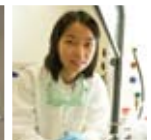


THE UNIVERSITY of
TENNESSEE **UT**

COLLEGE of
ENGINEERING

A LEGACY OF ACCOUNTABILITY



2007 ANNUAL REPORT

MISSION STATEMENT

The mission of the College of Engineering is

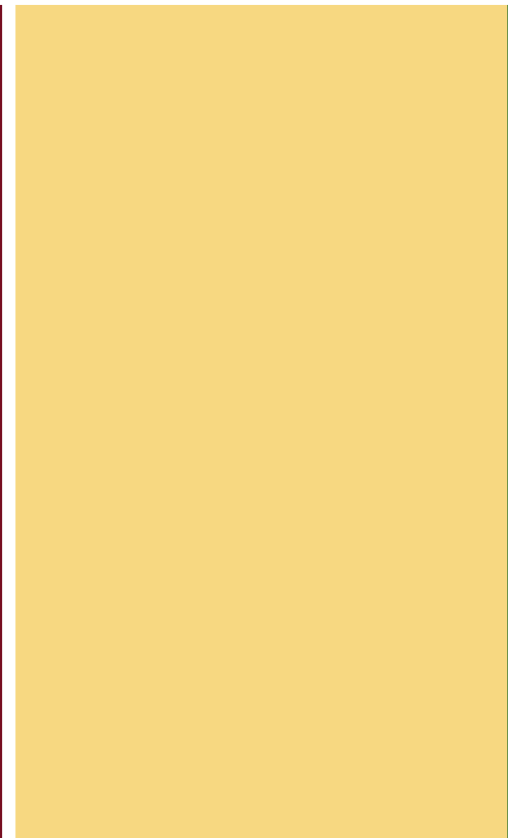
- To provide high quality education in the major engineering disciplines from the undergraduate through doctoral levels through a creative balance of academic, professional and extra-curricular programs;
- To foster and maintain mutually beneficial partnerships with our alumni, friends, industry, and local, state and federal governments through public services assistance and collaborative research; and
- To be a major contributor to our global 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.



COLLEGE OF ENGINEERING 2007 ANNUAL REPORT

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The information in this report reflects the time period from July 1, 2006 through June 30, 2007.

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CREATING THE LEGACY

Welcome to the fiscal year 2007 edition of the University of Tennessee College of Engineering's annual report.

Our theme this year is "A Legacy of Accountability," and it is appropriate in light of the college's achievements during the past few years. We have made notable progress in many areas,

including breaking ground for our new Min Kao Electrical Engineering and Computer Science building; enrolling a higher quality of students; escalating our funded research expenditures and enhancing our multi-disciplinary collaborations with other departments/colleges and Oak Ridge National Laboratory (ORNL); and attracting outstanding new faculty to our college.

Here is a listing of the college's accomplishments in FY 2007.

FACILITIES

The college hosted a groundbreaking ceremony May 14, 2007, for the new Min Kao Electrical Engineering and Computer Science Building. Dr. Min Kao and his wife, Fan Kao, attended this history-making event, along with many local, state and national political officials, UT administrators, and COE supporters, alumni, faculty, staff and students. It was a wonderful day for everyone. Please see the article on page 12 for more details.

The college also finalized plans for the rebuilding of Estabrook Hall. After an initial plan to reconstruct the current building, for which the Tennessee State Legislature provided \$16.6 million in funding in 2005, UT administrators determined that a new site, located behind Pasqua Hall facing Neyland Drive, was more appropriate and accessible. Architects are currently working to finalize the design with plans to complete that phase in late 2008 and begin construction in 2009.

After a great deal of discussion, it has now been determined that the Joint Institute for Advanced Materials (JIAM) building will be located on the Cherokee Campus. JIAM will be the first building constructed in this new technology- and research-focused area on the banks of Fort Loudoun Lake. The JIAM building project was

initiated with \$30 million in federal and state grants. The groundbreaking and construction dates are still under consideration.

STUDENTS

Our total enrollment for the academic year 2006–07 was 2,709 students, a slight increase from the 2005–06 term. We had 1,867 undergraduates and 842 graduate students enrolled during this time period. The total enrollment number is the highest in the history of the college. The HOPE scholarship has continued to allow us to attract the state's best students: the average ACT scores for our entering freshmen this year averaged 28.4, a very impressive figure and the highest recorded in the college.

RANKINGS

The college significantly increased our *U.S. News and World Report* rankings during this ratings period, rising from 71 to 66 for our graduate programs and from 71 to 57 for our undergraduate programs. All these numbers are the highest in the history of the college and make us the most improved engineering program in the U.S.

RESEARCH

Research expenditures (gifts, grants and contracts) continue to grow tremendously, with our total of \$32.6 million for FY 2006–07 surpassing the 2005–06 fiscal year figure of \$29.7 million and almost doubling the number from FY 2002–03.

This issue of our annual report will also feature the 2007 Engineering Research Fellows. These awards, established by the dean's office in 2004, have proven to be exceptionally effective in recognizing and rewarding our outstanding faculty members.

Additionally, we are including an update on the activities of our four research centers in this issue.

FACULTY

Several retirements and departmental restructurings led to a smaller number of faculty members for the COE this year. We had a total of 150 full-time faculty in FY 2006–07. However, several impressive hires were made, including our first multi-disciplinary joint faculty appointment for both the Department of Materials Science and Engineering and the Department of Mechanical, Aerospace and Biomedical Engineering, Dr. Wei He (page 20).

The other faculty member featured in this annual report is Dr. Larry Townsend (page 18), an outstanding professor in the Department of Nuclear Engineering and the 2007 COE Teaching Fellow. Dr. Townsend is a dedicated teacher and tireless researcher who has been a credit to his department and the college for many years.

Our college has made exceptional progress during FY 2006–07 and we are proud to provide you with updates on all of our activities. We appreciate the ongoing support and interest from our alumni, donors, friends of the college and other supporters!

Please direct your comments to coe@utk.edu.

Sincerely,



Way Kuo
Dean and University Distinguished Professor
The University of Tennessee College of Engineering



A PASSION FOR ENGINEERING

OUTSTANDING UNDERGRADUATE
BRITTNEE ROBINSON



“Don’t go into grandpa’s shop” is the phrase Brittnee Robinson heard over and over again as a child. However, when she was 8 years old, Brittnee broke the rules and, after awhile, was able to help her Grandpa with various building projects—an experience that ultimately led her to engineering.

“I believe working with my grandpa was important in my choice to be an engineer because it introduced me to the concept of planning and using materials to build structures,” said Robinson, who is in her fifth and final year of studying electrical engineering and plans to graduate in May 2008.

Originally from Huntsville, Alabama, Robinson initially came to the University of Tennessee to study architecture but quickly realized she was interested in civil engineering. After her freshman year, Robinson job-shadowed her cousin, who is an electrical engineer, and discovered a passion she has continued to excel in.

Robinson has participated in two research opportunities during her time at UT. The first involved observing postural sway in normal subjects in various age groups to see if a correlation existed between age and postural sway in performing a specific task. On-going collaborations between the Department of Electrical Engineering and Computer Science (EECS) and the Center for Environmental Biotechnology (CEB) gave Robinson a second research opportunity to help test the Bioluminescent Bio-Reporter Integrated Circuit (BBIC) in the physical environment by investigating several methods of wireless transmission that can be integrated into the current setup.

After graduation, Robinson plans to stay at UT to pursue a master’s degree in electrical engineering with a concentration in power electronics. She will begin her research at Oak Ridge National Laboratory (ORNL) this summer.

“My ultimate goal is to be remembered as someone great,” said Robinson. “In my career, I hope to make a positive impact on an organization or field and believe my position at

ORNL will provide a great starting point in making my mark on the engineering world!”

Robinson hopes to inspire other young women to choose science- and technology-related fields. Someday she hopes to be listed in the *Forbes* “50 Most Powerful Women” feature article. She had her 15 minutes of fame while working on the Rubik’s Cube restoration project—a collaboration between the Institute of Electrical and Electronics Engineers (IEEE), American Society of Mechanical Engineers (ASME) and the East Tennessee Historical Society and a memorable experience for Robinson, who attended the unveiling ceremony during the 25th anniversary celebration of the World’s Fair in Knoxville.

“I appreciated the project because it was my first opportunity to work on an industrial-sized project with a group of talented people,” said Robinson. “It was amazing to see the crowds of people waiting to take pictures in front of this iconic Rubik’s Cube and very rewarding to see how our efforts impacted the city of Knoxville.”

Since coming to UT, Robinson has received a number of scholarships, including the African-American Achievers Scholarship, Billy and Sylvia Moore Scholarship and a COE Ambassador Scholarship. Throughout her academic career, the only thing Robinson wishes she had taken advantage of was the opportunity to study abroad and experience different cultures.

“All my other experiences I wouldn’t change for the world, though, because I have grown so much and feel my work ethic and attitude towards situations would not be the same,” said Robinson, who is a member of the IEEE, National Society of Black Engineers, Eta Kappa Nu Electrical Engineering Honors Society, Society of Women Engineers, College of Engineering Ambassadors, Chancellor’s Honors Program, and the Badminton Club.

As she moves into the next phase of her education, Robinson looks forward to starting a new chapter of her life.



Dr. Veerle Keppens working with Farragut High School senior Christina Zhong.

OUTREACH

THE UT PRE-COLLEGIATE RESEARCH SCHOLARS PROGRAM

An innovative pre-college program at the University of Tennessee will help area high school students interested in science, technology, engineering and math (STEM) leave their legacy of accountability for future generations. The Pre-Collegiate Research Scholars Program (PCRSF) was created in April 2007 as a pilot program involving two high schools, Fulton High School and Farragut High School, and the Colleges of Arts and Sciences and Engineering (COE) at UT.

“In 2005, the National Academy of Sciences released a report warning the U.S. could risk its world leadership and compromise its citizens’ quality of life if the nation does not stay competitive with the rest of the world in science and technology. As a result of these reports, encouraging student interest in STEM subjects has become both a national and a state priority,” said Dr. Lynn Champion, director for academic outreach and communications in the College of Arts and Sciences.

At that time, UT was already involved in outreach to area high schools, but Champion wanted to explore avenues for providing research opportunities on the UT Knoxville campus for high school students. After conducting a national survey to see how other universities hosted students in research labs and a few more months of meetings, Champion and Dr. Masood Parang, COE associate dean for student affairs, outlined the program involving both colleges.

Continued on page 9

AN ENGINEERING DESTINY

OUTSTANDING
GRADUATE STUDENT
CHUCK MARGRAVES



As a child, the last thing Chuck Margraves wanted to be was an engineer. Twenty-something years later, that is exactly what he is.

“When I was growing up, my dad’s job was a test engineer at TVA, which did not seem like something I would enjoy,” said Margraves. “However, earlier in his career, my father worked on the jet engine for the SR-71 Blackbird and would tell me stories about running afterburner tests at night where the jet plume was larger than the engine itself. Those stories stuck with me.”

Margraves is in his fifth year of graduate school and plans to graduate in 2008 with a Ph.D. in mechanical engineering. After graduation, Margraves would like to find a faculty position and teach engineering but would settle for post-doctoral work at a national lab.

While at the University of Tennessee, Margraves has had many research opportunities through the Department of Mechanical, Aerospace and Biomedical Engineering. In 2004, Margraves joined the Micro/Nano Scale Fluid and Energy Transport Lab (MINSFET) as a research assistant working in optically tracking nanoparticles for bio/nano-fluidic applications under Dr. Kenneth Kihm, Magnavox Professor in MABE. Margraves’ own research goal is to use engineering methodologies in a biological field.

“Approaches used in these professions are often different, and I believe many techniques we use may provide a different light on existing areas of research in the bio-field,” Margraves said. In particular, he focuses on using multiple-microscopy techniques to examine vesicle movement inside colorectal cancer cells, which may play a role in preventing the spread of cancer within the body. In 2005, Margraves presented his work at the Particle Image Velocimetry Conference at the California Institute of Technology. Following the conference, he and his co-authors were asked to submit their work for publication in a special issue of the *Experiments in Fluids* journal.

“Margraves has an outstanding publication record as a doctoral graduate student,” said Dr. Masood Parang, associate dean for student affairs. “He has authored or co-authored three highly regarded journal papers, with two more currently under review and a few manuscripts in preparation.”

Before entering the doctoral program at UT, Margraves worked at Denso Manufacturing in Maryville, Tennessee, as a production engineer. He then moved on to Huntsville, Alabama, to work for Stone Engineering Company, where he focused on applied computational fluid dynamics in the area of national missile defense systems. Margraves took part in Phase I and Phase II awards of a Small Business Innovative Research (SBIR) contract, which involved the design, construction and testing of a small pintle-controlled rocket motor.

Margraves received a bachelor of science degree from UT Chattanooga in 1996. He earned a master’s degree in mechanical engineering through distance education from Georgia Institute of Technology in 2003. Margraves is a member of the American Society of Mechanical Engineers.

During his time at UT, Margraves also worked as a teaching assistant for the freshman Engineering Fundamentals Division (EFD)—one of the nation’s most innovative approaches to freshman engineering education. He has also taught fluid mechanics courses to junior-level students.

According to Margraves, establishing relationships with people from different parts of the world is perhaps the most rewarding experience he has had while at UT.

“While these relationships have stretched me academically, they have had a significantly larger effect on me personally,” said Margraves.

Continued from page 7

“Since we started the program last summer, we’ve had eight students participate in four COE faculty labs,” said Parang. “Student participation in the research labs has been for one or, in some cases, two semesters.”

Participating faculty include three assistant professors in the Department of Materials Science and Engineering, Dr. Bin Hu, Dr. Veerle Keppens and Dr. Claudia Rawn, as well as one associate professor in the Department of Electrical Engineering and Computer Science, Dr. Micah Beck.

According to its website, the program’s goal is “to develop a model for hosting high school students in UT research laboratories so they may experience the excitement of scientific research and engage in their own original research.”

“Our students love this program,” said Kristin Baksa, a teacher in the science department at Farragut High School. “They feel privileged, I believe, to be working with faculty at UT while still in high school. They love being able to see the application of science and are often astounded at the amount of work involved in research. Their confidence increases as they progress from not knowing what they are doing to presenting their work at a poster session of the Tennessee Junior Science and Humanities Symposium at the end of the program.”

All engineering programs in the COE, including biosystems engineering, are participating in the mentoring program. Eleven students from Farragut High School have participated in the College of Arts and Sciences program in projects involving the Division of Biology and the following departments: chemistry, earth and planetary sciences, mathematics, and physics and astronomy.

“I love being a materials scientist,” said Rawn. “It has been a rewarding career, and I want the field to keep going. It is only going to survive if we get young people interested in the technologies and science of materials. This way, they are able to work today on tomorrow’s discoveries.”

More information about the program, including how to apply and the mentoring process, can be found at artsci.utk.edu/outreach/high_school_mentor.asp.

DIVERSITY UPDATE



In 2007, the Office of Diversity Programs in the college was selected to host the Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP) 2008 Summer Bridge Program for new freshman July 20–August 8. The Summer Bridge Program is a cooperative effort between the National Science Foundation (NSF) and six schools in the state of Tennessee—UT, Tennessee State University, Middle Tennessee State University, University of Memphis, Le Moyne-Owen College and Vanderbilt University.

The purpose of the Bridge Program is to help incoming freshmen majoring in science, technology, engineering and mathematics adapt to the academic, social and emotional pressures experienced during the transition from high school to college. UT's three-week summer residential program will focus on enabling participating minority high school graduates to achieve a smooth transition to college life. It will emphasize three areas: academic instruction, academic skills and life skills. Academic instruction covers math, chemistry and physics. Academic skills include supervised study sessions, communication skills and study habits. Life skills include teaming through group activities under the supervision of program staff.

Fifty new freshmen representing the six TLSAMP partners will participate in UT's program. Since 2003, 225 students have participated in the Summer Bridge Program Alliance. During the Fifth Annual TLSAMP Undergraduate Research Conference at Vanderbilt University, seven UT College of Engineering TLSAMP students showcased their research.

The Pipeline Engineering Diversity Program at UT is funded in part by the Department of Energy (DOE) in an effort to enhance the number of minority graduate students participating in and graduating with advanced degrees in engineering. The program includes a Graduate Research Partnership Program designed to

recruit students, provide partial funding and pair the students with engineering laboratory researchers in the college, the Engineering Research Centers and related research facilities such as ORNL. Fourteen students currently participate in the Pipeline Engineering Diversity Program: 13 M.S. candidates and one doctoral candidate.

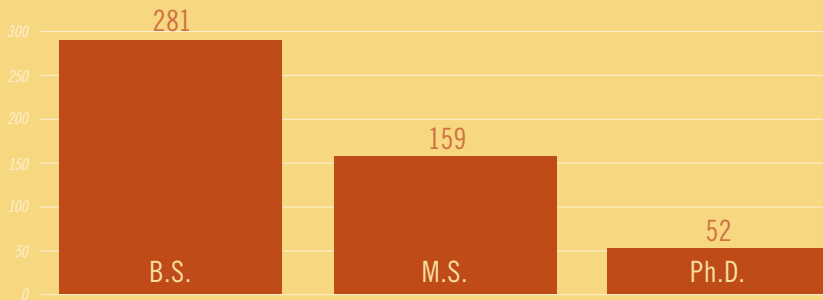
The Office of Diversity Programs sponsored three, weeklong pre-college summer programs for middle and high school students designed to prepare them for the challenges of an engineering education and, ultimately, a successful career. Twenty-six middle school students participated in the Middle School Introduction to Engineering (MITE); 23 high school sophomores participated in the Introduction of Sophomores to Engineering Principles (INSTEP); and 21 high school juniors and seniors participated in the High School Introduction to Engineering Systems (HITES). A total of 70 students participated in the 2007 pre-college summer programs.

During the 2006–2007 academic year, the college had 1,867 undergraduate students, 503 master’s students and 339 Ph.D. students for a total enrollment of 2,709. The numbers of both undergraduate and graduate students increased from academic year 2005–2006.

STUDENT BODY

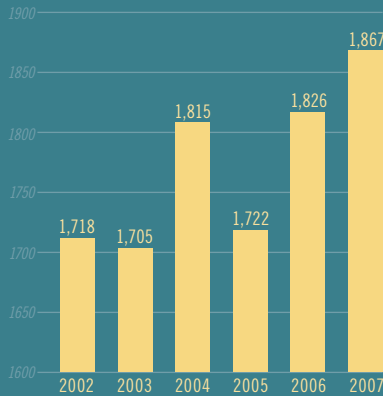
The college welcomed 452 incoming freshmen in the fall of 2007. ACT test scores for this group remain high, with an average composite score of 28.4.

DEGREES GRANTED IN 2007

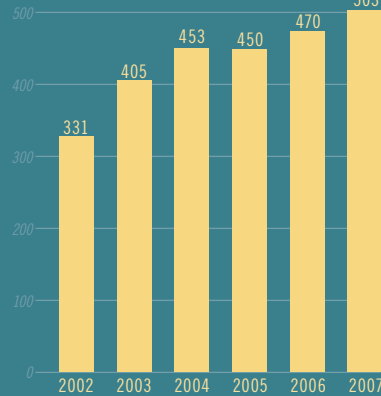


COLLEGE OF ENGINEERING ENROLLMENT TRENDS BY YEAR

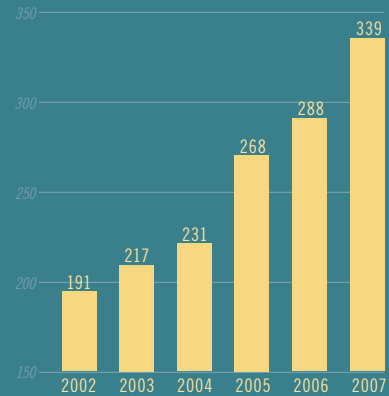
UNDERGRADUATES



MASTERS



DOCTORATES



COLLEGE OF ENGINEERING BREAKS GROUND ON \$37.5 MILLION MIN KAO BUILDING

On Monday, May 14, 2007, the University of Tennessee College of Engineering broke ground on the new Min H. Kao Electrical Engineering and Computer Science Building. The building is named for Dr. Min H. Kao, a UT alumnus and co-founder and CEO of Garmin Ltd, a world leader in Global Positioning System (GPS) technology. Originally from Taiwan, Kao received a bachelor's degree in electrical engineering from the National Taiwan University and his master's and doctorate in electrical engineering from UT.

Guests at the ceremony included Dr. and Mrs. Kao; several members of the Garmin administrative team; UT and COE faculty, staff and administrators; and local, state and regional political leaders.

Dr. John Petersen, president of the UT system, was enthusiastic in his remarks about the prospect of another new facility on campus and mentioned other current capital projects.

"These are exciting times for the University of Tennessee," Petersen said. "As of today, along with the Min H. Kao Building, we have over nine capital projects on the Knoxville campus currently being constructed. These projects all offer us unprecedented opportunities to dramatically improve our educational, research and athletic programs and to enhance the profile of the University of Tennessee around the world."

COE Dean Way Kuo introduced Kao, who thanked his former faculty advisor, Dr. Jim Hung, who was present at the



The groundbreaking crew for the new Min Kao Electrical Engineering and Computer Science Building (left to right): Way Kuo, dean; Bill Haslam, City of Knoxville mayor; Loren Crabtree, chancellor, UT Knoxville; Dr. Min Kao; Mrs. Fan Kao; John Petersen, president of the UT system; Kim McMillan, senior advisor to Governor Phil Bredesen; Jim Porter, vice president of engineering, DuPont Corporation/chair, College of Engineering Board of Advisors; and Mike Arms, chief of staff for Knox County Mayor Mike Ragsdale.



Architect's rendering of the Min Kao Electrical Engineering and Computer Science Building, which is currently being constructed on The Hill next to the Dougherty Engineering Building.

ceremony. Kao's initial contact regarding the gift proposal was made in February of 2004 through Hung. Kao also praised his wife, Fan, for encouraging him to "give back" to the university where he studied as a graduate student and said that the UT College of Engineering was the beginning of his career success.

"I'm grateful to UT for accepting me as a student and allowing me to start a new life in the U.S.," Kao said.

Kao's gift of \$12.5 million, out of a total donation of \$17.5 million, to the construction of the new building for the college is the largest single gift toward one building in the university's history and serves as the cornerstone of a public-private partnership in funding the building. The remaining \$5 million of Kao's donation was used in a dollar-for-dollar match with other private donations to create a \$10 million endowment for the Min H. Kao Department of Electrical Engineering and Computer Science (EECS).

The 150,000-square-foot building is being built at a total cost of \$37.5 million, with the additional \$25 million coming in state funds. The building will house classrooms, laboratories, a state-of-the-art clean room facility and a 2,500-square-foot auditorium. Completion is projected for April 2010. Bullock, Smith and Partners and Lindsay and Maples Architects are the primary architects. Other participating companies include Ross Bryan Associates, Inc. (Nashville), IC Thomasson (Knoxville/Nashville) and Vreeland Engineers, Inc. (Knoxville), who are responsible for the structural engineering design and electrical engineering design, respectively.

The building will be the first on UT's campus built for LEED certification, which requires using environmentally sound materials, positioning the building to make the best use of natural lighting and using indoor lighting that is both cost- and energy-efficient.

The facility will be home to the EECS department, created through a merger in July 2007 between the Department of Electrical and Computer Engineering and the Department of Computer Science.

ESTABROOK HALL

The college began finalizing plans for Estabrook Hall in 2007. The Tennessee State Legislature provided \$16.6 million in 2005 toward the reconstruction of the current building. However, difficulties with the original facility, including lack of a foundation and security limitations on the building due to its proximity to Neyland Stadium, led to the development of a new site between Pasqua Hall and Neyland Drive. The college is currently working with the architectural firms of Grieves and Associates and Pro2Serve to adapt the current design for the new location, with plans to complete the design in late 2008 and begin construction in early 2009.

THE JOINT INSTITUTE FOR ADVANCED MATERIALS (JIAM)

Funded with \$30 million in federal and state grants, the JIAM building will be a central facility for faculty and researchers from UT and ORNL in the field of materials research, including a focus on advanced materials in the transportation sector.

Initial plans were for the facility to be constructed on the Knoxville campus. However, other initiatives by the university led to the announcement of the Cherokee Campus development. Located on the former site of the UT Institute of Agriculture's dairy farm on the banks of Fort Loudoun Lake a few miles from the main campus, the Cherokee Campus will feature research and technology buildings including JIAM.

Barber & McMurray and Bullock, Smith and Partners are architects for the project. Site reviews and project planning are ongoing. A projected date for groundbreaking has not been set.

RESEARCH CENTERS

CENTER FOR MATERIALS PROCESSING (CMP)

The CMP is designated by the state of Tennessee as a Center of Excellence. The center focuses on controlling the performance of materials by using the relationships among processing methods, structure and properties. Studies are conducted on all classes of materials: metals, ceramics, polymers, composites, etc.

The CMP provided support for members of the Department of Materials Science and Engineering to conduct a study with members of the Vascular Biology Center of Excellence, University of Tennessee Health Science Center, to develop a polyurethane electrospun stent with controlled porosity. The objective is to control the transmigration of cells from the vascular wall and prevent the reocclusion of the vessel. A patent application has been filed.

The CMP continued strong interactions with the Oak Ridge National Laboratory by providing research faculty members to work with laboratory technical staff on the preparation of high-temperature superconducting materials; development of improved metallic alloys by control of microstructural features; and understanding the effects of nuclear irradiation on the stability of phases and mechanical properties of structural material.



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. This year, the center further lived up to its motto, “where industry and academia meet.”

Membership remained at 32 companies, and participation of those companies at the center’s best practice meetings was very good. MRC expanded the exhibit part of the annual conference, continued with an outstanding program and increased attendance by 40 percent. Twenty engineering students gained valuable work experience during the summer as interns employed by several MRC member companies.

The MRC also helped market and support the new college-wide master’s degree program in reliability and maintainability engineering. This new program neatly complements the MRC’s existing partnership master’s program with Monash University of Australia.



All in all, the MRC continues to thrive and is helping the College of Engineering become nationally recognized by industry in the area of reliability and maintenance.

CENTER FOR TRANSPORTATION RESEARCH (CTR)

The CTR has been a nationally and internationally recognized research entity at UT for over 30 years. The group has been the research venue for some of the brightest and most innovative faculty, researchers and graduate students in the nation's transportation arena. The CTR has experienced steady growth and today has over \$10 million currently under contract. Considering the breadth of the U.S. transportation system, the quality of newly graduated transportation students must be of the highest caliber, and CTR is supporting the college's responsibility to supply well-educated transportation students to the growing field of transportation professionals.



The CTR is the lead research center for the USDOT-funded Southeastern Transportation Center (STC), a consortium of ten universities and institutes in our region. The consortium's research theme is *Comprehensive Transportation Safety*. In 2007, STC members submitted nearly 30 research proposals. Eight proposals submitted by the CTR were selected. In keeping with the STC's theme, each project chosen has a safety component. The University of Tennessee funded projects are the following:

Improved Signalized Intersection Safety and Efficiency for Emergency; Itamar Elhanany & Tom Urbanik, co-PIs.

Evaluation of Longitudinal Joints of HMA Pavements in Tennessee; Baoshan Huang, PI

Effects of Urban Greenway Construction on Pedestrian and Cyclist Injury Rates, Travel Patterns and Estimated Vehicular Emissions; Mary Davis, PI

School Bus Railroad Crossing Safety Survey; Lee Han, PI

Feasibility of Camera-Based Enforcement of Speed and Red Light Running: An Investigation of Operational, Ethical, and Legal Issues Related to Camera-Based Speed and Traffic Signal Enforcement; Arun Chatterjee, PI

Van Safety: Guidelines on Best Practice for Commuter and Community Transportation Vans; Fred Wegmann, PI

Effects of Asphalt Pavement Conditions on Traffic Accidents in Tennessee Utilizing Pavement Management System (PMS); Baoshan Huang, PI

Investigating the Feasibility of Standardized Evaluation of Young Driver Education & Training Programs; Jerry Everett, PI

Each project received \$25,000 in either partnering funds or seed grants. Projects will be completed by July 31, 2008.

In the summer of 2007, Drs. Larry Bray and Mark Burton completed a study of the regional economic impacts of a potential failure of the spillway at Reelfoot Lake in northwest Tennessee. This study was in response to a request from the Honorable John Tanner, Tennessee 8th Congressional District, State Representative Philip Pinion



and State Senator Roy Herron. Dam failure and the subsequent lake drainage would result in economic hardship from the loss of visitor dollars in impoverished Lake and Obion Counties in Tennessee. This project was undertaken in conjunction with the County Technical Assistance Service of the university's Institute for Public Service.

SCINTILLATION MATERIALS RESEARCH CENTER (SMRC)

The Scintillation Materials Research Center is a unique multidisciplinary research facility formed in 2006 through a collaboration of the University of Tennessee and CTI Molecular Imaging. The center's mission is to discover and develop new scintillation materials that will provide the foundation for the next generation of gamma-ray, x-ray and neutron detectors. During the past year, the SMRC has received financial support for this work from both industry and government and is working on projects that range from medical imaging to homeland security.

As a new research center on campus, the SMRC has grown over the past year to the point of fully supporting two staff members and offering partial financial support to two others, as well as sup-

porting the laboratory activities of three additional professors. The SMRC currently supports five graduate students and offers part-time employment to three undergraduates. These students are engaged in a wide variety of projects that offer some unusual educational opportunities, including such activities as the Czochralski method of crystal growth, thin film deposition and the characterization of scintillation properties.

Members of the SMRC filed two patent applications during FY 2007 and authored or co-authored several papers on inorganic scintillators.

Dr. Chuck Melcher, director of the SMRC, was the recipient of the IEEE Nuclear and Plasma Sciences Society Merit Award given for "outstanding contributions to the field of scintillation materials, particularly for the invention, development and commercialization of LSO scintillators and the resulting impact on positron emission tomography and nuclear medicine." Three SMRC graduate students also received awards for various conference presentations.

COLLEGE OF ENGINEERING RESEARCH FELLOWS

In 2004, Dean Way Kuo established the College of Engineering Research Fellow Awards to recognize and reward outstanding achievements in research. Recipients are presented a plaque at the college's honors banquet in the spring. The selected faculty members also receive additional funding and support.

The COE Research Fellows for 2007:

DR. BRIAN J. EDWARDS

*Associate Professor, Department of
Chemical Engineering*

Edwards' research interests include thermodynamics, fluid mechanics, molecular modeling and sustainable energy.

DR. BAOSHAN HUANG

*Assistant Professor, Department of
Civil and Environmental Engineering*

Huang's research is in the areas of construction materials, pavement engineering, constitutive modeling and numerical analysis and geotechnical engineering.

DR. SYED K. ISLAM

*Associate Professor, Department of
Electrical Engineering and Computer Science*

Islam's research encompasses semiconductor devices, analog/mixed signal VLSI and monolithic sensors.

DR. MOHAMED R. MAHFOUZ

*Assistant Professor, Department of Mechanical,
Aerospace and Biomedical Engineering*

Mahfouz, who was also a Research Fellow in 2006, is a researcher in the biomedical division. He specializes in the research areas of musculoskeletal mechanics, analysis, computer assisted orthopedic surgery and medical imaging registration.

DR. PHILIP D. RACK

*Associate Professor, Department of
Materials Science and Engineering*

Rack, who also received the Research Fellow recognition in 2006, conducts research in electronic and optoelectronic materials and devices and thin film processing.



The 2007 College of Engineering Research Fellows are recognized at the college's Honors Banquet. Left to right: Dr. Brian Edwards, Dr. Baoshan Huang, Dr. Syed Islam, Dr. Mohamed Mahfouz, Dr. Phillip Rack, Dr. Leon Tolbert, Dr. Larry Townsend, Dean Way Kuo, and Dr. Belle Upadhyaya.

DR. LEON M. TOLBERT

*Associate Professor, Department of
Electrical Engineering and Computer Science*

Tolbert, a recipient of the award in 2004, specializes in the areas of power systems and power electronics, hybrid electric vehicles, renewable energy and silicon carbide power electronics.

DR. LAWRENCE W. (LARRY) TOWNSEND

Professor, Department of Nuclear Engineering

Townsend was also named as a Research Fellow in 2006. His research areas include nuclear and radiological engineering, radiation physics, transport theory, theoretical nuclear physics and space radiation protection.

DR. BELLE R. UPADHYAYA

Professor, Department of Nuclear Engineering

Upadhyaya's research areas include reactor dynamics and control, instrumentation, advanced signal processing, reactor monitoring and diagnosis, space reactors and maintenance, and reliability engineering.

OUT-OF-THIS-WORLD ABILITIES

OUTSTANDING FACULTY MEMBER
DR. LARRY TOWNSEND

Dr. Lawrence “Larry” W. Townsend, a professor in the Department of Nuclear Engineering, is rapidly developing a reputation as one of the COE’s most outstanding faculty members.

Although Townsend may modestly deflect that praise, in 2007 he was named as both the college’s Teaching Fellow and one of the Research Fellows.

ing Fellow and one of the Research Fellows.

Townsend was born in Jacksonville, Florida. He followed in the footsteps of his father, who was in the Navy, and attended the U.S. Naval Academy, where he received his B.S. in physics in 1969. Townsend then entered the Naval Postgraduate School in Monterey, California, where he received his M.S. degree, also in physics. He then enrolled in the Navy’s Nuclear Power School and Prototype Training, where he became a nuclear submarine engineer.

He stayed in the Navy until 1977, achieving the rank of Lieutenant Commander. Townsend then enrolled in the University of Idaho, where he received his Ph.D. in theoretical nuclear physics. He graduated in 1980 and took a post-doctoral position at NASA’s Langley Research Center in Hampton, Virginia.

Shortly afterwards, Townsend was hired by NASA as a research scientist and stayed until 1995.

“I had an opportunity after the normal academic physics hiring cycle to take early retirement from NASA,” Townsend said. “I started looking for academic positions and found two openings at UT. I interviewed for both and was hired as the successor to Rafael Perez in the Department of Nuclear Engineering.”

Townsend made the adjustment to academic life and began teaching classes and pursuing his research in radiation protection and shielding for deep space missions.

“I had students and postdocs in my research group while I was at NASA, but it was usually only one or two,” Townsend said. “I have had much more interaction with larger groups since I began teaching classes at UT.”



In 2002, Townsend was selected by NASA to be the principal investigator and leader of a multi-institutional consortium tasked with developing the next generation of space radiation transport codes for the agency. These codes are used to model the passage of radiation fields, such as those found in deep space, through materials such as spacecraft protective shielding and the human body. These codes can be used to estimate the possible radiation exposures to astronauts from cosmic radiation in deep space and to design and model the protective shielding to be used on spacecraft in order to ensure crew health and safety.

UT was selected as the lead institution in the consortium, which was funded at \$2 million for four years (plus another \$1 million funding in house within the NASA members of the consortium). The project was managed out of NASA Marshall Space Flight Center in Huntsville, Alabama.

“Traveling beyond the bounds of earth, robots can gather information, but humankind has an explorer mentality,” Townsend commented. “We need to explore our universe with both humans and robotic missions.”

Townsend’s enthusiasm for both research and teaching make it clear why he was chosen for dual teaching and research honors.

“I enjoy teaching and interacting with students, and I also love research. If I wasn’t doing this for a job, I would be doing it for a hobby,” Townsend said.

Townsend is also encouraged by enrollment increases in nuclear engineering departments across the U.S. Factors include renewed interest in nuclear power as an option for the energy and global warming crises as well as the significant employment opportunities.

“The nuclear engineering workforce is ageing,” Townsend said. “We are going to need people to operate the reactors and power plants. The career field has changed, jobs are opening up now, and the salaries are very good.”

Townsend’s only complaint these days is about the occasional comments he gets regarding his cluttered office, sometimes from the notoriously neat Dr. Lee Dodds, the nuclear engineering department head.

“The first time Lee harassed me about my office,” Townsend said, “I replied with an old saying from NASA, ‘a clean desk is a sign of an empty mind.’ He now recognizes that I usually know where things are in the paper stacks in my office. When I came to UT from NASA, I had 37 boxes of books!”

EXHILARATING ENGINEERING

OUTSTANDING FACULTY
MEMBER DR. WEI HE

Dr. Wei He may be an engineering professor, but she doesn't mind having a second career as a matchmaker.

The college's first joint faculty member, who serves as an assistant professor in both the Departments of Materials Science and Engineering and Mechanical, Aerospace and Biomedical Engineering, is determined to encourage others to recognize the benefits of multidisciplinary research.

"I enjoy being in a joint position between two departments," He said. "I have double the resources, mentors and students! I'm glad to be in this arrangement, where I can help facilitate multi-disciplinary projects and research in the biomaterials field. I'd like to be a 'matchmaker' between departments."



COLLEGE PROFILE

DEPARTMENTS

Chemical and Biomedical Engineering

Dr. Bamin Khomami

Department Head

Civil and Environmental

Engineering

Dr. Dayakar Penumadu

Department Head

(Dr. Greg Reed FY '07)

Electrical and Computer

Engineering

Dr. Kevin Tomsovic

(Dr. Luther Wilhelm FY '07)

Department Head

Industrial and Information Engineering

Dr. Alberto Garcia

Interim Department Head

Materials Science and Engineering

Dr. George Pharr

Department Head

Mechanical, Aerospace and Biomedical

Engineering

Dr. William R. Hamel

Department Head

Nuclear Engineering

Dr. H. Lee Dodds

Department Head

University of Tennessee

Space Institute

Dr. Donald Daniel

Associate Vice President and

Associate Dean

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 1,867

Graduate 842

Total 2,709

DEGREES GRANTED

Bachelor of Science 281

Master of Science 159

Doctor of Philosophy 52

Total 492

FACULTY

Professors 74

Associate Professors 35

Assistant Professors 28

Total 13

The college has four National Academy of Engineering members, two UT-ORNL Distinguished Scientists, two University Distinguished Professors, two Distinguished Research Professors, one UT-Battelle Distinguished Professor, and 10 Endowed Professorships. In addition, the college holds two Chairs of Excellence: the Ivan Racheff Chair in Materials Science and Engineering and the Henry C. Goodrich Chair in Civil Engineering.

STUDENT/FACULTY RATIO

22:3 (undergraduate)

ACCREDITATION

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

DEGREES OFFERED

Bachelor of Science

Aerospace Engineering
Biomedical Engineering
Chemical Engineering
Civil Engineering
Computer Engineering
Electrical Engineering
Industrial Engineering
Materials Science & Engineering
Mechanical Engineering
Nuclear Engineering

Master of Science

Aerospace Engineering
Biomedical Engineering
Chemical Engineering
Civil Engineering
Computer Engineering
Electrical Engineering
Engineering Science
Environmental Engineering
Industrial Engineering
Materials Science & Engineering
Mechanical Engineering
MS-MBA Program
Nuclear Engineering
Polymer Engineering

Doctor of Philosophy

Aerospace Engineering
Biomedical Engineering
Chemical Engineering
Civil Engineering
Computer Engineering
Electrical Engineering
Engineering Science
Industrial Engineering
Materials Science & Engineering
Mechanical Engineering
Nuclear Engineering
Polymer Engineering

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

DR. WAY KUO
Dean of Engineering and University Distinguished
Professor

DR. ALBERTO GARCIA
Associate Dean for Academic Affairs

DR. MASOOD PARANG
Associate Dean for Student Affairs

DR. WAYNE T. DAVIS
Associate Dean for Research & Technology

DR. LUTHER WILHELM
Associate Dean for Special Projects

JUDY MOORE
Director of Finance and Administrative Affairs

DOROTHY BARKLEY BRYSON
Director of Engineering Development
(Patricia Shea FY '07)

MARGIE RUSSELL
Director of Engineering Advising Services

DR. J. ROGER PARSONS
Director of the Engineering Fundamentals Division

JAMES T. PIPPIN
Director of Engineering Diversity Programs

WALTER ODOM
Director of the Office of Professional Practice

KIM COWART
Manager of Engineering Communications

ACADEMIC SUPPORT PROGRAMS AND DIVERSITY INITIATIVES

Engineering Fundamentals Division

Engineering Advising Services

Office of Professional Practice

Diversity Engineering Scholarship Program

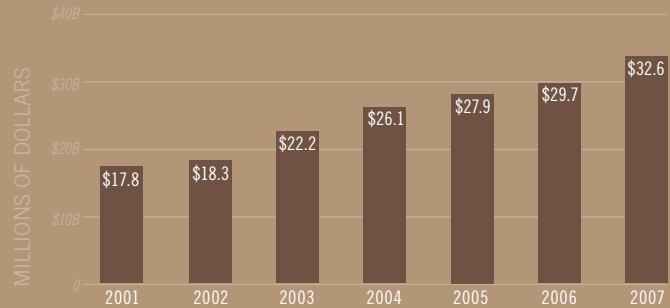
Engineering Diversity Programs Office

Pipeline Engineering Diversity Program

Tennessee Louis Stokes Alliance for Minority
Participation

RESEARCH EXPENDITURES

Gifts, Grants and Contracts by Fiscal Year



BOARD OF ADVISORS FOR FY 2007

DR. BERT ACKERMANN JR.
BS/NE '65, MS/NE '67, PhD/NE '71
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Knoxville, Tenn.

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Director, Composite Manufacturing Center
The Boeing Company
Seattle, Wash.

MR. HOWARD E. CHAMBERS
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Boeing Company Foundation
Seal Beach, Calif.

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Dallas, Texas

MRS. NANCY COLE
Engineering Consultant
Fernandina Beach, Fla.

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Capital, LLC
Nashville, Tenn.

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Vice President and IBM Fellow
IBM Almaden Research Center
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Retired, Race Trac Petroleum, Inc.
Shallotte, N.C.

DR. R. G. GILLILAND
BS/ChE '58, MS/MetE '63
Retired
Pittsburgh, Pa.

MR. RON GREEN
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Charlotte, N.C.

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Washington, D.C.

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Engineers
Nashville, Tenn.

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BS/ME '69, MBA/Ind. Mgmt., '70
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Knoxville, Tenn.

MR. ANDREW K. PHELPS
Principal Vice President, Bechtel National Inc.
Los Alamos, N.M.

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Vice President of Engineering and Operations
E.I. DuPont de Nemours Corp.
Wilmington, Del.

MR. RICHARD T. SNEAD
BS/IE '73
President and CEO
Carlson Restaurants Worldwide
Carrollton, Texas

MR. ERIC ZEANAH
President/Owner, American Accessories
International
Knoxville, Tenn.

LEADING THE WORLD

OUTSTANDING ALUMNUS CHAD HOLLIDAY

Charles O. “Chad” Holliday Jr. is living proof of the power of higher education.

The Nashville native, who received a B.S. in industrial engineering from UT in 1970, has been the chairman and chief executive officer of DuPont, the global science company, for almost a decade.

Holliday began his career at DuPont’s Old Hickory plant in his hometown. After working in a summer job with the company during college, he accepted a full-time position after graduation.

Holliday subsequently held a range of manufacturing, marketing, and business positions with DuPont, primarily with the company’s fibers and chemicals businesses. During the 1990s, he served in leadership roles for DuPont in Asia, ultimately becoming president and later chairman of DuPont Asia Pacific. In 1998, Holliday became CEO of DuPont and chairman the following year.

Under Holliday’s leadership, DuPont developed a world-class capability in biology to complement its traditional strengths in chemistry and engineering. And the company focused on a new mission: sustainable growth.

“What we seek as a company is to reduce stress on the environment,” Holliday said. “At the same time, we want to provide consumers with safe, effective products. We now have goals reaching all the way to the year 2015 to create and market environmentally smart products that are appealing to consumers.”

As a result of the company’s commitment to sustainable growth—which DuPont defines as increasing shareholder and societal value while decreasing the environmental footprint throughout the value chains in which it operates—DuPont has transformed itself from a chemical company to a science company.

One example of this change is the new DuPont Tate & Lyle Bio Products Facility, located in Loudon, Tennessee.

“We’ve built the only plant of its kind,” Holliday commented. “This facility is one of the largest biomaterials processing facilities in the world, and it offers us the opportunity to begin manufacturing state-of-the-art renewable materials.”

The new plant produces propanediol (PDO) derived from corn sugar instead of petroleum. Branded Bio-PDO™, the substance will be used in cosmetics, liquid detergents, de-icing fluids and antifreeze. It is also used to manufacture DuPont™ Sorona® polymer for textiles and carpets.

Headquartered in Wilmington, Delaware, DuPont has operations in 70 countries, more than 50 R&D centers around the globe, and 60,000 employees worldwide. Holliday is excited about the company’s future.

“Our new research and development model is delivering more customer-driven products faster, and there is exciting growth potential in our R&D pipeline,” Holliday stated. “We have a lot of opportunity ahead.”

Holliday was elected a member of the National Academy of Engineering in 2004, and he was named chairman of the Business Roundtable’s Task Force for Environment, Technology and Economy that same year. He is also past chairman of the World Business Council for Sustainable Development (WBCSD), the Business Council and the



Society of Chemical Industry-America Section. During his chairmanship of the WBCSD, Holliday co-authored a book, *Walking the Talk*, which details the business case for sustainable development and corporate responsibility.

Holliday is also chair of the Board of Directors of Catalyst, chairman of the U.S. Council on Competitiveness, and a founding member of the International Business Council.

In 1999 Holliday received the Nathan W. Dougherty Award, the College of Engineering's most prestigious honor. In 2007, he received the Institute of Industrial Engineers "Captains of Industry" award, a recognition that honors business, industry and government leaders as presidents, CEOs, senior vice-presidents and directors of organizations with substantial sales, assets, employees or other resources. The IIE event took place in Nashville, Holliday's hometown.

Holliday and his wife, Ann—also a UT graduate—live in Wilmington, and their two sons, Scott and Chad, are attending universities in Washington, D.C.

"Ann and I both have some great memories of UT," Holliday added. "The university is really where my career began."

ENGINEERING DEVELOPMENT

CHALLENGES AND TRANSFORMATION

What begins a transformation? What propels it? In the College of Engineering, forces for philanthropy are expanding the academic potential in ways that have only begun to have effect. These forces for philanthropy are a dedicated and passionate cadre of people—alumni who want to give back to support the future, corporate leaders who recognize their futures depend on the quality of UT's engineering programs and friends of the college who understand the importance of engineering education to the vitality of our nation's technological advances.

These development dollars reflect an increased awareness that philanthropy is an investment that provides important returns.



THE CAMPAIGN  FOR TENNESSEE
A SPIRIT • A VISION • A PLAN

THE CAMPAIGN FOR TENNESSEE

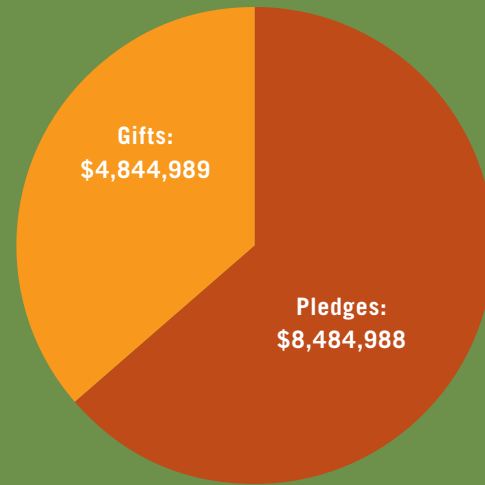
The university's capital campaign has provided the stimulus for the College of Engineering to define and focus its fundraising goals on areas of greatest priority. While the broad categories of student awards, faculty endowments, building funds and program support are predictable, our attention to outcomes and accountability will drive transformation.

THE DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE (EECS) CHALLENGE

A \$5 million dollar-for-dollar challenge from Dr. Min Kao has resulted in two new professorships, several new endowments for student awards and dramatically increased program support. As of press time, the official challenge has nearly been met, but the imperatives continue, as will our efforts to increase these endowments.

To qualify in this challenge, gifts must be designated for the EECS department and be used to establish new endowed accounts for student or faculty support, programmatic funding or departmental operations.

Gifts and Pledges for Fiscal Year 2007
Total: \$13,329,977



Gifts may also help build existing endowments such as

- EECS Endowment*
- EECS Fund for Excellence*
- Blalock, Pierce, Kennedy Professor of Analog Electronics*
- Robert Bodenheimer Fellowship*
- Frank and John Uhl Pierce Engineering Endowment*
- Vaughn Blalock Graduate Award*
- W. O. Leffell Scholarship*

Donations for the challenge may be made in the form of cash, securities, planned gifts or bequests. In-kind gifts do not count. Pledges must be documented in writing.

WAYS TO GIVE

There are many ways alumni and friends can support the College of Engineering.

An outright gift of any amount may be designated to any existing gift account and made by cash, check, Visa or MasterCard.

The university accepts gifts of stock, mutual funds or real estate. If the value has appreciated, donors may realize the benefit of an income tax deduction for the gift's current fair market value and, thereby, avoid capital gains taxes.

Charitable remainder trusts may be funded with cash or appreciated assets. The donor will receive income for life and the life of a loved one after the donated asset is sold by the trust. Again, all capital gains taxes are avoided on the sale, and the donor receives a partial income tax deduction based on age and the amount of income received from the trust. Further, the trust assets are removed from the donor's estate.

A donor may also include the College of Engineering in his or her will or living trust by giving a dollar amount, a percentage of the estate or the residuary (what is left after specified bequests are made).

The university accepts the bequest of an IRA or other retirement plan assets. Donors who make UT's COE the full or partial beneficiary of an IRA or other tax-advantaged retirement plan may avoid income taxes that might be charged to the estate.

For more information or to discuss giving options please contact

Engineering Development Officer, Dorothy Barkley Bryson, Associate Vice Chancellor for Development
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: engr.utk.edu/giving/oad.html

BLAZING THE TRAIL FOR FEMALE ENGINEERS

Nancy Cole knows what it means to be first. After entering the university as an engineering student in 1958, she became the first female in the cooperative engineering program. In 1963 she became the first woman to graduate from UT with a degree in metallurgical engineering. In 1990, Cole was the first woman to be appointed to the Board of Advisors for the College of Engineering.

And in 2007, Cole was named the first female recipient of the Dougherty Award, which is the college's most prestigious honor. The award was named for Nathan W. Dougherty, COE Dean from 1916–1956.

“I was always good at math and science,” Cole said. “When I went to my high school guidance counselor for suggestions on what to

study in college, it was recommended that I study engineering.”

Although Cole's family supported her decision, she found several difficulties when she entered the UT engineering program.

“When I began my studies, there were very few female engineering students,” Cole said. “One of my professors told me that a woman had no place in mechanical or electrical engineering, that I belonged in the chemistry department.”

Cole switched her major to metallurgical engineering after her first two years at UT.

When Cole entered the Cooperative Engineering Program, she also found that many companies were not willing to accept a woman in a co-op position. However, she was eventually placed at the on-campus Civil Engineering Experiment station. “I'm sure that Mr. Willey Thomas, who was director of the co-op program at that time, twisted a few arms to place me in that position,” Cole added.

After receiving her bachelor's degree in 1963, she married Leon Cole a week after graduation and began her career at Oak Ridge National Laboratory (ORNL) doing research on the corrosion of metals. After the birth of her first son, she joined ORNL's Welding and Brazing Laboratory where she researched the joining of stainless steels, refractory metals and ceramics. When her husband was awarded a promotion with his company, they moved to Chattanooga, where she worked for Combustion Engineering for 17 years.

In 1991 she returned to ORNL as manager of Fossil Energy Materials where she managed programs for the Department of Energy that involved national laboratories, universities and industry.

Cole's professional career has taken her through many engineering experiences: 11 years in research and development and 17 years in fabrication, non-destructive evaluation and repair, both in the shop and in the field. She helped develop welding electrodes, submerged arc fluxes and flux cored wire and wrote the computer program used in that work. Recently, she formed her own company to provide technical assistance with joining techniques and procedures.

Cole was one of the first women to become active in the American Welding Society (AWS). Since the early 1970s she has presented papers, published and helped organize and chair sessions at professional conferences of AWS, ASM International and The Metallurgical Society (TMS). Through AWS and the Welding Research Council, she is known internationally for her pioneering work on corrosion resistance of brazed joints. She is also involved with writing standards internationally and has participated in selected ISO meetings abroad.

Cole served the American Board of Engineering and Technology (ABET) by participating in accreditation audits of a variety of materials-related engineering programs at several universities.

Cole became a Fellow of the American Welding Society in 1999 and an Honorary Member in 2006. She has won several awards, including one for the best contribution to the progress of brazing and another for a significant contribution in the field of welding. She has over 35 technical publications and holds three patents. She is currently on the AWS Board of Directors and serves as chair of the Fellows Committee. Cole is also a registered professional engineer in the state of Tennessee.

Cole and her husband, Leon, established the Nancy and Leon Cole Outstanding Teacher Award, which UT has given annually for over 20 years.

“Throughout the years, our education at the University of Tennessee has opened up many doors for both Leon and myself, and we wanted to give back in some way. The primary importance of our award is to recognize teaching ability,” Cole said.

The Coles live in Florida. They are parents of Douglas and Andrew and have four grandchildren, Aaron, Jacob, Elizabeth and Alexandra.

Although her sons did not attend UT, Cole has high hopes for the next generation. “We’re going to try to send the grandkids to UT,” Cole added.



COE Dean Way Kuo (left) presents the Dougherty Award to Nancy Cole at the College of Engineering's 2007 Honors Banquet.

NATIONAL SCIENCE FOUNDATION DIRECTOR VISITS UT COLLEGE OF ENGINEERING

Bement discussed the challenges faced by the country in maintaining technology leadership in the face of major growth by countries like India and China, which are making major investments in both scientific talent and infrastructure.

Bement pointed to the need for increased investment in science and engineering research and education and also addressed enhancing the nation's role as both a scientific leader and trusted international partner.

Prior to becoming NSF director in 2004, Bement was the director of the Department of Commerce's National Institute of Standards and Technology. He was previously a distinguished professor and head of the School of Nuclear Engineering at Purdue University.

Dr. Lee Dodds, professor and head of the UT nuclear engineering department, met Bement in the early 1990s when they both had students competing in the American Nuclear Society's annual student design competition in Washington, D.C. Dodds stayed in touch with Bement over the years and recently invited him to speak in the UTNE colloquium program.

"We are honored that Arden chose to visit UT," said Way Kuo, COE dean. "We are very grateful for the support that NSF provides to our college, and his address offered a great deal of valuable information for our researchers."

An archive of Bement's web cast address is available at <http://www.engr.utk.edu/nuclear/colloquia/Archive>.

Arden L. Bement Jr., director of the National Science Foundation (NSF), visited the UT College of Engineering Wednesday, September 13, 2007, and was a featured speaker for a Department of Nuclear Engineering colloquium.

Bement's talk, "The Globalization of Science and Engineering: Competing and Collaborating," focused on the current global challenges facing U.S. scientists and engineers.

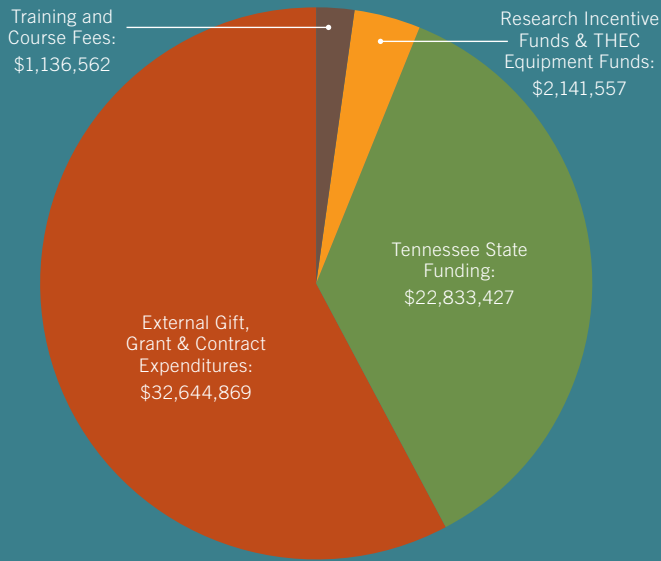
NSF is one of the major sources of American research funding. As NSF director, Bement oversees an agency that provides support to 200,000 scientists, engineers, educators and students each year with a budget of about \$5.5 billion.



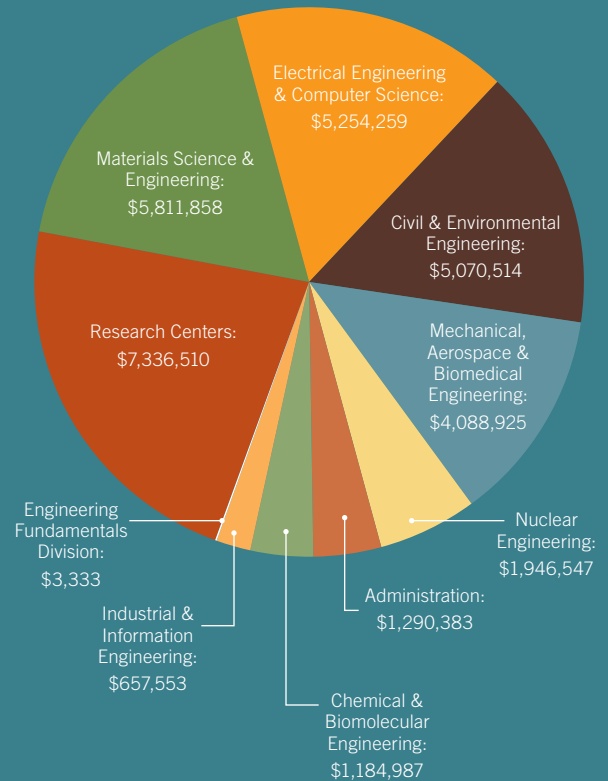
Left to right: Dr. Lee Dodds, department head of nuclear engineering; NSF director Dr. Arden L. Bement Jr.; and Dr. Way Kuo, dean of engineering.

FINANCIAL INFORMATION

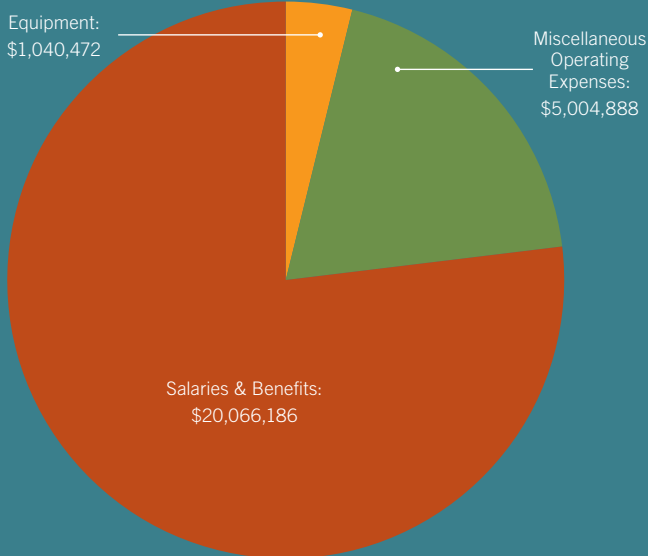
FY 2007 Total Budget: \$58.7 Million



FY 2007 Research Expenditures (Gifts, Grants & Contracts) by Department/Center: \$32.6 Million



FY 2007 State Funding Expenditures \$26.1 Million



THE UNIVERSITY of
TENNESSEE **UT**

COLLEGE of
ENGINEERING

A LEGACY OF ACCOUNTABILITY

2007 ANNUAL REPORT

THE UNIVERSITY OF TENNESSEE
COLLEGE OF ENGINEERING

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