr>
<td>2013</td>
<td>$622.9 million</td>
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</table>

TE: The research expenditures for the last five years have increased from $191,000/faculty member to over $3 million allocation for the college’s base budget, to be matched by the combination of the chancellor’s/provost’s office, and college and department boards of advisors. A quote from Jack Welch’s book Winning illustrates my answer to this question: “Having good people is hard. Hiring great people is brutally hard...all the clever strategies and advanced technologies in the world are nowhere near as effective without great people to put them to work.” I am extremely blessed to be surrounded by great people.

Students

Undergraduate Enrollment Trends by Academic Year

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Undergraduate Enrollment</th>
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<tbody>
<tr>
<td>2008-2009</td>
<td>2,061</td>
</tr>
<tr>
<td>2009-2010</td>
<td>2,111</td>
</tr>
<tr>
<td>2010-2011</td>
<td>2,206</td>
</tr>
<tr>
<td>2011-2012</td>
<td>2,312</td>
</tr>
<tr>
<td>2012-2013</td>
<td>2,406</td>
</tr>
<tr>
<td>2013-2014</td>
<td>2,510</td>
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</table>

TE: In 2015, the State of Tennessee and Governor Bill Haslam, relied upon the very specific request for recurring funds with a $3 million allocation for the college’s base budget, to be matched by the combination of the chancellor’s/provost’s office, and college and department boards of advisors. A quote from Jack Welch’s book Winning illustrates my answer to this question: “Having good people is hard. Hiring great people is brutally hard...all the clever strategies and advanced technologies in the world are nowhere near as effective without great people to put them to work.” I am extremely blessed to be surrounded by great people.

TE: The PhD program has also experienced tremendous growth in the past five years, from three hundred forty four students in 2008 to six thousand students in 2013. What are the factors that you see as contributing to this successful expansion of the doctoral program?

WD: The growth in our PhD programs has been unprecedented. This sixty-five percent increase in the last five years is over three times the national average. We graduated over one hundred PhD students during my term as dean compared to seventy-two last year (also the highest ever).

The growth is due, for the most part, to the fact that our faculty has aggressively sought and obtained research funding. On average, those funds increased from $19,000/faculty member to over $450,000/faculty member in the last five years, a miraculous 2.5—ironically, the number of PhD students per faculty increased by that same amount. Our faculty deserves the credit for this amazing transformation of our college. This has allowed the college to recruit recent increases in faculty, which I predict will have an even greater impact in the coming years.

Growth in PhD Graduates by Academic Year

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>PhD Degrees Granted</th>
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<tbody>
<tr>
<td>2008-2009</td>
<td>104</td>
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<tr>
<td>2009-2010</td>
<td>100</td>
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<tr>
<td>2010-2011</td>
<td>200</td>
</tr>
<tr>
<td>2011-2012</td>
<td>270</td>
</tr>
<tr>
<td>2012-2013</td>
<td>250</td>
</tr>
<tr>
<td>2013-2014</td>
<td>250</td>
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</tbody>
</table>

Faculty

<table>
<thead>
<tr>
<th>Faculty Name</th>
<th>Chair/Professorship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Art Ramesh</td>
<td>Chair in Nanomaterials Engineering</td>
</tr>
<tr>
<td>Dr. William Weber</td>
<td>Governor's Chair in Nanostructures and Mechanical Engineering</td>
</tr>
<tr>
<td>Dr. Thomas Zawodzinski</td>
<td>Governor's Chair in Nuclear Materials Engineering</td>
</tr>
<tr>
<td>Dr. Steve Zinkle</td>
<td>Professor in Nuclear Engineering</td>
</tr>
<tr>
<td>Dr. Frank Loetter</td>
<td>Professor in Nuclear Engineering</td>
</tr>
<tr>
<td>Dr. Art Reguski</td>
<td>Professor in Bioremediation</td>
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UT Engineering Governor’s Chairs

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<tr>
<th>Chair Name</th>
<th>Chair Focus</th>
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<tbody>
<tr>
<td>Governor’s Chair in Magnetic Materials Engineering</td>
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<tr>
<td>Governor’s Chair in Advanced Manufacturing</td>
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<tr>
<td>Governor’s Chair in Nuclear Security</td>
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<td>Governor’s Chair in Power Electronics</td>
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<td>Governor’s Chair in Environmental Biotechnology</td>
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<tr>
<td>Governor’s Chair in Environmental Biotechnology</td>
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<tr>
<td>Governor’s Chair in Computational Nuclear Engineering</td>
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TE: The College of Engineering has played a significant role in the UT-ORNL Governor’s Chair program, having eleven Governor’s Chairs since 2009 in areas such as advanced manufacturing, global nuclear energy security, and nanoscience and nanotechnologies. What are the advantages of these outstanding faculty associated with the UT College of Engineering, and do you have plans to hire more Governor’s Chairs?

WD: When I became interim dean, UT had only one Governor’s Chair. However, our college has always had a strong relationship with ORNL, so it was a natural fit for us to work with the chancellor’s office to find synergies with appropriate ORNL divisions and our programs. This has been a very successful program for us in that our Governor’s Chairs were able to hit the ground running at both ORNL and UT and develop strong externally funded research programs very quickly.

In addition, the UT Engineering Governor’s Chairs hold appointments with other colleges and programs within the university, further enhancing the multidisciplinary activities of our college. Our Governor’s Chair program also provides us an opportunity to hire a select number of supporting faculty hires that were guaranteed for a three to five year period. This program is provided by the state through the Governor’s Fund Program allowed us to insure the long-term sustainability of these positions. The future of the PA 403 is to extend the funding to a point where the Governor’s Chair program funds are fully committed, and I am optimistic that this will provide opportunity for expansion sometime in the future.
TE: In 2013, the college hired one of the most diverse groups of new faculty in its history. Why is this such an important accomplishment for the college?

WD: The engineering profession (at both universities and corporations) has always had a major challenge with diversity. However, it is essential, in order to remain at the forefront of research and development, for us to attract a diverse student body. We were able to focus on hiring a very diverse faculty, and we have a substantial number of programs at the pre-college level to help us attract a diverse student body.

TE: While we are close to the national average with respect to women, African-American, and Hispanic faculty, we are still far below where we should be to provide the truly diverse experience that our students deserve. To continue to be a high priority for both our college and university.

WD: The National Academy of Engineering (NAE) is a non-profit organization under the National Academies consisting of members who are elected to membership on the basis of their engineering expertise. The NAE members provide independent advice to the federal government and society in general on matters involving engineering and technology, including the “Grand Challenges” established by NAE in 2008 (www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=02152008 for more information of that faces you today).

Facilities

TE: The college now has two new, state-of-the-art facilities dedicated in 2012 to Chemical Engineering and Computer Science Building and the John D. Tickell Engineering Building. How have these two buildings improved the college’s ability to meet the goals of its research and teaching mission?

WD: These two new buildings have been a central focus of our college for the last ten years, as we completed planning, design, and construction phases, and it is exciting to see both of them now open! Both facilities are excellent examples of the synergy between our educational goals, our university priorities, and our ability to lead in bringing state-of-the-art facilities to Knoxville. These buildings would not have happened except for the funds provided by Dr. Min Kao and Mr. John Tickle and the state’s appropriations. The buildings helped to relieve part of the pressures on space created by the rapid growth of our student population; faculty size and critical needs on the rise of space. I will be forever thankful to these two friends and their families for their transformative investments in our college and to the success of our current and future students, faculty, and staff who are served by these facilities.

TE: Funding of $10 million in alumni support is in place to build a new engineering complex to house the freshman engineering program, the Engineering Honors Program, advising-related programs, and the North Hall of Nuclear Engineering (NE). What is the current status of this new facility?

WD: Thanks to the continued generosity of Mr. Tickle and Dr. Kao, we now have the college’s commitment that we needed to initiate the planning phase for this third, much-needed facility. In addition, our new faculty members provide to students?

TE: These named endowments actually provide opportunities for students to receive grants and fellowships—a direct benefit to the students. We have many deserving faculty and this area is the college’s highest fundraising priority. Fortunately, our alumni and friends (both individuals and corporations) have really responded to our needs in this area and are continuing to do so. Recently announced endowed positions include the John Prades Professorship; the Gibson Chair in Engineering; the Wayne T. Davis Endowed Dean’s Chair in Engineering; funded by John and Ann Tickle, Chad and Ann Holliday, Joe and Judy Cook, and Eric and Elaine Zuah; the Gonzalez Family Professorship; the Cook-Eversold Professorship; the Jerry and Kay Henry Professorship; the UCCR, Ferguson, and Heath Fellows; three Eastman Professors of Practice, and the UL Professor of Practice. Others have been previously announced and several are in progress or have been established as estate bequest gifts.

TE: What message would you send to engineering alumni who want to support the college but are unsure how to start giving?

WD: Call us. Our development team, headed by Dorothy Bryson, would be delighted to discuss how you could help support our college’s mission. The biggest uncertainty that our college faces is to identify and secure adequate resources to attract the very best faculty and students. We are always looking for new ideas and ways to grow and during and since the last recession. Critical thinking and teamwork are key skill sets within the engineering profession, so I am optimistic that our college can take a good position to address any challenges and uncertainties that might arise.

TE: What would you like to see as your legacy as dean when you retire or step down?

WD: First of all, I want to say that I have had the most fun in my position as dean than anytime in the history of my forty-three years of employment. The biggest accelerator of my tenure was the fact that we face as a nation—the economy. In general, the engineering profession is in a good position to respond and grow during and since the last recession. Critical thinking and teamwork are key skill sets within the engineering profession, so I am optimistic that our college can take a good position to address any challenges and uncertainties that might arise.

TE: What are other ways for alumni to become involved?

WD: Involvement comes in many ways: financial gifts, as an advisor on one of our boards, serving as a speaker to a student chapter, providing insight into your expertise in a classroom or laboratory, You are involved when you wear orange at your office and tell the UT engineering story to your colleagues. You are involved when you recruit new students to the university and the college. Come to our engineering alumni events when you are in the area, and always try to come back for the Homecoming event. We always want to stay engaged with our alumni.

The Next 5 Years

TE: What are your primary goals for the college in the next five years in terms of students, faculty, and facilities?

WD: I will focus here on my primary goals, realizing that there are many secondary goals that none of the goals could be accomplished without the help and support of our faculty, staff, university administration, state, alumni, and friends. With regards to students, it is to identify and secure adequate resources to attract the very best faculty and students. Yet, the large number of smaller gifts such as those received through annual giving programs collectively provide critically needed funds that allow the college and the heads of the department to support the many secondary goals such as that will attract an increasingly diverse student body. We were able to focus on hiring a very diverse faculty, and we have a substantial number of programs at the pre-college level to help us attract a diverse student body. We are close to the national average with respect to women, African-American, and Hispanic faculty, we are still far below where we should be to provide the truly diverse experience that our students deserve.

TE: What is being done to upgrade the Dougherty Engineering Building into a state-of-the-art facility?

WD: The Dougherty Engineering Building has been the focus of a number of significant upgrades over the past two years, including laboratory renovations funded by a $1.8 million ARA grant. However, it is necessary, in order to remain at the forefront of research and development, for us to continue to be a high priority for both our college and university.

TE: What are the current status of this new facility?

WD: The engineering profession (at both universities and corporations) has always had a major challenge with diversity. However, it is essential, in order to remain at the forefront of research and development, for us to attract a diverse student body. We were able to focus on hiring a very diverse faculty, and we have a substantial number of programs at the pre-college level to help us attract a diverse student body. We are close to the national average with respect to women, African-American, and Hispanic faculty, we are still far below where we should be to provide the truly diverse experience that our students deserve. To continue to be a high priority for both our college and university.
COE Dean Wayne T. Davis Addresses Conference in China

Dr. Wayne T. Davis was one of the invited speakers at the 2014 International Conference on Engineering Science and Technology in Beijing. Davis was invited to the conference due to his expertise in air quality concerns, and he is a major contributor to climate change.

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Faculty Focus: Dr. Thanos Papanicolaou

Thanos Papanicolaou, graduate student Ben Abban, and graduate student Micah Wyssmann. Hydraulics and Sedimentation Laboratory team members include, from left, postdoctoral research associate Achilleas Tsakiris, Dr. Mohamed Elhakeem, Dr. Landscapes (IML-CZO), a project funded by the National Science Foundation for good for everyone involved.”

The emphasis of the IML-CZO is to understand if we have kept busy setting up two large flumes, pumps, gauges, and other gear—including a boat. “I was impressed with the changes in the department and the desire to grow,” he said. “The commitment at the university level has been amazing. CEE is well balanced and, with the John D. Ticka building, provides state-of-the-art facilities for training future engineers.”

Papanicolaou grew up on his family’s farm in what he calls the “Midwest” of Greece, experiencing diverse landscapes from mountain rivers to fertile valleys and the sea coast. “I also witnessed first-hand the different interactions that we humans must have with our environment to sustain our livelihood,” he said. “All these sights have shaped who I am as a researcher and a teacher.”

Papanicolaou’s teaching focuses on the fundamentals of fluid mechanics and continuum, mechanics of sediment transport, and methods of hydraulic measurements. He likes to interact with students on a daily basis, encouraging involvement from early in their careers. “I follow a Socratic approach by poking student participation through questions,” he said. “I really believe in fostering the idea of taking initiatives and in hands-on demonstrations.”

Papanicolaou earned his own undergraduate degree in civil engineering in 1990 from Aristotle University of Thessaloniki, Greece. He earned his MS degree in 1993 and his doctorate in 1997 from Virginia Polytechnic Institute and State University. Multiple elements attracted Papanicolaou to join the UT community, with the dynamic nature of the college and the CEE department at the top of his list. “I am excited with the changes in the department and the desire to grow,” he said. “The commitment at the university level has been amazing. CEE is well balanced and, with the John D. Ticka building, provides state-of-the-art facilities for training future engineers.”

He feels encouraged in his work by his appointment as the Goodrich Chair of Excellence Professor, and additionally from winning the 2014 ASCE Hunter Rouse Hydraulics Award. “Certainly it is an honor and recognition of my research efforts and efforts in the classroom,” said Papanicolaou. “The position allows me to lead an effort towards the establishment of an internationally-renowned laboratory with state-of-the-art facilities.”

Papanicolaou’s wife, Dr. Julie Andsager, was another influence in his move to Knoxville—she earned her PhD in journalism at UT in 1993. She has also joined the UT faculty after serving as a professor and interim director of the School of Journalism and Mass Communication at UI. “She has good friends here and excellent memories,” he said. “She is a Volunteer!”

Outside of academics, Papanicolaou enjoys linguistics, math, and music, and keeps tabs on sports and politics. He and Andsager are eager to explore the Tennessee region, and find out where to get the best barbecue. “I would love to visit the mountains whenever the opportunity arises,” he added. Even with the flurry of activity accompanying their relocation and the establishment of new facilities, the couple has settled in smoothly to the UT community. “My colleagues have been fantastic in welcoming me here, and the main office extremely helpful,” said Papanicolaou. “The campus appears to be a very dynamic place.”

Dr. Shashi Nambsan, a faculty member with the Department of Civil and Environmental Engineering (CEE) and the Center for Transportation Research (CTR) has been elected president of the Council of University Transportation Centers. Nambsan is one of the leading researchers in the area of transportation, whose expertise led the governor of Nevada to proclaim "Shashi Nambsan Day" in recognition of his efforts to improve transportation safety in that state. “To be elected by my peers is both a great honor and a great responsibility,” said Nambsan, who along with DaAnna Flinchum, serves as co-director of education and workforce development for the Southeastern Transportation Center. “I’m excited to be in a position to help address education, research, and outreach in my field of transportation. To be the spokesperson for such a diverse, well-respected group is a privilege.”

The Council of University Transportation Centers—CUTC—is a leading proponent of safety, research, education, and development in relation to the upkeep and expansion of the nation’s transportation system. While its beginnings can be traced to 1971 federal mandate calling for the establishment of transportation-focused research centers, CUTC itself was founded in 1979 and now includes almost ninety public and private institutions. The growth of the group has led to collaboration between institutions that might not otherwise have a chance to work together, and has led to an increase in the sharing of ideas. Along the way, the spectrum of topics the group can cover has increased as well. Nambsan, who has been on the CUTC executive committee since 2010, will serve until June 2015. He has previously served as director, treasurer, secretary, and vice president of the group.
As in 2013, the College of Engineering (COE) continues to build its community with a roster of more than two dozen new faculty members for 2014, moving forward to strengthen the college’s opportunities for teaching and research.

**Department of Chemical and Biomolecular Engineering**

Dr. John (Zhanhu) Guo
Assoc. Professor, PhD: Louisiana State University, Baton Rouge
Research Areas: Multifunctional polymer and carbon nanocomposites; electrochemical energy storage; supercapacitors and electrode materials; polymer nanocomposite membranes; fuel cell; improvement in electrolyte polymerization/electrodeposition; giant magnetoresistances sensors; electrochemical materials; microwave absorption materials development; environment sustainability and remediation.

Dr. Arthur Ragauskas
Governor’s Chair Professor for Bio refineries
PhD: University of Western Ontario
Research Areas: Converting plant matter into biofuels; bio-based chemicals and materials; use of algae ranging from health care to packing materials.

**Department of Civil and Environmental Engineering**

Dr. Islam El-adaway
Assoc. Professor
Construction Engineering and Management
Program Coordinator
PhD: Iowa State University
Research Areas: Sustainable infrastructure systems; risk and financial engineering; holistic management for natural and man-made hazards; contractual and legal affairs in construction; agent based simulation and system dynamics modeling; engineering education; and engineering ethics.

Dr. Kan Huang
Research Assistant Professor
PhD: Fudan University, China
Research Areas: Atmospheric science related to aerosol formation, transport, and impacts.

Dr. Shashi Nambisan
Professor
PhD: University of California, Berkeley
Research Areas: Transportation safety, risk analysis, data-enabled decision support systems; vulnerable road users; education; and engineering ethics.

Dr. Abbas Rashidi
Assistant Professor
PhD: Georgia Institute of Technology
Research Areas: Applications of information technologies for managing infrastructure systems; applications of machine learning, computer vision, pattern recognition, robotics, and image and signal processing techniques for automating different processes in construction industry.

Dr. Christopher Wilson
Research Assistant Professor
PhD: Case Western University
Research Areas: Bank erosion; conservation practices; riparian buffers; runoff and infiltration; sediment source partitioning; soil carbon biogeochemistry.

**Department of Electrical Engineering and Computer Science**

Dr. Michael Jantz
Assistant Professor
PhD: University of Kansas
Research Areas: Computers, operating systems, and runtime systems (virtual machines), memory system tools and techniques to enable more efficient execution on modern architectures.

Dr. Shashi Nambisan
Professor
PhD: University of California, Berkeley
Research Areas: Transportation safety, risk analysis, data-enabled decision support systems; vulnerable road users; education and work-force development.

Dr. Thanas Papaoikouros
Goodrich Chair of Excellence Professor
PhD: Virginia Polytechnic Institute and State University
Research Areas: Hydrodynamics, modeling, sediment transport, sensors.

Dr. Andreas Koschan
Professor of Practice
PhD: Technical University Berlin, Germany
Research Areas: Image processing, computer vision, biometrics, robotics, multispectral and color vision, industrial inspection, and homeland security.

Dr. Donatello Materassi
Assistant Professor
PhD: Universita degli Studi di Firenze, Florence, Italy
Research Areas: Development of a general theoretical framework for the reconstruction of networks of dynamical systems.

Dr. Audrey Mockus
Harlan Mills Chair Professor
PhD: Carnegie Mellon University
Research Areas: Software engineering, data science, digital archeology.

Dr. Hector Pulgar-Palmeiral
Assistant Professor
PhD: University of Illinois at Urbana Champaign
Research Areas: Power systems and power electronics, including utility applications of power electronics, renewable energy integration, smart grid, microgrid, communication, control, protection; energy management of power systems.

**Department of Industrial and Systems Engineering**

Dr. Anahita Khojandi
Assistant Professor
PhD: University of Pittsburgh
Research Areas: Sequential decision making under uncertainty; medical decision making; reliability; maintenance optimization; stochastic processes; Markov decision processes.

Dr. Janice Tolk
Assistant Professor
PhD: Texas Tech University
Research Areas: High Reliability Organizations (HRO); performance measurement; deferred maintenance; strategic management.

Dr. Michael Jantz
Assistant Professor
PhD: Texas Tech University
Research Areas: Data storage systems; information theory; data communication and networks; joint source-channel coding; image/video coding and processing.

**Department of Materials Science and Engineering**

Chris Wetteland
Lecturer
Research Areas: Simulating the role of high-energy protons in primitive solar system materials; radiation damage in nuclear materials; beam analysis; ceramic processing; development of solar thermal and solar electric renewable energy systems; STEM outreach.

Dr. Chris Wetteland
Assistant Professor
PhD: Western Michigan University
Research Areas: Process modeling, healthcare engineering, pervasive computing, medical imaging, computer vision, machine learning, biomechanics, computational anatomy, anthropology.

Dr. Emam Abdel-Fatah
Research Assistant Professor
PhD: University of Tennessee
Research Areas: Process modeling, healthcare engineering, pervasive computing, medical imaging, computer vision, machine learning, biomechanics, computational anatomy, anthropology.
Department of Nuclear Engineering

Dr. David Donovan
Assistant Professor
PhD: University of Wisconsin-Madison
Research Areas: Nuclear fusion science and technology through experimental, theoretical, and computational methods.

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

The Blalock, Kennedy, Pierce Analog Electronics Professorship offers me valuable opportunities to involve my graduate and undergraduate students in important research projects that greatly enhance the value of their engineering education. Our research team in the Integrated Circuits and Systems Laboratory partnered with the Jet Propulsion Laboratory, a NASA Center of Excellence for robotic space exploration, in the design and development of the Mars Science Laboratory Quad Operational Amplifier microchip. This microchip was used in the motor actuator electronics on the exploration rover Curiosity, which landed on the surface of Mars almost two years ago and is still transmitting data to NASA researchers. I am grateful for the chance to involve my students in such a once-in-a-lifetime venture, and I hope their excitement about this project and others we are currently working on with the support from this endowment will help their research efforts aspire to new groundbreaking innovations.

Dr. Rachel McCord
Lecturer
PhD: Virginia Polytechnic Institute and State University
Research Areas: Problem solving and metacognition; self-regulated learning in engineering; academic motivation.

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Students

Civil Engineering PhD Candidate Wins Award and Scholarship

Hyeonsup Lim, a PhD candidate in the College of Engineering's Department of Civil and Environmental Engineering, received an award and a scholarship in 2014 for his work in transportation studies.

Lim became the first student from UT to win the Intelligent Transportation Society (ITS) of Tennessee Scholarship Award and its $2,000 prize. The award was presented at the ITS conference in Chattanooga, Tennessee, in April 2014.

In June, Lim received another $2,000 via the T. Dancy Sullivan Scholarship from the Tennessee Section Institute of Transportation Engineers (TSITE). The award was presented at the TSITE Summer Meeting held July 30-August 1 in Gatlinburg, Tennessee. Lim also holds a Chancellor's Scholarship and works with the Southeastern Transportation Center in Major Research Initiatives.

“I’m so happy to get these scholarships and opportunities to keep working on my desired research,” said Lim. “I’m getting a lot of thanks from the great instructors in CEE. Dr. Lee Han’s support and encouragement and his referral of me were all significant factors in me winning this.”

Lim’s essay, “The Meaning and Value of ITS in Our Community,” was born out of a lot of introspection on his part. “Many times I sat and thought to myself, ‘I study ITS, but what does that really mean,’” said Lim. “The big takeaway was that more focus needed to be put on how data was used, what people did with it, rather than just focusing on the quality or amount of data we got.”

Often referred to as big data, the amount of information coming in wasn’t just numerous in and of itself but came from multiple sources as well. Finding ways to sort through that, to analyze that for practical results became Lim’s focus.

“Dr. Han, my advisor, has encouraged me often to think about the fundamental purposes and meaning of using those data,” said Lim. “Coming at it from that angle was different from the sort of things I was used to doing, so I was thrilled to think about values of (everything) I do.”

Putting the goals stated in his essay into practice has become a priority, one made more important by advances in technology. “The smartphone revolution has really brought about rapid changes and developments in information technology,” said Lim. “While boundaries related to services and systems of ITS are crumbling, the key now is that it is not just simply adopting new technologies; it’s more about how intelligently we use them.”

“It’s a reminder of the ‘intelligent’ part of ITS.”

Engineering Students Win in Vol Court Competition

Engineering students David Herberich and Christopher Sash took first and second place, respectively, in the Spring 2014 Vol Court pitch competition.

Seeman, senior in mechanical engineering and founder of Willow List, an innovative gift registry that used crowd sourcing to fund gifts, won first place and received $1,000. In addition to the cash prize, he also received space in the UT Research Foundation’s business incubator, consulting services from Pershing Yoakley and Associates, legal support from Morehouse Legal Group PLLC, and mentoring from the Anderson Center for Entrepreneurship and Innovation.

Vol Court is a speaker series and pitch competition presented by the College of Business Administration’s Anderson Center for Entrepreneurship and Innovation. The goals of the program is to help people develop new business ideas and gain entrepreneurial skills. It is sponsored by the Anderson Center for Entrepreneurship and Innovation, UT Federal Credit Union, Morehouse Legal Group, Launch Tennessee, Pershing Yoakley and Associates, and the UT Office of Pre-Entrepreneurship Planning.

Vol Court is offered every fall and spring semester and is open to students, faculty, and the general public.

ISE Students Received Honors and Scholarships from IIE and Chancellor

IEEE students in the Department of Industrial and Systems Engineering (ISE) won two prestigious scholarships from the Institute of Industrial Engineers (IIE) for 2014-2015.

David Herberich, an ISE sophomore, won the Marvin Mundel Memorial Scholarship in the amount of $1,650. ISE graduate student Isaac Atuahene won the Lisa Zaken Award for Excellence in the amount of $1,000.

In other awards and honors, multiple ISE students were recognized by the Chancellor’s Honor Quaintage, Gabriele Bonadonna and Henry Kendall McCord received 2014 Extraordinary Academic Achievement awards. Chambale Collier, Nathan Cole Irwin, Nathaniel Truett Siler, Harshitha Muppaneni, and Grish Upreti earned 2014 Extraordinary Professional Promise awards.

Yang wins TSITE poster award

Jianjiang Yang, a PhD student in the Department of Civil and Environmental Engineering (CEE), has been awarded first place in the Southeastern Transportation Center (STC) poster competition during the annual student paper competition. His paper, “Short-Term Freeway Sped Profiling Based on Longitudinal Spatial-Temporal Dynamics,” was given a scientific merit, the concept of predicting traffic flow. The Southeastern Transportation Center helped support his project.

Much like meteorologists using data and instrumentation to forecast the weather, Yang’s idea focuses on officials using various means to calculate where problems and slowdowns might occur before they happen. “Using the data, we can achieve a level of accuracy in short-term traffic forecasting,” Yang said. “In turn, that will provide the public with more accurate travel time information when planning for a trip, instead of having to rely on ‘best-case scenario’ travel time calculations like we have now.”

Along with the award, Yang received $500 and presented his paper at the group’s annual meeting held July 30–August 1, 2014, in Gatlinburg, Tennessee. Not only could his research help drivers in the future, but it also could help the state meet a key government mandate for growing research and graduate programs, all key steps in our journey to become a Top 25 public research university.”

Curran served as outreach advisor for UT’s EcoCAR 2 team, a US Department of Energy competition. He says the Bredesen Center helped to sharpen their focus on different fuels and fuel sources.

“Energy research is increasingly interdisciplinary, and the Bredesen Center is well suited to both the knowledge depth and breadth needed to succeed in today’s environment,” Curran said.

The center is now a top choice for some of the most promising young scientists, thanks to a combined recruiting effort from UT and ORNL. That has attracted students from top universities in the nation and around the world. The Bredesen Center welcomed twenty-nine new students in fall 2013 and has more than one hundred students enrolled for fall 2014. For more on the Bredesen Center visit: bredesencenter.utk.edu/index.php.
College of Engineering Hosts International Lean Summer Program

Students from universities and institutes around the world arrived at UT this past summer as part of the International Lean Summer Program in the College of Engineering. Sponsored by the Department of Industrial and Systems Engineering, the program attracted almost one hundred and twenty students to campus for a chance to study ways of reducing waste and increasing efficiency while partnering with students from countries around the world, beginning with an opening ceremony at the Foundry at World's Fair Park on July 7, 2014.

“Studying the manufacturing process is one of the components, but the bigger opportunity is to have students from China, Brazil, Ghana, Colombia, Mexico, Venezuela, Chile, and the US getting together, learning to work together, and sharing ideas,” said program founder Dr. Rupy Sawhney, the Health Faculty Fellow in Business and Engineering and a professor in the Department of Industrial and Systems Engineering. While students get the benefit of the experience of the camp both scholastically and interpersonally, Sawhney said UT also gets a world of good out of the exposure.

“You have all of these students coming from a diverse array of places, and they all get to see UT, get to experience what UT has to offer, get to talk about UT when they get back home,” said Sawhney. “You really can’t understand how much of an impact it makes. People at Monterey University in Mexico had no idea what UT was when we started this. Now, if you go to their campus and ask ‘What do you know about the University of Tennessee’ they will tell you that is where they learned Lean. From a university perspective, you can’t put a price on that kind of exposure.”

The future for the Lean Summer Program looks brighter still, with UT’s Enrique Macías de Anda laying the groundwork for future partnerships with universities in France, Russia, and Italy. If at least one of those European universities joins before next summer, it will mean the program will draw upon students from five of the six inhabited continents, with only Australia not represented.

Students began studies online at their home university before flying to UT for the remainder of the course. While at UT, students had access to facilities, laboratories, and research in addition to faculty input during their progress through four distinct phases. As part of the process, students also had the opportunity to take the systems that they have developed and travel with faculty to sponsoring companies to see how their ideas translate into a real-world scenario.

The NEUP graduate students awarded fellowships are, from left Daniel Hamm and Elizabeth Jones. Ryan Sweet, not pictured, also won a fellowship.

AIChE Chem E Car Team Competes in Puerto Rico

UT’s American Institute of Chemical Engineers (AIChE) Chem E Car Team followed its 2013 successes with a trip to the 2014 AIChE Southern Regional Conference, held at the University of Puerto Rico March 13–16, 2014. The team placed second in the Chem E Car poster competition, adding to its list of awards from 2013, which included the National SACHE Award: Inherent Safety in Design for the best application of the principles of chemical process safety to the Chem E Car competition. The team also succeeded in funding its trip to the Puerto Rico conference through a department-specific call to action crowdfunding project, raising $1,330 in addition to a contribution from the Department of Chemical and Biomolecular Engineering.

Nuclear Engineering Students Receive DOE Scholarships

Nuclear Energy University Programs (NEUP) took notice of students in the Department of Nuclear Engineering (NE) in May 2014, bestowing nine undergraduate scholarships and three graduate fellowships.

Nuclear Energy University Programs (NEUP) undergraduate scholarship winners are, standing from left, Whitney Smith, Alyxandria Wszolek, Gregory Meinweiser, Mikiah Rust, Whitney Smith, and Alyxandria Wszolek. The three graduate students awarded fellowships are Daniel Hamm, Elizabeth Jones, and Ryan Sweet.

“Having our students selected for these honors is a validation of the things we’ve got going on in our college,” said Dean Wayne Davis. “For our students to be recognized like this speaks to their dedication, innovation and commitment to their work.”

The goal of the program is to strengthen ties between students and the DOE’s nuclear energy research programs. Students are expected to take on studies of some of the challenges facing the industry today, including sustainability and efficiency.

The nine undergraduate students awarded scholarships are Sarah Combee, Kaitlyn Darby, Travis Labossiere-Holman, Tucker McClanahan, Danielle McFall, Gregory Meinweiser, Mikiah Rust, Whitney Smith, and Alyxandria Wszolek. The three graduate students awarded fellowships are Daniel Hamm, Elizabeth Jones, and Ryan Sweet.
College of Engineering Recognizes Outstanding Achievers at 2014 Faculty and Staff Awards Dinner

The UT College of Engineering held its annual Faculty and Staff Awards Dinner on Thursday, April 3, 2014, at the Knoxville Hilton. Longtime Knoxville and Knox County political icon Dwight Kessel was the guest of honor, receiving the 2014 Nathan W. Dougherty Award, the college’s most prestigious honor, 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, where the Nathan W. Dougherty building now bears his name. From 1940 to 1956, 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 Knox County Clerk from 1966 to 1980 and then serving as Knoxville’s mayor from 1980 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.

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

- **Outstanding Support Staff**: Samantha Allen, Business Manager, Department of Civil and Environmental Engineering; Justin Forbes, Senior IT Technologist II, College of Engineering; and Rita Gray, administrative specialist III, Department of Chemical and Biomolecular Engineering.

- **Outstanding Faculty Advisor Award**: Dr. Paul Frymier, Department of Chemical and Biomolecular Engineering.

- **Moses E. and Mayme Brooks Distinguished Professor Award**: Dr. Richard Bennett, Professor and Director; and Terry E. Stoneking, associate professor Emeritus, Department of Industrial Engineering.

- **College of Engineering Professional Promise in Research Award**: Dr. Christopher Cherry, Department of Civil and Environmental Engineering.

- **Dr. Jason Hayward, Assistant Professor, Department of Electrical Engineering and Computer Science.**

- **Dr. Jeremy Holleman, Assistant Professor, Department of Electrical Engineering and Computer Science.**

- **Dr. Butch Irick, Research Assistant Professor, Department of Mechanical, Aerospace, and Biomedical Engineering.**

- **Dr. cellphone®, Engineering Fundamentals Division.**

- **Dr. Lynne Johnson, Associate Professor, Department of Civil and Environmental Engineering.**

- **Dr. Hahn Choo, Associate Professor, Materials Science and Engineering.**

- **College of Engineering Research Achievement Award**: Dr. Leo Han, Professor, Department of Civil and Environmental Engineering.

- **Dr. Jason Hayward, Assistant Professor, Department of Civil and Environmental Engineering.**

- **Dr. Butch Irick, Department of Electrical Engineering and Computer Science.**

- **Dr. Lynne Johnson, Associate Professor, Department of Mechanical, Aerospace, and Biomedical Engineering and the UT Space Institute.**

- **College of Engineering Research Achievement Award**: Dr. Leo Han, Professor, Department of Civil and Environmental Engineering.

- **Dr. Jason Hayward, Assistant Professor, Department of Mechanical, Aerospace, and Biomedical Engineering and the UT Space Institute.**

- **College of Engineering Research Achievement Award**: Dr. Leo Han, Professor, Department of Civil and Environmental Engineering.

- **Dr. Butch Irick, Professor, Department of Civil and Environmental Engineering.**

- **Translational Research Award**: Dr. Douglas Birdwell, Department of Electrical Engineering and Computer Science.

**Dean Wayne Davis presents the Nathan W. Dougherty award to Dwight Kessel at the college’s Faculty and Staff Awards Dinner in April.**

**Dean Davis (left) and Associate Dean for Faculty Affairs Verita Keppens (right) with the college-wide award winners (left to right): Dr. Paul Frymier, Dr. Ed din Burdette, Dr. Lynne Parker, Dr. Butch Irick, and Dr. Hahn Choo.**
The Innovative Computing Laboratory (ICL) at UT keeps a close watch on the ever-evolving nature of the fastest, most powerful computers in the world. ICL director Dr. Jack Dongarra says he is always engaged in measuring these computers—sometimes even before they are shipped. The standard benchmark system called Linpack has been used since 1993 to compile the TOP500, a list of the world’s fifty fastest supercomputers.

In 2013, Dongarra announced the standard needed a reset. Linpack measures linear equation calculations. Newer applications often require computations of more complex differential equations. Dongarra and team launched a new benchmark, the High Performance Conjugate Gradient (HPCG), to measure supercomputer performance more accurately and work in tandem with Linpack.

“We have reached a point where designing a system for good Linpack performance can actually lead to design choices that are wrong for the real application mix, or add unnecessary components or complexity to the system,” said Dongarra. “The hope is that this new rating system will drive computer system design and implementation in directions that will better impact performance improvement for real applications.”

This kind of advancement is the hallmark of ICL, new in the twenty-fifth year of its mission to establish and maintain UT as a world leader in advanced scientific and high-performance computing through research, education, and collaboration. Headquartered in the Claxton Building in the heart of the UT campus, it is part of the Department of Electrical Engineering and Computer Science (EECS) in the College of Engineering. It serves as the cornerstone laboratory of the Center for Information Technology Research (CITR), one of UT’s nine Centers of Excellence. Since Dongarra established ICL in 1989, it has grown into an internationally recognized research laboratory. Companies such as NVIDIA and Intel regularly collaborate with the lab’s researchers. NVIDIA designates ICL as a CUDA Center of Excellence (CCOE), and this collaboration benefits ICL with hardware, financial support, and other resources.

ICL is also part of the SciDB project of the Intel Science and Technology Center for Big Data. The lab helps improve the efficiency of large-scale data analytics by providing efficient codes for linear algebra on the Intel Xeon Phi coprocessor, and also develops expertise on other Big Data applications and operations. ICL employs around forty researchers, students, and staff, and has earned many accolades, including four R&D100 awards. Among recent accolades, Dongarra won the ACM-IEEE Ken Kennedy Award at the 2013 SC13 conference, and also received a Professional Achievement Award from the Illinois Institute of Technology, where he earned his master’s degree.

In 2013-2014, ICL has produced ninety-four publications, including journal conference proceedings, tech reports, and book chapters. ICL research scientists and co-authors earned Best Paper awards at a number of conferences, including an award for “Implementing a Blocked Asen’s Algorithm with a Dynamic Scheduler on Multicore Processors.” The latest project to address this challenge is the Bench-testing Environment for Automated Software Tuning (BEAST). BEAST embraces the nature of accelerators—such as graphic processing units (GPUs) from NVIDIA and AMD, and the Xeon Phi coprocessors from Intel—to enable performance tuning at higher magnitudes of computing power and memory bandwidth than that of standard processors.

As a lead project in ICL’s distributed computing area, BEAST adds to a collection of evaluation tools that allow programmers to increase the efficiency when mapping source/object code to a computer’s architecture. ICL’s benchmark software is widely used to profile the performance of HPC machines and plays an essential role in the management of computer infrastructure used by government and industry.

ICL’s three-part focus on these projects, and others, maintains its position on the front lines of computer evolution. In this regard, the US DOE appointed Dongarra in 2014 to a subcommittee studying the goal of achieving exascale computing within the next decade. The subcommittee issued a report detailing the top ten research challenges in reaching exascale computing. Meeting these challenges would have far-reaching impact on the scientific world.

“The need to advance our understanding of the universe is without bounds, as is the need for modeling and computing the phenomena around us,” said Dongarra. “For example, everyone is concerned about climate change and we need computers to help in modeling the climate. The second is that doing oceanic clouds, ice, and topography are all tremendously important. And today we need just two orders of magnitude improvement on that problem alone.”

A lead project in ICL’s distributed computing area is to design software for the next generation of supercomputers, machines that operate at a level called exascale (capable of a quintillion floating-point operations per second). These computers could help solve some of the most demanding problems in numeric modeling, to answer questions across the scientific spectrum.

“You can’t wait for the exascale computers to be delivered and then start thinking about the software and algorithms,” said Dongarra. “The exascale computers are going to be dramatically different than the computers we have today.”

Dongarra received a $1 million grant from the US Department of Energy (DOE), starting in 2013 and spread over three years, to develop the techniques and software to effectively use exascale machines. Called the Parallel Randomized Runtime Scheduling and Execution Controller (PaRSEC), the project aims to address the issues created by the increasing complexity of supercomputer designs.

The addition of HPCG to the TOP500 is ICL’s latest development in performance evaluation and benchmarking. This provides a collection of evaluation tools that allow programmers to increase efficiency when mapping source/object code to a computer’s architecture. ICL’s benchmark software is widely used to profile the performance of HPC machines and plays an essential role in the management of computer infrastructure used by government and industry.

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Dedication of Fred D. Brown Residence Hall is Highlight of Homecoming Weekend

The 2014 Homecoming weekend will be kicked off with two exciting events this year. On Friday, October 10, the new Fred D. Brown Residence Hall, named for the original director of the Minority Engineering Program (MEP) in the College of Engineering and the first building on the university’s Knoxville campus named after an African-American, will be dedicated during an afternoon ceremony. Prior to the dedication, the College of Engineering and the Engineering Diversity Programs Office will host an invitation-only luncheon in the University Center Ballroom from 11:30 to 1:00 p.m.

The Fred D. Brown Jr. Residence Hall is the first new residence hall to be built in forty-three years. Located on Andy Holt Avenue, this five-story building provides eighteen first-year students with an opportunity to live together in a community designed to foster learning, socialization and personal development.

Brown graduated from Hall High School in Alcoa, Tennessee, and earned his college degree from the Tuskegee Institute. He went on to study as a post-graduate at UT, Tennessee State University, Fisk University, and Vanderbilt University. Brown taught at Hall High School and Oak Ridge High School and was the first African-American member of the Alcoa Board of Education.

Dean Fred Peebles established the Minority Engineering Program in 1973, an initiative designed to motivate highly qualified African American young people to pursue engineering coursework at UT, and designated Brown as its first director. Brown launched the initial Minority Engineering Scholarship Program (MESP) with an endowment of only seventeen African American students. Under his guidance, MESP grew rapidly over the years.

MEP evolved into the Engineering Diversity Programs (EDP) Office and incorporated pre-college summer programs for middle and high school students; bridge programs for new freshmen; recruiting initiatives targeted at underrepresented students; and retention and mentoring programs.

In the four decades since the program was established, UT has consistently ranked among the top fifty universities and colleges in the nation for graduation rates of African American engineering students. The college has graduated more than nine hundred minority students.

UT Trustee and industrial engineering graduate Spruell Driver submitted a letter to the UT Board of Trustees detailing his gratitude to Brown for influencing his own career. “He made it his mission to personally identify and successfully recruit the best students in Tennessee and neighboring states with a high aptitude for engineering studies,” Driver said. “Mr. Brown went to great lengths to ensure that his students got off to a strong start academically and that we had a cohesive support structure to ensure successful persistence to graduation.”

The events will be part of the Homecoming 2014 festivities, which will include a parade on Friday afternoon and the college’s annual Alumni Barbeque on the Hill, which will be held on Saturday, October 11, three hours prior to kickoff of the Tennessee Volunteers football game. Tickets to the Engineering Alumni Barbeque will be available for purchase online this fall.

For more details on the Fred D. Brown Jr. Residence Hall, visit uthousing.utk.edu/construction/construction.html or housing.utk.edu/students/new-construction/.

For more information about Homecoming 2014 and the Engineering Diversity Alumni Luncheon, contact the Engineering Development Office at (865) 974-2779/engdev@utk.edu.

Research Update

Institute of Biomedical Engineering Hosts Cross-Discipline Symposium

“This year’s symposium exists to provide an intellectual bridge between researchers from across disciplines and various businesses and government laboratories, the event served as a way for faculty and researchers to brainstorm ideas about the next wave of medical breakthroughs.”

“IBME bringing all of these various disciplines and real-world partners together is a wonderful idea and the perfect example of how the colleges here at UT can work together,” said College of Engineering Dean Wayne Davis. “Sharing ideas between colleges can not only help solve problems that one group or another might have had, but it can help alert you to things, both good and bad, that you might not have considered.”

Medical personnel and equipment manufacturers in attendance provided immediate thoughts and feedback about which ideas have merit and the potential pitfalls of various programs and proposals, while at the same time getting the chance to present their own concerns to the very faculty and innovators who could help solve their problems.

“The Institute of Biomedical Engineering and our annual symposium exist to provide an intellectual bridge between highly talented researchers throughout the state of Tennessee in academia, industry, and the national laboratories,” said IBME chairman Dr. Mohamed Mahfouz.

In addition to the College of Engineering, the College of Veterinary Medicine, College of Education, Health, and Human Sciences, College of Arts and Sciences; College of Business Administration, and the College of Agricultural Sciences and Natural Resources all took part in the event.

The near-term goal of the group is to come up with sustainable ideas and file a number of patents on those innovations within the next five years. Along those lines, and perhaps as a preview of what is to come, topics at this symposium ranged from regenerative medicine and biomechanics to sensor technology and simulations.

“By bringing together researchers from across disciplines we were able to discuss and develop teams around highly complex topics,” said Mahfouz. “We were able to address topics like cancer, neurological trauma rehabilitation, regeneration of damaged tissue, and how to provide quality treatment for patients with decreasing insurance reimbursement and rising costs.”

For more information on the IBME, visit ibme.utk.edu.

(From left to right) Jim Stahlowitz, of LaunchTN, addresses panel members Chudi Wilkerson, CEO of Hublie Telemedial; Grady Vanderheiden, co-founder of Menlo Ventures; and David Page, partner member of Third Dimension Technologies; as they discuss fundraising strategies for medical device companies at the IBME Research Symposium.

CURENT Honored With Spot In USA Science and Engineering Festival

The National Science Foundation area of the USA Science and Engineering Festival in April had representation from the University of Tennessee thanks to a spot in the prestigious event going to CURENT, the Center for Ultra-Wide-Area Resilient Electric Energy Transmission Networks.

“Being able to take part in events like this helps serve as a way to educate the public about what CURENT does, and to do so in an engaging, entertaining way,” said UT College of Engineering Dean Wayne Davis. “Any time you have a chance to make a positive impression on your mind, it’s a great opportunity.”

The largest science festival in the country, the gathering was sponsored by groups like Lockheed Martin, 3M, Northrop Grumman and the National Security Agency, and included appearances from speakers as diverse as Bill Nye the Science Guy and television host Mike Rowe. housed in the Min H. Kao Electrical Engineering and Computer Science Building in UT’s College of Engineering, CURENT is a UT-led multi-institution research group focused on making the electrical grid more efficient, particularly in the area of energy transportation.

The research center’s presentation at the festival was “Powering Today and Tomorrow,” a look at solar energy and how it could be better utilized.

Participants were able to design their own energy circuits one of many possible car parts as part of the exploration of how the sun’s energy—said to be the twenty thousand times more than what is consumed—could hold the key to our future energy needs. As part of the festival, students and adults had the chance to take part in more than three thousand activities or presentations.

“CURENT was honored to represent the National Science Foundation and the University of Tennessee as one of sixteen engineering research centers at the festival,” said CURENT Communications Coordinator Adam Hardebeck. “Being a part of the largest science festival in America provides us with an opportunity to connect with young people and showcase the fascinating research going on in our center.”

Participating groups included universities, museums, educational television stations, and featured everything from robotic snakes to tsunami simulations. Additionally, there was music, magic, and other entertainment.

The fair took place April 25-27, 2014, at the Walter E. Washington Convention Center in Washington, D.C.

For more on CURENT, visit current.utk.edu.

For more on the USA Science and Engineering Festival, visit www.usasciencefest.org.

Small, Flexible Tablets and TVs Possible Thanks in Part to UT Researchers

Researchers from UT recently garnered national attention for their part in a study that could lead to the development of tablets, TVs, and mobile devices the width of a piece of paper.

First published in Nature, the article details how researchers have been able to create wires only three atoms wide using an electron beam. The lead researcher on the project was Vanderbilt PhD student Junhao Lin, who was a visiting scientist at Oak Ridge National Laboratory at the time.

Through the ORNL connection, UT’s Dr. Stephen Pennycook, Dr. David Mandrus, and Dr. Jianqiang Yan—all of the College of Engineering Department of Materials Science and Engineering—got involved.

It’s the second time Yan and Mandrus have found recognition in a study that led to early months. The pair’s research also was part of an article in early March on a University of Washington-led effort to reduce the size of LEDs.

“The role of my group was to supply some of the materials used in the study,” said Mandrus. “It’s very similar to the way we worked with the University of Washington group on the LEDs. The materials were grown in my lab in the Science and Engineering Research Facility.”

The eventual products, called nanowires, are of a flexible metallic nature, and only one one-thousandth the width of the current microscopic wires used to connect transistors in today’s circuits.

The idea is that it would now be possible to stack such small wires together in clusters—researchers used a Lego block analogy—to build layers and circuits that would allow for a great reduction in the size of electronic products.

In addition to a reduction in size, the process could also make TV screens and tablets flexible, something that could prevent countless repairs.

Read the article in Nature at: http://www.nature.com/nano/
The College of Engineering joined forces with the Colleges of Agriculture and Natural Resources and the College of Arts and Sciences in July of 2014 to host the Intercollegiate Summer Bridge Program July 8–30, 2014. This three-week session provided a transition in study from high school to the university for underrepresented students majoring in science, technology, engineering, and math (STEM) areas.

The bridge program is based on the established model of the Tennessee Louis Stokes Alliance for Minority Participation (TSAMP), a statewide collegiate alliance funded by the National Science Foundation (NSF) that seeks to improve graduation rates for underrepresented students majoring in science, technology, engineering, and math (STEM) areas.

"It is always a rewarding experience to watch the students grow throughout the duration of the program," said Enrica Echols, coordinator for Engineering Diversity Programs (EDP). "Through three weeks of mentorship, academics, and campus life preparation, our goal is that the students not only realize the expectations of their upcoming freshman year, but also identify and improve their weaknesses in order to meet the demands of their respective curricula."

The Intercollegiate Summer Bridge offered nineteen STEM students an overview of courses in their respective curricula, and also engage in discussion about current projects and future internship/research opportunities. In addition to the educational field trips, students also participated in a leadership retreat and teambuilding day at New Horizons Center for Experiential Learning in Knoxville on July 12. This excursion was an opportunity for the students to get to know one another, learn to work as a team, and the importance of being an effective leader.

The success of the program will be measured by testing before and afterward, and by the transformation in the students’ perception and attitude over the three weeks. In the long term, student success will be tracked from their freshman year through graduation.

Students also visited area companies to give insight into different aspects of STEM careers. The group visited DENSO Manufacturing in Maryville, Tennessee, on July 18; Oak Ridge National Laboratory (ORNL) in Oak Ridge, Tennessee, on July 11; and Sweetwater Valley Farms in Philadelphia, Tennessee, on July 25.

These field trips allowed students to hear from engineers and scientists about their respective careers, and also engage in discussion about current projects and future internship/research opportunities. In addition to the educational field trips, students also participated in a leadership retreat and teambuilding day at New Horizons Center for Experiential Learning in Knoxville on July 12. This excursion was an opportunity for the students to get to know one another, learn to work as a team, and the importance of being an effective leader.

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Students in the Intercollegiate Summer Bridge Program visited DENSO Manufacturing during their three-week experience.

Students studying engineering and agriculture and natural resources will participate in the STEAM Mentoring Program in 2014-2015. The purpose of this program is to provide incoming minority students with vital tips, strategies, and opportunities in an effort to serve as a catalyst for both academic and professional success. The program focuses on three major areas—academic success, career development, and retention. Through the implementation of specialized programs, workshops, guest speakers, and outings/trips, participants will be able to successfully master their first year, and beyond.

"Our chapter continues 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 increase the success rate of our engineering students, and I think that was on display for all to see in Nashville."
As a student I am constantly challenged, but because I enjoy majoring in biomedical engineering, it is a responsibility I eagerly accept. However, financing tuition is one of the greatest problems students face. The Fred D. Brown Jr. Engineering Scholarship has been an extremely critical and supportive aspect for me in my academic career. It has allowed me to devote my time and efforts into pursuing a career I truly love as well as maintaining my GPA without going into debt. As the newest dormitory is dedicated to Fred D. Brown Jr., he leaves behind an inspiring legacy for me that I hope to one day emulate.

Olufunke “Tina” Anjonrin-Ohu
Fred D. Brown Jr. Minority Engineering Scholarship

Inspire

Invest in the future. Support a student’s dream. Learn how you can eliminate a student’s financial barrier to a world-class college education by investing in a student scholarship.

Call 865-974-2779 or visit engr.utk.edu/give
Shannon, and Karl Hughes. Packback's founders (left to right): John Hanula, RE (BS/CE '82, MS/CE '86), Terry Begley, BS/CE '82, Mike Sherry, BS/CE '82, and Packback's CEO, Jessica Tenuta, Kasey Gandham, Mike Shannon, and Karl Hughes.

The company's service is now available nationwide at packbackbooks.com and Packback Books recently found success on the ABC-TV reality show Shark Tank. Packback affords college students the option of renting digital versions of textbooks online for five dollars or less instead of paying larger dollars for traditional and pricier physical textbooks. Hughes said the TV show gave Packback invaluable exposure. "Being on Shark Tank was a big boost," Hughes said. "We had publishers calling us after we were on the show."

For more info on the company and the episode of Shark Tank, visit blog.packbackbooks.com/page/2.

Memorials

Dr. Hall Carmack Roland (MS/EE '62, PhD/EngrSc '85), of Knoxville, died on March 3, 2014. Roland was a professor emeritus in the Department of Nuclear Engineering at the University of Tennessee. He was a commissioned Naval Officer during both World War II and the Korean War and was a long-time member and past president for Knoxville Flyers. He is remembered for his dedication to his family, as well as his enjoyment of teaching and career.

Dr. H. Lee Dodds, professor emeritus and retired head of NE, was a student of Roland’s.

"Dr. Hall Roland was an outstanding teacher who was always eager to help his students, both inside and outside of the classroom," said Dodds. "He was the first faculty member hired by Dr. Pietro Pau, the first director. He was also an expert in many areas of engineering, not just nuclear engineering. For example, he was an airplane instructor and he built a small airplane in his garage, which he flew on its maiden voyage. Roland touched the lives of many people in a very positive way. He is sincerely missed by everyone who knew him."

Roland authored a textbook and also wrote a weekly column in the Knoxville News Sentinel in the 1980s. His columns were later compiled into a book titled The Armchair Engineer. Roland retired from teaching in 1990.

Michael N. Armstrong (BS/CE '79) died on March 14, 2014. He was a resident of Kingsport, Tennessee.

James Edward "Jim" Goiger Sr. (BS/EE '54) died on July 19, 2014. He was a resident of Knoxville.

Larry Doby Horton (BS/CE '93) died on July 13, 2012. He was a resident of Knoxville.

Jack H. Kahn (BS/EngPhys '47, MS/Physics '49, PhD/Physics '51) died on May 24, 2014. He was a resident of Dallas, Texas.

Erby Boyd Nankivil Jr. (BS/EE '43) died on June 7, 2014. He was a resident of Fort Myers, Florida.

Billy Mac Newberry (BS/EE '56, MS/EngrSci '71) died on March 16, 2014. He was a resident of Sugar Land, Texas.

Don Sewell Robinson (BS/EE '59) died on February 5, 2014. He was a resident of Little Rock, Arkansas.

Zack Thompson (BS/EE '57, MS/EE '67) died on May 6, 2014. He was a resident of Huntsville, Alabama.

Jude Forestell Webb (BS/EE '05) died on March 9, 2014. He was a resident of Nashville, Tennessee.

Former NASA astronaut and UT graduate Henry W. Hartsfield Jr. (BS/EngrPhys '56) died on July 17, 2014, after an illness. He was 80 years old. Hartsfield earned a master’s degree in engineering sciences from UT Space Institute in 1965. He then served as commander of space shuttle Discovery’s maiden mission and flew on three shuttle flights. After his final shuttle flight, Hartsfield served in a number of NASA administrative posts, including deputy chief of the astronaut office, deputy director for flight crew operations, and director of the Technical Integration and Analysis Division at NASA Headquarters.

Next he became deputy manager for operations in the Space Station Operations Office at NASA’s Marshall Space Flight Center in Huntsville, Alabama. Back at the Johnson Space Center in Houston he worked in the Space Station Freedom Program and later as manager of the international Space Station Independent Assessment Team. He later became NASA’s director of independent assurance for Human Exploration and Development of Space.

Hartsfield was one of ten current or former astronauts who received a degree from the UT Space Science Institute. One of them, Barry "Butch" Wilmore, a 1994 UT graduate, will take command of the international Space Station in November. Another astronaut, Martha Rhea Seddon, earned her medical degree from UT.

Alumni

Dr. Mohammad Qureshi (PhD/CE '00) has been appointed to the California Board for Professional Engineers, Land Surveyors, and Geologists. Qureshi has been chief of traffic at the San Bernardino County Department of Public Works since 2012. He was regional director and senior project manager at LIN Consulting from 2007 to 2012, director of the California Institute for Multimodal Transportation from 2006 to 2007 and assistant professor and director at the University of Missouri-Rolla’s Missouri Local Transportation Resource Center at the College of Engineering, Computing and Technology.

Dr. Hash Hashemian (MS/NE '74), president and CEO of AMS Corporation in Knoxville, Tennessee, has been elected as a Fellow of the American Nuclear Society (ANS). Hashemian will be honored during the ANS Winter Meeting which will be held at the Disneyland Hotel in Anaheim, California, at the Opening Plenary Session on Monday, November 10, 2014. AMS Corporation is one of the world’s premier nuclear instrumentation and control services companies. Hashemian has received other accolades in recent years, including being named as the 2013 Tennessee Small Business Person of the Year by the US Small Business Administration in Washington, DC, and was the recipient of the prestigious University of Tennessee Alumni Professional Achievement Award in 2012.

Dr. Hall Roland received the award.

Faculty

Dr. Henry Hartsfield, professor and director at the University of Missouri-Rolla’s Missouri Local Transportation Resource Center at the College of Engineering, Computing and Technology.

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Mitch Patel (BS/CE ’87, MS/CE ’92), the president and CEO of Vision Hospitality Group, based in Chattanooga, Tennessee, has seen his life come full circle, back to the industry that was part of his youth.

He was born in India, but Patel’s family immigrated to the United States when Patel was four years old. His father had only eight dollars in his pocket, but he also had a dream to further his education and to make a better life for his family. After working as a research scientist, his father decided to lease an eleven-room motel in Stockton, California, and the family moved into the owner’s apartment behind the motel office.

In 1980, Patel’s father purchased a Scottish Inn in Tennyson, Tennessee, and the family moved across the country from California to the South. Although it was quite a cultural change, Patel eventually adapted and enjoyed life in the small city.

Patel attended several elementary schools in Davis and Stockton, California, and in Cleveland. He graduated from Cleveland High School in 1987. Although his family continued to operate the motel, he wasn’t interested in working in the hospitality industry.

“Because I grew up in the motel business cleaning rooms, taking out the trash, and even checking in guests, the last thing I wanted to do was pursue it as a career,” Patel said. “Growing up, I had a strong interest in math and physics. I was always interested in solving problems. Solving problems is what engineers do best.”

In addition to his interest in math and science, Patel also wanted to learn more about the design and development of buildings. He decided to pursue a career in civil engineering to help align his personal interests and career goals. He selected the University of Tennessee for his academic studies in engineering for its proximity to Cleveland and the reputation of UT’s civil engineering program.

“Some of my favorite memories at UT were just building great relationships and friendships with fellow students,” Patel commented. “I still have those friendships. And who can forget football Saturdays in the fall?”

“I still have those friendships. And who can forget football Saturdays in the fall?” commented. “I still have those friendships. And who can forget football Saturdays in the fall?”

Patel had been working as an engineer for three years when an interesting opportunity in the hotel business came along. One of his uncles was developing a hotel in Chattanooga and thought that Patel would be a perfect choice to develop and manage a relatively new Hilton brand at that time, the Homewood Suites. Although his engineering degree was stable, Patel decided to take a chance on a new and exciting venture.

“I found out that building a hotel was not easy, but somehow I was able to get it done. Sometimes, there is no better way to learn than by baptism by fire,” Patel said. “When the hotel was completed, I literally took off my hard hat and put on a tie, and there was the opening general manager of the hotel. The hotel struggled early, but I am proud to say that after careful hard work and determination, that hotel became the number-one hotel in the market. More importantly, something else happened in those eighteen months; a first business building inside of me. It took me a little while, but I found my passion where I never expected to, in hospitality. That passion, along with some confidence, allowed us to grow.”

Today, Vision Hospitality Group, founded in 1997, is one of the top hotel development and management companies in the US. Patel’s initial foray into hospitality gave him the self-assurance to seek out other opportunities. Vision now has more than one thousand associates, a portfolio of thirty-one hotels in five states, and a current pipeline of fifteen hotels associated with the industry’s premier hotel brands. The company just recently moved into its new twenty-eight thousand square-foot headquarters in downtown Chattanooga to support its associates who stand behind the company’s values and have embraced Patel’s shared vision to be the best, most respected hotel company in the country.

“Establishing a strong associate-focused service culture is the key,” Patel said. “We surround ourselves with great people and simply take care of them. Happy and loyal associates equal to happy and loyal guests. Happy and loyal guests lead to greater market share, which in turn shows a premium return on investment—when you invest back in your associates.”

Vision Hospitality Group owns and operates hotels associated with Hilton, Marriott, Hyatt, and InterContinental Hotels Group family of brands. Patel said the company decides what demand drivers a particular location might have, and what brand best serves the site when pursuing a particular project.

“For example, some brands are better located in transient locations such as immediately off of a highway exit, while others are few being located deep within an office park,” Patel said. “Each situation poses its own set of criteria and challenges, and that’s one of the things that keeps it interesting.”

The company’s associates view themselves as being part of a hands-on company. From concept to design, through construction and to the hotel opening, Vision is always focused on the details, and that’s one of the things that Patel believes has been essential to its success.

“As we continue to grow, and efficiency becomes a priority, it is more and more difficult to maintain that culture,” Patel said. “Just because you have the right technology, the right platform, the right technology, it is very important to maintain the culture.”

“I am proud to have become an engineer,” Patel stated. “I believe engineering can be a great background for anything you would want to pursue. We engineers are trained to just figure things out.”

Patel and his wife, Parul, have been married for seventeen years and have three children, ages thirteen, nine, and seven. In his free time, he enjoys traveling, reading, and sports, and especially values spending time with his family.

For more information on Vision Hospitality Group, visit www.vhghotels.com.
College of Engineering Collaborates with College of Nursing to Build Simulated Health Care Facility

The College of Engineering (COE) and the College of Nursing collaborated on the renovation of an existing building to improve simulated instruction and research for students across multiple disciplines.

The Health and Information Technology and Simulation (HITS) Laboratory is housed in the former Student Health Center at 188 Andy Holt Way. The HITS Lab features simulated learning experiences and opportunities to explore research scenarios. The building adds more than seven thousand square feet to simulation learning and health information technology development and research.

“Gaining first-hand knowledge of the impact that health technology has on improving patient care, quality, and safety is critical for nursing students,” said Dean Victoria Niederhauser. “Research has shown that when students engage in simulated scenarios in a safe learning environment, they are better prepared to enter into the work force upon graduation.”

The $1.5 million project involved renovating the three-story building. The HITS Lab takes two floors and one floor houses a rare plant herbarium for the College of Ecology and Evolutionary Biology in the College of Arts and Sciences. The second floor includes four patient exam rooms; a pediatric unit; a room that functions as an operating room, a birthing room and an emergency department; storage space; and lockers. It also contains a debriefing room with an observation and control laboratory where students and professors can observe how other students are handling simulated scenarios live. The experiences can be taped so that students can review how they responded to situations.

The basement level contains an apartment with a bedroom, living room, and dining room for simulated living and collaborative nursing and engineering research projects to tackle health care challenges. For example, HITS co-directors Dr. Tami Wyatt, associate professor of nursing, and Dr. Xueping Li, associate professor of industrial engineering, plan to conduct a study using new smart-home technologies to assist with independent living for elderly people. These technologies will allow older adults to live safely and independently in their own homes. “Our primary goal for the HITS Lab is to advance the science of health information technology and discover ways to enhance consumer health and interprofessional health education,” Li said. “We will integrate clinical simulation, distance education, process optimization, and delivery of care using telehealth into an intraprofessional education (IPE) learning experience involving students in pharmacy, social work, advance practice nursing, medicine, and industrial engineering. I am excited about this collaboration and cannot wait to see HITS in operation!”

An open house and ribbon cutting for HITS was held on March 27, 2014, at Temple Hall on Andy Holt Avenue.

Student Health Services moved from its former Andy Holt Avenue building to the corner of Pat Head Summitt Street and Andy Holt Avenue. The facility opened to students in January 2012.

For more details, visit http://lab.engr.utk.edu/hits/.

Events & Awards

College of Engineering Well Represented at Chancellors Honors Banquet

The annual Chancellor’s Honors Banquet is a showcase of the best and brightest at the University of Tennessee, and the 2014 edition proved to be quite a night for students and faculty of the College of Engineering.

James McConnell Professor and associate head of the Department of Electrical Engineering and Computer Science (ECECS) Syed Hamidul Islam took home the Alexander Prize, named for former UT president and current UT Senator Lamar Alexander and his wife, Honey. It recognizes excellence in teaching and research, and is only given to one faculty member across the entire campus each year.

Also on the faculty side, and also in the ECECS department, associate professor Dr. Bruce MacLennan received an Alumni Outstanding Teacher award given by the UT Alumni Association to those who best exemplify teaching excellence.

Another James McConnell Professor in the ECECS department, Dr. Aly Fathy, took home the Excellence in Graduate Mentoring and Advising, given to graduate advisors and faculty members who have distinguished themselves as being highly committed to the advising and mentoring of graduate students.

The college had three faculty members win Research and Creative Achievement awards as Department of Civil and Environmental Engineering professor Dr. Lee Han took one award for his research into transportation safety, ECECS professor Michael Langston won one for his work advancing high-performance computing and related applications, and Department of Nuclear Engineering assistant professor and UCOR Faculty Fellow Dr. Jason Howard earned a Professional Promise award for the research into nuclear safety, arms control and nonproliferation.

Another ECECS spotlight came when the Success in Multidisciplinary Research award went to the Infant-Inspired Robotics Systems team, which includes MacLennan, associate professoritar An Aval and Dr. Lytne Parker as members, along with twelve faculty members from psychology.

The National Society of Black Engineers chapter—recently named the top chapter in the country at its annual conference—was the only group on campus to win an Extraordinary Community Service award, given for their efforts in reaching out to schools and children in an effort to generate interest in engineering-related activities. Elsewhere on the student side, swimmer Carl Svagerko, a materials science and engineering major, won a Scholar Athlete Award. A participant in fly and freestyle events, Svagerko was a two-time SEC Academic Honor Roll member during his two years at UT.

Yi Ying Chin, of chemical and biomolecular engineering, Joseph R. Coste, of materials science and engineering major, Gabrielle Knoel, an industrial and systems engineering major, Henry McCay, an industrial and systems engineering major, and Samantha Watts of chemical and biomolecular engineering all took home Extraordinary Academic Achievement awards.

Top Collegiate Scholar awards went to Samantha Ann Hawks and Rebekah Kathryn Patton, both of whom are chemical and biomolecular engineering majors.

More than twenty others won Extraordinary Professional Promise awards:

- From Chemical and Biomolecular Engineering: Rebekah Patton
- From Civil and Environmental Engineering: Taehyeon Yoo
- From Electrical Engineering and Computer Science: Margaret Drouhard, Sang Hyub Lee, Ifana Mahbab, Khandaker Abdalhuda Al Momun, Charles A. Phillips, Terence Cordell Randall, Siyi Xiang, Yao Xu, and Yanyun Yao.
- From Materials Science and Engineering: Haoing Jia and Shaoqiang Tang.
- From Mechanical, Aerospace, and Biomedical: Sean F. Elvared, Jason Charles Howison, and Lu Huang.

Dr. Bruce MacLennan (left) receives the Alumni Outstanding Teacher award from Chancellor Jimmy G. Cheek (right).
For EcoCAR 3, the goal will be for teams to focus on reducing costs and coming up with new innovations that make hybrid or electric vehicles more accessible and more likely to be adopted by the general public. The added challenge to teams this time is to make improvements in fuel efficiency and emissions reduction while maintaining performance, safety, and consumer appeal.

“That’s the other part of the challenge,” said Irick. “The end result of your car needs to be that you can’t tell it apart from a stock model. It needs to look completely like something you could get at the dealer.”

As part of the of the competition, teams are composed of engineers, researchers and even their own media representatives. Typically, they contain fifteen to twenty team members, but some have as many as seventy-five.

UT’s past teams—including the current EcoCAR 3 team—have been sponsored in part by local industries including DENSO and the Electric Power Research Institute, as well as the support that they’ve received from the university and alumni.

Support also comes in expertise as General Motors and other auto-related businesses will be available to mentor and provide advice and feedback along the way.

“The help they give is just as important as anything financial,” said Irick. “They really do give a lot to all of the teams in terms of support and advice.”

In addition to the assistance that industry partners can lend teams along the way, students also have the added benefit of having worked with the teams throughout the process, leading many to employment with those companies.

“That’s the great thing. It’s not just simulated experience, it’s gained real world experience,” said Irick.

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**Calendar**

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**Save the Date**

**College of Engineering Alumni BBQ On the Hill**

The University of Tennessee College of Engineering invites you to Homecoming 2014 and the Annual Alumni Barbeque on the Hill.

**Saturday, October 11, 2014**

Three hours prior to kickoff of the Tennessee vs. Chattanooga game.

Join us for a barbeque lunch, including hot dogs for the kids, catered by Dead End BBQ.

Enjoy exhibits and demonstrations, reunions with former classmates and faculty, and games for both adults and children.

Register today and be a part of the Tennessee Tradition.

**Costs:**

$12.00/adults – $8.00/children under ten years of age

Register online at: [www.volsconnect.com](http://www.volsconnect.com)

For more information, contact Juliette McClure at (865) 974-2779 or e-mail jmclu10@utk.edu.