MISSION STATEMENT

The mission of the College of Engineering is:

• To provide high quality education in the major engineering disciplines from the undergraduate through doctoral levels through a creative balance of academic, professional and extracurricular programs;

• To foster and maintain mutually beneficial partnerships with our alumni, friends, industry, and local, state and federal governments through public services assistance and collaborative research; and

• To be a major contributor to our nation’s technology base through scholarship and research.

VISION STATEMENT

The College of Engineering is resolved to become one of the country’s top 40 public engineering educational institutions. To bring this vision to reality, our college is committed to these five charges:

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

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

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

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

5. Partnering with academic, industrial and government entities that share and enhance the mission of the College of Engineering, so that our educational and collaborative efforts result in the maximum, positive, economic impact locally, regionally, nationally and globally.
The information in this report reflects the time period from July 1, 2005 through June 30, 2006.

The University of Tennessee does not discriminate on the basis of race, sex, religion, national origin, age, disability or veteran status in provision of educational programs and services or employment opportunities and benefits. This policy extends to both employment by and admission to the University.

The University does not discriminate on the basis of sex, or disability in its education programs and activities pursuant to the requirements of Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act (ADA) of 1990.

Inquiries and charges of violation concerning Title VI, Title IX, Section 504, ADA or the Age Discrimination in Employment Act (ADEA) or any of the other above referenced policies should be directed to the Office of Equity and Diversity (OED), 1840 Melrose Avenue, Knoxville, TN 37996-3560, telephone (865) 974-2498 (TTY available) or 974-2440. Requests for accommodation of a disability should be directed to the ADA Coordinator at the UTK Office of Human Resources, 600 Henley Street, Knoxville, TN 37996-4125.

The University of Tennessee, Knoxville, in its efforts to ensure a welcoming environment for all persons, does not discriminate on the basis of sexual orientation in its campus-based programs, services, and activities. Inquiries and complaints should be directed to the Office of Equity and Diversity.
I am pleased to report on the University of Tennessee College of Engineering’s progress during the 2006 fiscal year in this edition of our annual report.

As we continue to strive toward our goal to become one of the most outstanding engineering education programs in the country, significant progress can be measured in all areas, including detailed plans for new facilities, a higher quality student body, increased research expenditures and continuing efforts to build an exceptional faculty of internationally respected academics. Notable achievements in FY 2006 include:

**Facilities**—As most of you may remember, in 2005 the college received a transformational gift of $17.5 million from Dr. Min Kao, CEO of Garmin Ltd., of which $12.5 million was designated toward the construction of a new electrical and computer engineering building. Tennessee Governor Phil Bredesen and the State Legislature added an additional $25 million to the building initiative.

The site analysis for the facility, which is to be located on the corner of Cumberland Avenue and Estabrook Road, directly across from the 11th Street Parking Garage, is almost completed, and the architectural plans are currently in the last phase of completion. We hope to break ground on the new building in the spring of 2007.

Plans are also being finalized for the renovation of Estabrook Hall, the recipient of $16.6 million in state funding in 2005. Construction for the Joint Institute for Advanced Materials (JIAM), a COE-related building project funded with $30 million in state and federal grants, is slated to initiate by 2008.

The construction of these two new facilities and the renovation of Estabrook Hall will greatly assist the college in our mission to provide engineering students and faculty with state-of-the-art learning and research environments.

**Students**—The college had a total enrollment of 2,584 during the academic year 2005-06, with 1,826 undergraduate students and 758 graduate students. We continue to attract high-achieving students to the engineering program, and
this year’s entering freshman class had an average composite ACT score of 27.4.

Student diversity has improved: 16 percent of all COE students are females, while African-American (9 percent) and other underrepresented students (8 percent) have also shown notable increases. While the expiration of the Geier Consent Decree ends one era at the university, the COE remains committed to the recruitment and retention of underrepresented students through numerous programs including the Engineering Diversity Program (EDP) and the Diversity Engineering Scholarship Program (DESP); both have been in existence for several decades.

**Research**—Our research expenditures (gifts, grants and contracts) increased to $29.7 million in FY 2006, up from $27.9 million in FY 2005, an almost $7 million increase since FY 2003.

In this issue, we will introduce you to the 2006 Engineering Research Fellows and the 2006 Engineering Teaching Fellow. I established both of these awards in 2004 in order to recognize and reward outstanding professors, and this year’s group is truly exceptional.

The college also welcomed a new research center this year. The Scintillation Materials Research Center (SMRC), a joint venture between the COE and Siemens Medical Imaging, augments our research capabilities in an important innovative area while also providing new opportunities for economic enhancement in the region and the state.

**Faculty**—Our current faculty consists of four National Academy of Engineering members; two University Distinguished Scientists; eight Endowed Professorships; and two Chairs of Excellence in the college: the Ivan Racheff Chair in Materials Science and Engineering and the Henry C. Goodrich Chair in Civil Engineering.

In this issue, we are featuring two of our faculty members who have endowed professorships: Dr. Richard Komistek, the COE’s first Fred M. Roddy Professor of Biomedical Engineering, and Dr. Bamin Khomami, the new head of the Department of Chemical Engineering and the recipient of the Armour T. Granger and the Alvin & Sally Beaman Professorships.

As we move into the coming year, we express our appreciation for the ongoing support, encouragement and interest expressed by our alumni, friends of the college and corporate supporters. The future looks bright!

Please direct your comments to coe@utk.edu.

Sincerely,

Way Kuo

Dean and University Distinguished Professor,
The University of Tennessee College of Engineering
Sarah Kyker grew up on a dairy farm in Polk County, Tenn., where she and her brother helped milk cows, bale hay and work with steers.

“It was a lot of hard work, but my favorite chore was to bottle feed the calves,” said Kyker. “There were a couple of years that my dad would give each of us a young steer to work with. We showed them in the Polk County Fair, and I won first and second place in the showings. Later, when my dad sold them, he gave us the money to put towards our future college tuition.”

After graduating valedictorian from McMinn Central High School in Englewood, Tenn., Kyker moved to Athens to attend Tennessee Wesleyan College. Once she decided on a major, Kyker transferred to the University of Tennessee, where her father graduated.

“Chemistry was my favorite class in high school,” said Kyker. “Based on my love for it and mathematics and my success in those areas during high school, I decided a degree in chemical engineering would leave me open for several options in the future.”

Kyker also has a love for dancing and is president of the UT Dance Company. “Dance has always been a major part of my life,” said Kyker. “I have been classically trained in ballet and jazz since I was six years old. I have danced with Armfield Dance Academy and performed in Italy and Greece. Most recently, I danced with the UT Dance Company.”

Since beginning her undergraduate course work at UT, Kyker has completed three summer internships - two with the Tennessee Valley Authority (TVA) and one with Eastman Chemical Company.

“Both of my internships with TVA were in the chemistry and environmental department at Watts Bar where I worked on developing new procedures and revising old ones,” said Kyker. “I had several projects, but the one I worked longest on was the implementation of a new procedure for monitoring microbiological corrosion. I started this project during my first internship and finished it in my second.”

During her time with Eastman Chemical, Kyker worked in PET (Polyethylene terephthalate) Technical Services and Development assisting tech service representatives with sample preparation and submission.

“I also studied the effect of pellet moisture content on perform acetaldehyde generation,” said Kyker. “But the project I enjoyed most while at Eastman was making a stress crack comparison of enhanced resins versus competitive materials.”

While at UT, Kyker took advantage of the numerous social and academic organizations on campus. She is president of the UT
student chapter of the American Institute of Chemical Engineers, treasurer of the Dance Society and a member of Tau Beta Pi, National Society of Collegiate Scholars and Phi Sigma Theta National Honor Society. Kyker has also received the Col. S.H. Lockett Scholarship for the past two years and was recently awarded the Eastman Scholarship for her senior year.

“The sense of accomplishment I feel for being successful in such a rigorous academic program is extremely rewarding,” said Kyker. “The rewards I have received thus far are great, but they are nothing compared to the future benefits that will come from earning my undergraduate degree.”

As her undergraduate career comes to a close, Kyker plans to focus her research in hydrogen fuels. “It is a very important issue,” said Kyker. “The supply of oil and gas is declining while energy demand is vastly increasing. Hydrogen fuel cells generate electricity without combustion or pollution. The production of hydrogen from a renewable source would make an ideal fuel.”

When Kyker looks back on her experience at UT, she says it was not easy, but it was worth it. “Time management has been one of the biggest obstacles I have faced as an undergraduate. It is difficult enough to take a full load of classes, but when extra-curricular activities and family are added to the list, it becomes even harder to maintain the balance between work and play,” said Kyker. “Overall I have had a good experience in the COE. I have confidence in the quality of education I have received and feel prepared for whichever avenue I choose in the future.”

The University of Tennessee College of Engineering (COE) held its third annual spring commencement Friday, May 12th at 3:00 p.m. in the Knoxville Convention Center, Exhibit Hall B. The college conferred bachelor of science degrees on 206 spring and summer graduates.

Masood Parang, Associate Dean of Student Affairs, presided over the ceremony. Additional ceremony participants included COE Dean Way Kuo; college department heads and representatives; and Roger Parsons, director of the Engineering Fundamentals Division, who served as announcer during the presentation of the degrees.

Adam Christopher Hetzler, a nuclear engineering major, was recognized as the College of Engineering’s top graduate at the event.

Keynote speaker for the event was Dr. Jeffrey Wadsworth, Director of the Oak Ridge National Laboratory (ORNL) and CEO and President, UT-Battelle LLC. Wadsworth is also a Distinguished Research Professor in the COE’s Department of Materials Science and Engineering.

Wadsworth was named as the director of ORNL August 1, 2003. He was previously a senior executive at the Battelle Memorial Institute in Columbus, Ohio.
A young boy growing up in Santiago, Chile, Christian Seal got an early start on his engineering education from his parents. “They are both civil engineers who showed me projects and explained what they were doing,” said Seal. “I grew up in an environment that gave me a good idea of what engineering was and the type of work it would require.”

Seal remembers working with his mother on a project during his undergraduate work. “She was looking at the environmental impact a landfill would have and what would be necessary to minimize the impact,” said Seal. “My original job in the project was basically to collect data. This experience got me interested in the environmental field, and I started attending courses related to the environment and conservation.”

After receiving his bachelor’s degree in civil engineering from the Universidad de Santiago de Chile in 2001, Seal traveled to the United States to work on his graduate degree in environmental engineering at the University of Tennessee.

“The thing I like most about engineering is the way engineers look at things,” said Seal. “Engineers figure out the way things work, which is what I enjoy.”

Seal’s overseas experience at UT was an added bonus to his education because he was able to meet people from different parts of the world. “I learned different realities and ways of thinking at UT,” said Seal. “People from other parts of the world see things in a different way. Because of this, I was able to broaden my perspective of how people think and work.”

In addition to his graduate course work and research, Seal was involved in several organizations on campus. “I was a member of the student chapter of Air and Waste Management Association (A&WMA) and president during 2003-2004,” said Seal. “I was also a member of the Italian Table, a social organization that offers students the opportunity to meet and speak Italian each week.”

Outstanding Graduate Student Christian Seal
Seal’s interest in environmental engineering stems from problems in his homeland. Chile recognizes the need for effective wastewater treatment, especially for grease waste and oil. Most of the time this waste is dumped in the landfill, but with space running out and new regulations in place, innovative ways of treating wastewater are needed. While working on his degree in environmental engineering, Seal focused his research on the treatment of grease waste and how to effectively mitigate existing treatment problems. “I looked at the determination of design criteria for aerobic biological treatments of grease waste by filaments microorganisms in activated sludge as an alternative method for treatment,” said Seal.

Although Seal had no problem determining what he wanted to do, he did have some challenges when it came to getting things done.

“My biggest obstacle was writing reports,” said Seal. “I have dyslexia and need help from others to look over my reports.” However, this disability will not stop Seal from achieving his dreams.

After receiving his Ph.D. in December 2006, Seal packed up and headed home in search of a job at the Universidad de Santiago de Chile. “I want to be a professor of environmental engineering,” said Seal. “I would also like to work with the Chilean government to help improve the environmental quality of my country.”

Seal’s experience at UT was very valuable to him in many ways. “I was honored to be accepted into such an excellent program for environmental engineering. The quality of the education and facilities within which to work were good,” said Seal. “I also had the opportunity to interact with people from other fields of research, which resulted in making some really good friends during my time at UT.”

“Christian is very self-motivated. All I had to do was give him direction and he would carry it through,” said Dr. Gregory Reed, Seal’s advisor and Head of the Department of Civil and Environmental Engineering.

“It was an honor to be accepted to the program,” said Seal. “I would like to thank Dr. Reed for all the opportunities he gave me during my time at UT. He helped me to achieve one of my dreams.”
This past spring, high school students from Knox County and Oak Ridge got a "Sneak Peek" at what college life looks like at the University of Tennessee College of Engineering (COE). Organized by the College of Engineering Student Ambassadors, the undergraduate recruitment arm of the college, the Engineering Sneak Peek offered prospective high school students the opportunity to view many aspects and features of the college.

"The Sneak Peek event provided a way for top college applicants and prospective students to meet selected faculty, visit research laboratories, tour the engineering campus, meet the College Ambassadors and find answers to their questions and concerns," said Dr. Masood Parang, associate dean of student affairs.

After an introduction and presentations by Dr. Thomas Scott and William Schleeter from the Engineering Fundamentals Program and Dr. Parang, students began working on a sample Engineering Fundamentals project, which involved dynamics of projectiles and measurement of their kinematic properties using computers. This demonstration provided students a taste of what their freshman year would look like in the Engineering Fundamentals Program—one of the nation’s most innovative approaches to freshman engineering education. In this success-oriented environment, students are engaged to learn by interacting with others to create solutions to engineering problems in a hands-on approach that provides an excellent foundation for all of UT’s undergraduate engineering degree programs.

Students were also given a tour of four research laboratories in materials science, biomedical, electrical and mechanical engineering facilities in the COE. Assistants in each lab presented current research projects, exposing high school students to innovative research in the college.

"The Sneak Peek was a great success," said Tiffany McDavid, biomedical engineering junior and COE Ambassadors chairperson. "The number one question we get from prospective students is ‘what do your lab facilities look like?’ For students to see first-hand how much research is going on in the college helps influence their decision to attend UT.”

According to McDavid, the COE Ambassadors are looking forward to making the Engineering Sneak Peek an annual event.
The College of Engineering enrolled a total of 1,826 undergraduate students and 758 graduate students (both full and part-time) for a total student body of 2,584 during the 2005-2006 academic year. The HOPE Scholarship, funded by the Tennessee Lottery, continues to attract a large number of undergraduate students.

The COE’s freshman class totaled 538 in the fall of 2006. ACT test scores also continue to be high, with 27.4 as the incoming ACT composite score for the fall 2006 incoming class of engineering students.

Student diversity also improved, with a total of 151 African-American students, 36 Hispanic students and 30 international enrollees. In addition, 281 of 2005-2006 academic year enrolled students were female.

“We are pleased that the college has continued to meet its goals of increasing both student diversity and quality,” said Masood Parang, associate dean for student affairs. “The increase in the number of applicants due to the HOPE Scholarship provides a larger group of high-achieving students to recruit for engineering programs.”
In 1968, Tennessee State University (TSU) instructor Rita Geier filed suit against Tennessee, accusing the state of violating the law by maintaining a race-based dual system in higher education. By 2000, parties of the lawsuit, including the United States Department of Justice and other TSU faculty members, entered into the Geier Consent Decree, which called for scholarships and other initiatives to increase diversity in Tennessee’s public higher education institutions. Under this decree, the University of Tennessee (UT) established the African-American Incentive Grant and African-American Achiever Scholarship, which helped over 1,300 students enter into the university for a chance at higher education.

“When the Geier Decree established the two scholarships, it enhanced our demographics in the College of Engineering,” said Mr. James Pippin, director of Engineering Diversity Programs (EDP) for the college. “In addition, we received scholarships and funding from former students and administrators, which helped incoming freshmen.”

Almost four decades later, higher education in Tennessee is a reality for underrepresented groups, thanks to the Geier Decree, which recently ended. In a statement to the press, Governor Bredesen announced, “Tennessee has met the challenge set by the Geier lawsuit—to build a unitary public higher education system that truly offers equal access to all citizens; in Tennessee, the door really is open to all.”

The College of Engineering (COE) at UT has been a leader in African-American recruitment and retention since 1973, when the Minority Engineering Scholarship Program, later renamed the Diversity Engineering Scholarship Program, was established through the college. Ranked in the top 100 colleges and universities to have a significant number of African-American graduates each year, the COE Diversity Program also ranks 50th out of 386 diversity engineering programs across the country.

“Two new scholarship programs will also help to increase enrollment of underrepresented students. The Tennessee Pledge Scholarship program, launched in Fall 2006, guarantees economically disadvantaged students an education at UT. Combined with the HOPE lottery scholarship, UT scholarship resources will provide room, board, tuition and fees, making a university education an attainable goal.”

“Two new scholarship programs will also help to increase enrollment of underrepresented students. The Tennessee Pledge Scholarship program, launched in Fall 2006, guarantees economically
nderrepresented 7th- and 8th-grade students interested in an engineering career. Through team-building exercises, students enhance their communication skills and learn more about various engineering disciplines.

Other innovative programs offered through EDP include the Introduction of Sophomores to Engineering Principles (INSTEP), which provides instruction to rising 9th and 10th graders on the basics of engineering, while helping students learn problem-solving and design skills. The High School Introduction to Engineering Systems (HITES) for students entering the 11th and 12th grades focuses on the fundamentals of engineering and the design process, with emphasis on the importance of mathematics.

“Our pre-college programs increase the recruitment pool for COE,” said Pippin. “Sixty-five percent of students in these programs go into engineering, either at UT or another institution. The reputation is out there that we run a solid program for pre-college students.”

After being accepted to COE, students are enrolled in the Freshman Summer Bridge Program, a two-week summer residential program designed to help increase the number of minority engineering students successfully completing the engineering curriculum.

The Summer Bridge Program is administered by the Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP), a National Science Foundation sponsored program.

The graduating class of 2006 had a reminder of the obstacles overcome when Rita Geier was invited to give the Fall commencement speech.

“As I said to those assembled at the official end of the Geier case in September, litigation like this does not take place in a vacuum. It has been impacted by societal change and growth. It has not been a one dimensional change, and court orders are only part of the story,” said Geier to the crowd. “In the long path of this litigation, political empowerment has occurred; attitudes towards race and diversity have changed; social and economic progress have created new opportunities and imperatives; and finally we have had the dawn of enlightened self-interest—the realization that Tennessee cannot reach its full potential as a place of economic opportunity and quality of living with any group of people left behind.”
Faculty, staff and students at the College of Engineering are all excited about the construction of the new Department of Electrical and Computer Engineering (ECE) building. Groundbreaking is currently slated to take place May 14, 2007.

The building project, originally funded by a $12.5 million donation in 2005 from COE alumnus Dr. Min Kao, was enhanced when Tennessee Governor Phil Bredesen and the State Legislature provided a further $25 million in matching funds for the facility, bringing the building project to a total of $37.5 million for the 150,000 sq. ft. facility.

Kao, CEO of Garmin Ltd., one of the world’s largest manufacturers of Global Positioning Systems (GPS) products, donated a total of $17.5 million to the college, of which $5 million was designated toward a matching fund-raising initiative designed to create a $10 million endowment for the ECE Department.

“We are coming along very well with our plans for the building,” said Dr. Wayne Davis, COE associate dean for research and technology. “The architectural design will be completed in early 2007, after which the university will seek and award a contract with a construction firm. After the groundbreaking, we anticipate that the actual construction of the building will take about two and a half years, with completion in mid-to-late 2009.”

Sited on the east side of the area of campus known as “The Hill” on Estabrook Road between the Dougherty Engineering Building and Cumberland Avenue, directly across the street from the 11th Street Parking Garage, the six-floor building will include a soaring atrium, a classroom annex, a 2,500 sq. ft. auditorium and a spacious deck with a magnificent view of downtown Knoxville. The building will also overlook a City of Knoxville-owned greenway, which is currently receiving an extensive landscaping upgrade.

The two architectural firms hired for the project, Bullock Smith and Partners and Lindsay and Maples Architects, are working closely with the ECE Department to create a plan...
for the building, which will house the majority of ECE class-
rooms, laboratories, faculty and administrative offices and a
6,000 sq. ft. clean room.

Plans are also progressing for the renovation of Estabrook
Hall. The building was the recipient of $16.6 million in reno-
vation funding from the Tennessee State Legislature in 2005. The multi-disciplinary architectural and engineering group
Grieves and Associates and Pro2Serve have been selected to
direct the project. The architects and the principal occupant, the Department of Civil and Environmental Engineering, are
meeting on a regular basis to address the needed design fea-
tures. A groundbreaking date has not yet been designated,
since the current occupants must be relocated to temporary
facilities before beginning the renovation.

Another COE-related building project is the new Joint Insti-
tute for Advanced Materials (JIAM) building. Funded by $30
million in federal and state grants, JIAM will house laborato-
ries and offices for faculty and researchers from UT and ORNL
who are extensively involved in materials research.

Barber & McMurray and Bullock Smith and Partners have
been selected as architects for the project, and site reviews
and project planning are currently taking place.

The new and renovated buildings will allow the college to
accommodate growing enrollments and will provide more
advanced facilities to enhance learning and research oppor-
tunities for students and faculty.

In addition to the three new COE facilities, the UT-Knoxville
campus currently has several major building and renova-
tion projects in the works, including the College of Business
Administration’s Glock Hall; a new aquatic facility; the
renovation of Neyland Stadium; and the completion of the
Hesler Biology Building Phase II.

“This is an exciting time for the college, to be in the midst
of the design and construction of all of these new facilities,”
Davis said. “We’ve just got to stay organized and focused on
planning ahead to make the best use of both our new and
current space.”
The College of Engineering Research Fellow Awards and the COE Teaching Fellow Awards were established in 2004 by Dean Way Kuo to recognize and reward outstanding professors. In addition to a plaque presentation at the COE joint faculty/staff meeting during the fall semester, the Fellow Awards include additional funding and support.

**The COE Teaching Fellow Award**

The 2006 recipient is Dr. Edwin Burdette, the Fred N. Peebles Professor of Civil Engineering in the Department of Civil and Environmental Engineering (CEE). Burdette, a member of the COE faculty since 1969, has been active in both research and teaching and has consulted extensively in the area of structural engineering. Burdette received his Ph.D. from the University of Illinois in 1969.

**The COE Research Fellow Awards**

**Dr. David Keffer**, associate professor in the Department of Chemical Engineering (ChE), whose research areas include molecular modeling of transport phenomena in flowing polymers, lubricants and fuel cell systems, is the principal investigator of research teams including colleagues from the ChE department and ORNL for projects developing a fundamental understanding of proton transport in fuel cells, the effect of molecular architecture on lubricant stability and new techniques for rigorous molecular-level simulation. Last year, Keffer’s group received, among other grants, $825,000 in funding from the U.S. Department of Energy (DOE) and a $575,000 grant from the Air Force Office of Scientific Research (AFOSR).

**Dr. Chris Cox**, associate professor in the Department of Civil and Environmental Engineering, has partnered with Dr. Michael Simpson, a UT-ORNL Distinguished Scientist and professor in the Department of Materials Science and Engineering (MSE), as well as two other members of an inter-disciplinary team, to develop computational models of genetic regulatory processes. The research was funded by a $1 million grant co-funded by the National Science Foundation (NSF) and the Defense Advanced Research Projects Agency (DARPA) and a $75,000 grant from the prestigious National Academies Keck Futures Initiatives.

**Dr. Ben Blalock**, associate professor in the Department of Electrical and Computer Engineering (ECE), whose research areas encompass analog/mixed-signal integrated circuit design for extreme environments, ultra low voltage CMOS IC design and monolithic sensors, was awarded four grants from the National Aeronautics and Space Administration (NASA) Exploration Systems Research and Technology program to develop prototype chips for robotic missions to the moon, scheduled to take place by 2020. Blalock is also part of a collaborative research effort, funded by NSF, with Kansas State University and UT-ORNL joint faculty Dr. Charles Britton to develop a CMOS instrumentation ASIC and a silicon-based neutron detector for the Spallation Neutron Source (SNS) in Oak Ridge, Tenn.

**Dr. Hahn Choo**, assistant professor in the Department of Materials Science and Engineering, is a joint faculty member.
with the Materials Science and Technology Division of ORNL and co-director of the NSF International Materials Institute (IMI) at UT. Choo’s current research interests include neutron diffraction studies on deformation micromechanics of structural materials. Choo received the Chancellor’s Citation for Professional Promise in Research and Creative Achievement in 2006 and was also a COE Research Fellow in 2005.

**Dr. Narendra Dahotre**, who is also a professor in the MSE department, is another UT-ORNL joint faculty member. Dahotre is the founder of the UT-ORNL-University of Tennessee Space Institute (UTSI) Joint Center for Advanced Photonics Processing (JCAPP). He is a Leader in laser materials processing activities in the Materials Processing Group of the Materials Science and Technology Division at ORNL. Dahotre’s research interests include surface engineering of biomaterials, science and engineering of laser materials interactions and structure-property relation.

**Dr. Philip Rack**, associate professor in the MSE department, performs research in nanofabrication and thin film processing; combinatorial materials synthesis and characterization; and electronic, optoelectronic and biological device fabrication and integration. Rack is currently working with other researchers at ORNL affiliated with the Molecular-Scale Engineering and Nanoscale Technologies (MENT) Research Group on a $1.4 million project to utilize nanoscale fabrication facilities at both UT and ORNL to develop new synthetic interfaces with biological materials.

**Dr. Richard Komistek** is the Roddy Professor of Biomedical Engineering in the Department of Mechanical, Aerospace and Biomedical Engineering (MABE). His research interests include developing mathematical models of the human body musculoskeletal system, in vivo kinematic and kinetic analysis of the human body and design of total joint implantable devices. Komistek previously received the College of Engineering Research Fellow Award in 2004.

**Dr. Wesley Hines**, professor in the Department of Nuclear Engineering (NE), is involved with research in the areas of applied artificial intelligence, surveillance and diagnostics, instrumentation and control, modeling and simulation and maintenance and reliability engineering. Hines has a very diverse funding base; in 2006, he received research dollars from six different agencies. He is the director of the COE’s newly established reliability and maintainability engineering master’s degree and certificate programs.

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2006 Research Fellows *(left to right)* Dr. Ben Blalock, Dr. David Keffer, Dr. Chris Cox, Dr. Wesley Hines, Dr. Narendra Dahotre, Dr. Hahn Choo and Dr. Philip Rack. Not pictured, Dr. Richard Komistek.
Dr. Loren Crabtree, UT-Knoxville chancellor, formally announced the establishment of the college’s new Scintillation Materials Research Center (SMRC) March 22, 2006.

SMRC specializes in both the growth and characterization of scintillation materials, which are used in a diversity of applications, including medical imaging systems for detection of diseases, homeland security applications, energy exploration and high energy physics. The center will also focus on neutron research, particularly in relation to investigative activities currently being conducted at the Spallation Neutron Source (SNS), a project located near the Oak Ridge National Laboratory (ORNL) and funded by the U.S. Department of Energy.

Siemens Medical Solutions Molecular Imaging collaborated with the COE to establish the new, $4 million center, located in the college’s Science and Engineering Research Facility (SERF). The affiliation between the college and Siemens was facilitated through CTI Molecular Imaging, Inc., a Knoxville-based company purchased by the Siemens Corporation in April of 2005.

Founded in 1983 by four College of Engineering alumni, Terry Douglass (BS/EE ’65; MS/EE ’66; PhD/EE ’68), James “Kelly” Milam (BS/EE ’61, MS/EE ’64), Michael Crabtree (BS/EE ’73; MS/EE ’75) and Ron Nutt (BS/EE ’61; MS/EE ’62; PhD/EE ’69), CTI became internationally recognized for the development of Positron Emission Tomography (PET) scanners, which use scintillator crystals to aid in the early detection of cancer and other diseases such as Alzheimer’s.

Dr. Chuck Melcher, a former senior scientist with Schlumberger-Doll Research and director of scintillator research at CTIMI since 1996, is the director of the new center.

SMRC will use resources provided by both Siemens and the COE to identify and develop innovative materials and to establish potential commercial applications for these materials. Melcher and colleague Merry Spurrier, who is currently a research associate with the center, were both employed by CTI for more than eight years prior to coming to UT.

Wayne Davis, the COE’s associate dean for research and technology, envisions the SMRC as a groundbreaking example of industry-university cooperative partnerships.

“The college is developing synergistic relationships with a number of companies to further the advancement of science, and we are particularly excited about the opportunity to collaborate with Siemens and the impact this has on the economy in the Tennessee Valley,” Davis stated. “The university continually seeks research alliances with technology-based businesses that enhance our local, state and national economy.”
RESEARCH CENTERS

The Center for Materials Processing (CMP)
The CMP was established as a “Center of Excellence” by the Tennessee Higher Education Commission (THEC) to unite students, academic staff, researchers and industry professionals to promote education, research and development and technology transfer in the area of materials. The center is funded by THEC, industry and federal contracts.

During 2005-2006, 12 Master of Science and 21 Doctor of Philosophy degrees were awarded to students who conducted part or all of their research with CMP support.

The CMP continues its strong relationship with the Oak Ridge National Laboratory (ORNL). Twelve research faculty members were assigned as guests to conduct research and development activities at the facility.

The Maintenance and Reliability Center (MRC)
A university-industry association, the MRC is dedicated to improving industrial productivity, efficiency, safety and profitability through advanced reliability engineering and maintenance management practices.

MRC’s membership includes 32 companies, and the participation of those organizations at the center’s best practices meetings and MARCON conference was outstanding. Thirty engineering students gained valuable work experience as interns employed by several of the MRC’s member companies during the summer. The center also led several research projects, including directing a multi-departmental team performing research and development activities in the area of world class maintenance and reliability practices, a collaboration that brought in almost $500,000 in funding.

The MRC also sponsored and helped establish a new college-wide master’s degree program in Reliability and Maintainability Engineering. This new curriculum neatly compliments the MRC’s existing partnership master’s degree program with Monash University in Australia.

The Center for Transportation Research (CTR)
The Center for Transportation Research was created in 1970 to foster and facilitate interdisciplinary research, public service and outreach in the field of transportation at UT.

At the national level, CTR successfully competed for the Region 4 U.S. Department of Transportation University Transportation Center and will remain the lead institute for the Southeastern Transportation Center (STC). Federal funding for the next four years has doubled to $2 million per year. Comprehensive Transportation Safety is the program’s theme. Also, CTR completed work under year one of a multi-year agreement with the Children’s Health Fund, aimed at mitigating transportation barriers to health care access for disadvantaged children across the rural south. At least one pilot project will be initiated in Tennessee during the current calendar year.

At the state level, the Tennessee Department of Transportation (TDOT) developed a set of 12 Rural Planning Organizations (RPOs) in accordance with the 2004 surface transportation bill. As a part of a $400,000 grant, CTR will work with the UT Center for Business and Economic Research to provide training and technical assistance to RPO personnel.

Closer to home, the 10th National Tools of the Trade Conference took place in Nashville, Tenn., in September. Sponsored by CTR, Federal Highway Administration, Federal Transit Administration, TDOT and others, 270 participants attended sessions on a variety of topics related to the transportation planning needs for small and medium-sized communities.
As a “citizen of the world,” the well-traveled Dr. Bamin Khomami has now added Knoxville, Tennessee to his resume of residences.

Since taking the helm of the COE’s Department of Chemical Engineering in 2006, Khomami—who has lived in Italy, Iran, England, Spain, Denmark, New York City, Boston, San Francisco and St. Louis—is adjusting to the environments of a mid-sized southern city and a large public university.

“When I was in high school, I loved physics and mathematics, so I decided to pursue a degree in engineering physics through a special honors program,” Khomami said. “Eventually, I gravitated toward engineering, and gave both chemical and electrical engineering a try. Luckily, the first class I took in chemical engineering was fluid mechanics and that course influenced me to pursue that field of study.”

Khomami received his B.S. degree in chemical engineering from Ohio State University and his M.S. and Ph.D. degrees in chemical engineering from the University of Illinois-Urbana. During his stint at Ohio State, Khomami played NCAA soccer, eventually going to the semi-professional level during his years in graduate school.

Khomami joined the faculty of Washington University as an assistant professor and was then promoted to an associate professor and named the Francis F. Ahmann Professor of Chemical Engineering. He also joined the adjunct faculty at Stanford University, a relationship that continues today.

Khomami’s current research activities primarily deal with engineering of materials with a desired micro-or nano-structure in addition to the application of nanotechnology, including large scale integrated nano/micro fluidic devices, to biology, chemistry and medicine. His research has resulted in more than 100 refereed journal publications as well as many presentations at national and international meetings.

The challenge of leading a department in transition appealed to Khomami, who was named as the Armour T. Granger and Alvin & Sally Beaman Professor and Head of the Chemical Engineering Department when he accepted the position with the COE.

“We have several things we need to accomplish in the coming years,” Khomami added. “First and foremost, it is now clear that biology is on an equal footing with chemistry, physics and mathematics as a primal foundation for chemical engineering. We need to reorganize the department and realign our priorities to answer global challenges in
health care, the environment, renewable energy sources, national security and economic prosperity.”

Khomami envisions multidisciplinary interactions as a way to accomplish these goals.

“We are presently in the process of developing innovative partnerships with other disciplines at UT, including medical, life and physical sciences, as well as with the College of Business,” Khomami added. “It’s also important to focus on developing core researchers in the biomolecular area, not only for UT, but as part of our relationship with ORNL. I also envision the advancement of a focus on sustainable energy and advanced materials as one of our most important missions.”

Khomami also cited the re-naming of his academic unit as the Department of Chemical and Biomolecular Engineering, currently planned for 2007, as a top priority and stressed the importance of emphasizing UT’s burgeoning research efforts.

“If we are striving to be known as a first-class university, then it is imperative that all faculty members also function as researchers and are engaged and active at the forefront of their particular area. Our students deserve to get their knowledge from the best experts in the field; we should have seamless boundaries between teaching and research,” Khomami said.

Although Khomami admitted that he has little time for recreation (“I work all of the time,” he joked), he has been pleasantly surprised by both the places and the people in the Knoxville area.

“Everyone that I have met in Knoxville has been very patient, kind and polite,” he added. “And the area is so beautiful! It’s a wonderful place to live and work.”
The COE’s biomedical engineering program continues to flourish, attracting record numbers of students each year. Dr. Richard Komistek, the Fred M. Roddy Professor of Biomedical Engineering and co-director of the UT Center for Musculoskeletal Research (CMR), is not surprised.

“What we’ve done with this center is to create something that is different—we deal with biomechanics, biocontrols, bioimaging, biosensors and other related research—and we try to involve students from all over the world,” Komistek said.

Komistek joined the Department of Mechanical, Aerospace and Biomedical Engineering in January of 2003. Prior to coming to UT, Komistek was the president and executive director of the Rocky Mountain Musculoskeletal Research Laboratory in Denver, Colo., where he partnered with Dr. Douglas Dennis, a world-renowned orthopedic surgeon, and Dr. Mohamed Mahfouz, his CMR co-director at UT.

Komistek believes that his strong research background provides a fresh approach to his teaching in the classroom.

“One of the reasons I decided to join academia was to teach and interact with students. I not only have the opportunity to instruct students in the classroom, but also to find assistants to help with my research projects,” Komistek added.

“The research provides me with an opportunity to continue teaching the latest concepts to students. I don’t use textbooks; most of my instruction is through journal articles and real-life problems that the students and I create each semester. I also invite guest lecturers, orthopaedic surgeons and biomedical engineers who are industry professionals. It’s more of a hands-on approach.”

Komistek, who received his B.S., M.S. and Ph.D. degrees in mechanical engineering from the University of Memphis in Memphis, Tenn., established the UT Center for Musculoskeletal Research with fellow biomedical engineering professor Dr. Mohamed Mahfouz.

“What Dr. Mahfouz and I have done is to bring a proven program from Denver to UT to do cutting-edge research that is not being done anywhere else in the world. We like to joke that we are the ‘McDonald’s of the biomedical world’—the
biomedical companies pull up, tell us what they need and we get it done. The hands-on research really benefits everyone—the companies, the students, the doctors, the surgeons and the patients,” Komistek added.

The primary focus of biomedical engineering is to create long-wearing, sustainable implants to replace joints in the human body that are worn or diseased and to conduct research leading to significant advances in the implants allowing patients to lead a normal life. Present implants can fail prematurely, between 2-10 years, and the patients’ activity levels then become limited.

“Our real goal is to help people with arthritis and other disabilities to live better lives,” Komistek commented. “We’re dealing with implants for every joint in the body now—the ultimate goal is to have an implant that will last the lifetime of the recipient.”

Komistek was named the first Fred M. Roddy Professor of Biomedical Engineering in 2006. The professorship, which recognizes excellence in biomedical teaching and research, was established in honor of UT alumnus Fred M. Roddy, a 1927 mechanical engineering graduate and founder of the Cumberland Engineering Company.

Komistek is also a member of the prestigious Knee Society and won its Coventry Award in 2003. He was also named as a College of Engineering Research Fellow in 2004 and 2006 and is the Executive Director of the International Society of Technology in Arthroplasty. In 2005, he was asked to be the guest editor for the Journal of Biomechanics for an edition focused on knee mechanics.

Komistek has high hopes for the future of the biomedical engineering program at UT. Already, two of the program’s students have won international awards for the best biomechanics papers.

“I can see eventually competing for larger government grants and added research funding. We also want to maintain the quality of our students and keep bringing in the best and brightest from around the world,” Komistek said.

Komistek also wants the students to leave UT prepared for a profession in biomedical engineering.

“We want our students to have a definitive career experience—to leave UT with a program, not just a degree,” Komistek added. “They will know how to write proposals, secure grants, get funding, present at international conferences and write reports. We want our students to eventually develop and create even more successful programs than the one we presently have at CMR. They will leave here ready for the real world—that’s what counts.”
The origins of the College of Engineering at The University of Tennessee date back to 1838. It is the fourth oldest engineering college in the nation.

**Total Enrollment Full-Time Programs**
- Undergraduate: 1,826
- Graduate: 758
- Total: 2,584

**Degrees Granted**
- Bachelor of Science: 273
- Master of Science: 184
- Doctor of Philosophy: 41
- Total: 498

**Faculty**
- Professors: 74
- Associate Professors: 35
- Assistant Professors: 28
- Total: 137

There are four National Academy of Engineering members; two UT-ORNL Distinguished Scientists; two University Distinguished Professors; two Distinguished Research Professors; one UT-Battelle Distinguished Professor; eight Endowed Professorships; and two Chairs of Excellence in the college: the Ivan Racheff Chair in Materials Science and Engineering and the Henry C. Goodrich Chair in Civil Engineering.

**Student/Faculty Ratio**
21:1 (undergraduate)

**Accreditation**
The university’s engineering academic programs are fully accredited by the ABET Engineering Accreditation Program.

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**Colleges and Schools**
- College of Agricultural Sciences and Natural Resources
- University of Tennessee Space Institute

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**Academic Support Programs and Diversity Initiatives**
- Engineering Fundamentals Division
- Engineering Advising Services
- Office of Professional Practice
- Diversity Engineering Scholarship Program
- Engineering Diversity Programs Office
- Pipeline Engineering Diversity Program
- Tennessee Louis Stokes Alliance for Minority Participation

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**Note:** The Department of Biosystems Engineering and Soil Science in the College of Agricultural Sciences and Natural Resources offers B.S., M.S., and Ph.D. degrees in Biosystems Engineering.
**Leadership Team**

<table>
<thead>
<tr>
<th>Name</th>
<th>Title and Details</th>
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<tbody>
<tr>
<td>Dr. Way Kuo</td>
<td>Dean of Engineering and University Distinguished Professor</td>
</tr>
<tr>
<td>Dr. Alberto Garcia</td>
<td>Associate Dean for Academic Affairs</td>
</tr>
<tr>
<td>Dr. Masood Parang</td>
<td>Associate Dean for Student Affairs</td>
</tr>
<tr>
<td>Dr. Wayne T. Davis</td>
<td>Associate Dean for Research &amp; Technology</td>
</tr>
<tr>
<td>Dr. Luther Wilhelm</td>
<td>Associate Dean for Special Projects</td>
</tr>
<tr>
<td>Judy Moore</td>
<td>Director of Finance and Administrative Affairs</td>
</tr>
<tr>
<td>Patricia Shea</td>
<td>Director of Engineering Development</td>
</tr>
<tr>
<td>Margie Russell</td>
<td>Director of Engineering Advising Services</td>
</tr>
<tr>
<td>Dr. J. Roger Parsons</td>
<td>Director of the Engineering Fundamentals Division</td>
</tr>
<tr>
<td>James T. Pippin</td>
<td>Director of Engineering Diversity Programs</td>
</tr>
<tr>
<td>Walter Odom</td>
<td>Director of the Office of Professional Practice</td>
</tr>
<tr>
<td>Kim Cowart</td>
<td>Manager of Engineering Communications</td>
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**Research Expenditures**

(Gifts, Grants and Contracts) by Fiscal Year

<table>
<thead>
<tr>
<th>Year</th>
<th>Millions of Dollars</th>
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<tbody>
<tr>
<td>2001</td>
<td>$17.8</td>
</tr>
<tr>
<td>2002</td>
<td>$18.3</td>
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<tr>
<td>2003</td>
<td>$22.2</td>
</tr>
<tr>
<td>2004</td>
<td>$26.1</td>
</tr>
<tr>
<td>2005</td>
<td>$27.9</td>
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<tr>
<td>2006</td>
<td>$29.7</td>
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**Board of Advisors for FY 2006**

<table>
<thead>
<tr>
<th>Name</th>
<th>Title and Details</th>
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</thead>
<tbody>
<tr>
<td>Dr. Bert Ackermann Jr.</td>
<td>(BS/NE '65, MS/NE '67, PhD/NE '71) CEO, SPINLAB Knoxville, Tenn.</td>
</tr>
<tr>
<td>Ms. Karyl Bartlett</td>
<td>(BS/ME '84, MBA '00) Director, Composite Manufacturing Center, Boeing Fabrication The Boeing Company Seattle, Wash.</td>
</tr>
<tr>
<td>Mr. Thomas R. Blose Jr.</td>
<td>(BS/CE '70) Retired Brentwood, Tenn.</td>
</tr>
<tr>
<td>Dr. Tom F. Cheek Jr.</td>
<td>(BS/EE '61, PhD/EE '69) Vice President of R &amp; D Epic Systems, Inc. Dallas, Texas</td>
</tr>
<tr>
<td>Mr. Joe C. Cook Jr.</td>
<td>(BS/IE '65) Founder and Principal Mountain Group Capital, LLC Nashville, Tenn.</td>
</tr>
<tr>
<td>Dr. Mark E. Dean</td>
<td>(BS/EE '79) Vice President and IBM Fellow IBM Almaden Research Center San Jose, Calif.</td>
</tr>
<tr>
<td>Dr. R. G. Gilliland</td>
<td>(BS/Chem '58, MS/MetE '63) Retired Pittsburgh, Pa.</td>
</tr>
<tr>
<td>Mr. Ron Green</td>
<td>(BS/EPh '70, MS/EPh '78) Chairman ADVATECH, LLC Charlotte, N.C.</td>
</tr>
<tr>
<td>Mr. H. M. Hashemian</td>
<td>(MS/NE '77) President and CEO Analysis &amp; Measurement Services Co. Knoxville, Tenn.</td>
</tr>
<tr>
<td>Mr. Dwight N. Hutchins</td>
<td>(BS/Chem '86) Partner Accenture Washington, D.C.</td>
</tr>
<tr>
<td>Dr. H. Lee Martin</td>
<td>(BS/Chem '78, PhD/Chem '86) Managing Member Clarity Resources, LLC Knoxville, Tenn.</td>
</tr>
<tr>
<td>Mr. Edwin A. McDougle</td>
<td>(BS/CEE '69, MS/CEE '75) Principal Ross Bryan Associates, Inc. Engineers Nashville, Tenn.</td>
</tr>
<tr>
<td>Mr. Raja J. Jubran</td>
<td>(BS/CEE '81) Chairman and CEO Denark Construction Inc. Knoxville, Tenn.</td>
</tr>
<tr>
<td>Mr. H. A. Martin</td>
<td>(BS/Chem '83, MS/EEE '84) Principal Vice President, Engineering and Operations E.I. DuPont de Nemours Corp. Wilmington, Del.</td>
</tr>
<tr>
<td>Mr. Andrew K. Phelps</td>
<td>(BS/ChE '65) Principal Vice President Bechtel National Inc. Los Alamos, N.M.</td>
</tr>
<tr>
<td>Mr. James B. Porter Jr.</td>
<td>(BS/Chem '65) Vice President of Engineering and Operations E.I. DuPont de Nemours Corp. Wilmington, Del.</td>
</tr>
<tr>
<td>Mr. Richard T. Snead</td>
<td>(BS/IE '73) President and CEO Carlson Restaurants Worldwide Carrollton, Texas</td>
</tr>
<tr>
<td>Mr. Mike Young</td>
<td>(BS/CE '71, MS/EnvsE '72) Senior Vice President/CEO Allen and Hoshall, Inc. Memphis, Tenn.</td>
</tr>
</tbody>
</table>
For Mark Dean, the road to success truly started with an engineering degree from the University of Tennessee.

Dean, an IBM Fellow and vice president of IBM’s Almaden Research Center in San Jose, Calif., possesses an incredibly long list of honors that includes the National Institute of Science (NIS) Outstanding Scientist Award in 2006; membership in the prestigious National Academy of Engineering in 2001; the Black Engineer of the Year Award from the Career Communications Group in 2000; induction into the National Inventors Hall of Fame in 1997; and a designation as the first African-American IBM Fellow in 1995. Dean also serves on UT’s College of Engineering Board of Advisors.

As the son of a teacher and a TVA dam manager growing up in Jefferson City, Tenn., Dean set his sights on an engineering career at an early age. He came to UT at a fortuitous time; the College of Engineering had just established a new Minority Engineering Scholarship Program (MESP), under the direction of Fred Brown. As part of his participation in the program, Dean co-oped at Alcoa Aluminum in nearby Alcoa, Tenn., where he supported the design, installation and start-up of large-scale furnace and mill control systems and also developed a plant lighting system.

“MESP gave me a chance to attend a quality university and prepared me for working in the industry,” Dean said. “The scholarship funding it provided helped to cover my university expenses, and the co-op program gave me valuable experience in working in the real world of engineering. MESP also allowed me to interact with other black students who had similar backgrounds, capabilities and interests.”

Dean graduated with Highest Honors in 1979, receiving a bachelor’s degree in electrical engineering.

“My education at UT provided me with two important things,” Dean added. “First, the ability to apply
technologies and design methods to solve relevant problems—the curriculum included many lab-based courses—and second, the ability to work as part of a team in a real engineering work environment in the co-op program.”

After graduating from UT, Dean accepted a position with IBM, working as an engineer in the corporation’s Boca Raton, Fla., location. Dean was the Chief Engineer of the IBM PC system architecture and development group. As an early developer of computer architecture and input/output (I/O) device interfaces, allowing IBM and IBM-compatible personal computers to run high-performance software, Dean was on the forefront of the PC revolution.

Dean received a master’s degree in electrical engineering from Florida Atlantic University in 1982. He also completed a Ph.D. in electrical engineering at Stanford University in Stanford, Calif., in 1992.

After occupying various positions at IBM facilities in Texas, New York State and Arizona, Dean was named to his current position in 2004. He is primarily responsible for projects, strategy and focus at Almaden, one of IBM’s eight premiere research centers worldwide.

The facility supports over 400 scientists and engineers who are performing exploratory and applied research in hardware, software, and services.

Dean also remains supportive of the COE’s diversity initiatives, which he sees as vital to the increasing emphasis on teamwork and global collaboration in the engineering field.

“There continues to be a tremendous need to broaden the diversity of cultures and races in the technology industry,” Dean commented. “This diversity increases the insight of functionality required in emerging products and services, and it is important that our educational and corporate institutions reflect the cultural diversity in our society. Corporations and institutions that promote diversity have stronger brands and better products and services.”

Dean, who lives in Morgan Hill, Calif., with his wife Denise, also maintains that engineering should be fun.

“I would advise any incoming freshman to enjoy being an engineer,” Dean said. “Be curious, engaging and bold, finding new ways of doing things and discovering what is yet unknown in fields like nanotechnology, biotechnology, environmental sciences, technology services, energy, healthcare and digital media. Be sure to make the most of your opportunities right now.”

Dr. Mark Dean (left) with his parents James and Barbara Dean at the 2005 Honors Banquet.

Dr. Mark Dean was the speaker at the 1999 UT Fall Commencement Ceremonies.
During 2005-2006, the UT College of Engineering Development Office expanded efforts to capitalize on the fund-raising opportunities provided during FY 2005.

**The ECE Challenge Campaign**

The COE received a $17.5 million pledge from Dr. Min Kao, CEO of Garmin, Ltd., in FY 2005, $5 million of which was designated toward a dollar-for-dollar challenge to other individual donors, corporations and foundations to match those private funds to create a $10 million endowment for the Department of Electrical and Computer Engineering (ECE).

At the 2005-2006 Honors Banquet, the COE received a $1 million pledge from the four COE alumni who founded the medical imaging corporation CTI (see page 28 for the article) in answer to Dr. Kao’s challenge. The gift from the CTI founders will establish the CTI Chair in the ECE Department.

Gift criteria for the ECE Challenge Campaign include:

- Gifts and pledges must benefit the ECE department and be used to establish new endowed accounts for student or faculty support, programmatic support or departmental operational support.
- Gifts may be used to contribute toward the new ECE endowment, the ECE Fund for Excellence or existing endowments named in honor of ECE faculty (minimum of $1,000), including:
  - Robert Bodenheimer Fellowship
  - Frank and Joan Uhl Pierce Engineering Endowment
  - Vaughn Blalock Graduate Award
  - W.O. Leffell Scholarship
- Gifts may be designated to “name” particular areas of the new ECE building.

Donations may be made in the forms of cash, securities, planned gifts or bequests. In-kind gifts do not count, and pledges must be documented in writing. As of June 30, 2006, the campaign has raised over $2.4 million.

**The University of Tennessee Capital Campaign**

The university is working on a system-wide capital campaign to focus on raising funds for student support, buildings and renovations and academic and research programs.

COE campaign priorities include:

- Building construction and renovation, including the new Min H. Kao Electrical and Computer Engineering Building and the renovation of Estabrook Hall.
- Named chairs and professorships
- Enhanced faculty research and teaching fellowships
- Increased student support through scholarships and fellowships
Categories of Giving

Donor Clubs and Recognition Levels
- *The Century Club*—Annual gifts of $100-$499 by individuals
- *The University Circle*—Annual gifts of $500-$999 by individuals
- *Annual President’s Club*—Annual gifts of $1,000 or more by individuals
- *The Tennessee Society*—$25,000 paid as a single gift, or $2,500 per year for 10 years
- *The Heritage Society*—Recognizes individuals and/or organizations whose cumulative giving exceeds $50,000 or pledges payable at $5,000 a year for 10 years.
- *The Benefactors Society*—Recognizes individuals and/or organizations whose cumulative giving exceeds $100,000 or pledges payable at $10,000 a year for 10 years.
- *The Charles Dabney Society*—Recognizes individuals and/or organizations whose cumulative giving exceeds $500,000.
- *The Founders Society*—Recognizes individuals and/or organizations whose cumulative giving exceeds $1,000,000.
- *1794 Society*—Recognizes individuals and/or organizations whose cumulative giving exceeds $5,000,000.
- *The Torchbearer Society*—Recognizes individuals and/or organizations whose cumulative giving exceeds $10,000,000.

Additional Methods of Giving
- *Employer Matched Contributions*—a program where employee gifts to The University of Tennessee are “matched” by the employer.
- *Planned gifts*—provide an individual with the opportunity to combine his or her personal charitable interests with long-range financial and estate planning utilizing options including real estate, stocks, trusts and bequests.
- *Online donations*—visit [https://ecommerce.cas.utk.edu/alumni/](https://ecommerce.cas.utk.edu/alumni/) to donate online.

- Program support for cooperative education and diversity initiatives

The ECE Challenge Campaign is also included in the UT capital campaign fund-raising efforts.

Giving Guidelines

As a state-assisted (not state supported) institution, the University of Tennessee receives approximately 36 percent of its budget from state appropriations. As support from state and federal sources has leveled, private support is playing an increasingly important role in maintaining and enhancing the strength of the college and the university.

Donors who support programs of personal interest earmark approximately 90 percent of the gifts received each year. Each dollar contributed supports the designated program, since no administrative costs are taken from these gifts.

Certified as a qualified charitable organization, the university meets all requirements of the Internal Revenue Service within the code sections 501(c)(3).

If you are interested in providing support to the College of Engineering, please contact:

Engineering Development Office  
Patricia Shea, Director  
The University of Tennessee  
College of Engineering  
120 Perkins Hall  
Knoxville, TN 37996-2012  
(865) 974-2779  
(865) 974-2015 FAX  
E-mail: engrdev@utk.edu  
Web: [http://www.engr.utk.edu/coe/new_devwel.htm](http://www.engr.utk.edu/coe/new_devwel.htm)
When Michael Crabtree, the president, chief executive officer and chairman of the board of IdleAire Technologies Corporation, was invited to attend the 2005-2006 Honors Banquet, the intention was to surprise him with the announcement of his designation as the winner of the prestigious Dougherty Award, named in honor of UT graduate and former COE Dean Nathan Dougherty.

Instead, the COE faculty, staff and students who attended the event received a surprise when Crabtree announced a gift of $1 million to the university from the founders of CTI Molecular Imaging to establish a new CTI Chair in the Department of Electrical and Computer Engineering (ECE).

Crabtree joined fellow alumni and former CTI founding partners Dr. Ronald Nutt, Kelly Milam and Dr. Terry Douglass in providing the funding for the new chair. The other three CTI founders were present at the event for the announcement.

This year’s announcement by Crabtree was the second time the college received a $1 million donation at the Honors Banquet. At the 2004 event, Nutt made a $1 million challenge gift to the COE.

Crabtree received B.S. and M.S. degrees in electrical engineering from UT, as well as an Executive M.B.A. degree from UT’s Executive Development Program. After receiving his graduate degree, Crabtree joined Douglass, Milam and Nutt at EG & G ORTEC, a technology company in Oak Ridge, Tenn. In 1983, the foursome purchased ORTEC’s scanner division and its technology and formed the fledgling Computer Technology & Imaging, Inc. (CTI) company.

In 2000, Crabtree and two other business partners joined together to start up the IdleAire Technologies Corporation. The company develops HVAC technology that long-haul truck drivers can attach to their vehicles at expressly equipped truck stops as an alternative to idling heavy-duty diesel engines.

“I’m very surprised and very honored to be included in a list of extremely successful and distinguished UTK engineering college alumni,” Crabtree said of the Dougherty Award honor.

The CTI Chair is just one more way Crabtree gives back to the university that set him on the road to his present success.

“CTI’s name has stood strong in the Knoxville community and PET (positron emission tomography) medical diagnostic imaging industry from 1983 until 2005,” Crabtree said. “It is our hope that this CTI Chair, together with Dr. Min Kao’s $17.5 million gift to the Department of Electrical and Computer Engineering, will be cornerstones paving the way for a new standard of excellence for the University of Tennessee’s College of Engineering.”
**FY 2006 Total Budget—$55.0 Million**

- Engineering and MRC Course Fees: $1,013,402
- Research Incentive Funds: $1,507,706
- Tennessee State Funding: $22,400,489
- RCEP Awards and THEC Equipment Funds: $349,099
- External Gift, Grant and Contract Expenditures: $29,715,940

**FY 2006 State Funding Expenditures—$25.3 Million (including course fees)**

- Salaries & Benefits: $20,467,102
- Equipment: $1,278,054
- Miscellaneous Operating Expenses: $3,525,540
- Materials Science & Engineering: $6,839,598
- Civil & Environmental Engineering: $4,601,060
- Electrical & Computer Engineering: $5,199,187

**FY 2006 Research Expenditures (Gifts, Grants and Contracts) by Department/Center—$29.7 Million**

- Nuclear Engineering: $1,889,862
- Mechanical, Aerospace & Biomedical Engineering: $4,013,414
- Chemical Engineering: $1,275,380
- Research Centers: $4,256,289
- Administration & EFD: $1,135,287
- Chemical Engineering: $1,275,380
- Civil & Environmental Engineering: $4,601,060
- Industrial & Information Engineering: $505,863
- Electrical & Computer Engineering: $5,199,187