GROWTH IN A CHALLENGING ECONOMY
ANNUAL REPORT 2009
Mission Statement

The mission of the University of Tennessee College of Engineering is:

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

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

To be a major contributor to our nation’s technology base through scholarship and research.
Dean's Message
Our Growing Progress

As the new dean of the University of Tennessee College of Engineering and a thirty-eight-year veteran employee of the college, it is my privilege to welcome you to the fiscal year 2009 edition of our annual report. Our theme this year is “Growth in a Challenging Economy.” This is a very appropriate premise in view of our growth—and continuing—success in a year of economic downturn, but it also represents the college’s commitment to the preservation of our planet’s environment. Whether it is through our investment in designing/constructing our new engineering buildings using energy efficient methods, our ongoing multidisciplinary research in the areas of sustainable and alternative energy, or our collaborative efforts with Oak Ridge National Laboratory, we are on the forefront of changing and rapidly improving technologies.

A few of our notable achievements during this fiscal year include:

**FACILITIES**
Progress continues on the new Min H. Kao Electrical Engineering and Computer Science Building. Current projections are for the facility to be completed in late 2010. This is a very exciting initiative for our college and one that holds great promise for the future.

An unexpected turn of events led to the development of a new Civil and Environmental Engineering/Industrial and Information Engineering Building. After the university determined that the reconstruction of Estabrook Hall was not feasible in view of the deteriorated condition of the building, the $23.1 million in funding was diverted to the construction of a new building to be located between Pasqua Hall and the Neyland Drive Parking Neyland Stadium. An anonymous alumnus provided significant additional financial support to allow new years in this building for the Department of Industrial and Information Engineering, which has been located in East Martin Hall for well over a decade. This new building will be the headquarters for a new program that connects our campus from Neyland Drive. A major feature of the CEE/IIE building will be the design of the bridge that connects the fourth level to “The Hill.” Please see the article on page 13 for more details about our new facilities.

**STUDENTS**
The college’s total enrollment for the academic year 2008-09 was 2,822 students. We had 1,991 undergraduates and 831 graduate students enrolled during this period. The growth in the number of graduate students, particularly our Ph.D. candidates (110% in five years), is very encouraging.

**RANKINGS**
The college’s undergraduate engineering program ranked 32nd among public universities and 64th nationally in US News & World Report’s 2010 edition of “America’s Best Colleges.” The college’s graduate program ranking in US News & World Report’s 2010 edition of “America’s Best Graduate Schools” is 40th among public universities and 68th nationally. Both undergraduate and graduate rankings are based on colleges of engineering in which the highest degree offered is a doctorate.

**EXPENDITURES**
Expenditures (gifts, grants and contracts) continue to grow, with a total of $73.4 million for FY 2009, surpassing the previous year by a significant amount. It is also notable that this increase has taken place at a time when we have had no increases in the number of overall faculty in our college. For an update on our research activities, please see page 14.

**FACULTY**
One of the college’s most impressive achievements in the recent hiring of three outstanding professors as Governor’s Chairs in nuclear security, power electronics and electrical energy storage. For profiles on Dr. Howard Hall, Dr. Yilu Liu and Dr. Thomas Zawodzinski please see page 16. Other news was in the writing of our annual report.

We are also featuring two other remarkable professors in this publication. Dr. Steven Kappes, an associate professor in the Department of Materials Science and Engineering, is one of our 2009 College of Engineering Fellows. He is a very promising young faculty member (page 18).

Dr. Jack Dongarra, one of the college’s most distinguished faculty members, is featured in this publication in addition to holding joint appointments as a Distinguished Professor in the Department of Electrical Engineering and Computer Science (EECS) and as a Distinguished Scientist at Oak Ridge National Laboratory (ORNL). Dr. Dongarra is a member of the National Academy of Engineering, CEO of the Innovative Computing Laboratory (ICL) at UT, and the director of the National Institute for Computational Sciences.

We are very proud of our accomplishments during Fiscal Year 2009 and are excited about the many new challenges and opportunities that await the college in the future. We are grateful for the support provided by our alumni, donors, friends of the college and other individuals. Thanks to each of you!

Sincerely,
Wayne T. Davis, Dean
The University of Tennessee, College of Engineering

Wayne T. Davis, Dean
The University of Tennessee, College of Engineering

The University of Tennessee, Knoxville

As the new dean of the University of Tennessee College of Engineering and a thirty-eight-year veteran employee of the college, it is my privilege to welcome you to the fiscal year 2009 edition of our annual report.
**College Profile**

**Leadership Team**
- Dr. Dr. H. Lee Dodds, Department Head
- Dr. George Pharr, Department Head
- Dr. Soren P. Sorensen, Department Head
- Dr. Kevin Tomsovic, Department Head

**Academic Support Programs and Diversity Initiatives**
- Minority Participation Office
- Engineering Outreach Office
- The Office of Professional Practice
- Director of Engineering Diversity
- Director of Engineering Advising Services
- Director of Engineering Development
- Director of Finance and Administration
- Director of Graduate Admissions
- Director of Technology
- Director, Composite Manufacturing Center

**College Profile**

**Expenditures (Gifts, Grants and Contacts by Fiscal Year)**

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Total Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>5,134</td>
</tr>
<tr>
<td>2008</td>
<td>5,172</td>
</tr>
<tr>
<td>2009</td>
<td>5,172</td>
</tr>
</tbody>
</table>

**Degrees Offered**

- Bachelor of Science
  - Electrical Engineering
  - Mechanical Engineering
  - Polymer Science
  - Nuclear Engineering Science
  - Materials Science
  - Environmental Engineering Science
  - Aerospace Engineering
  - Nuclear Materials Science

**Environmental Initiatives**

- The college has two National Science Foundation Centers of Excellence.
- The college was awarded the 2009 Solar Decathlon National Championship.
- The college received the 2009 ACEEE Efficient Plant Award.

**Enrollment Figures**

- The College of Engineering has an enrollment of 8,384 students.
- The college received 11,816 applications for the 2009-2010 academic year.

**Academic Programs**

- The college offers 30 undergraduate majors, 22 graduate programs, and 5 doctoral programs.
- The college has 12 research centers.
- The college has 9 endowed professorships.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.

**Academic Support Programs and Diversity Initiatives**

- The college has a Minority Participation Program.
- The college has an Engineering Outreach Office.
- The college has an Office of Professional Practice.
- The college has a Director of Engineering Diversity.
- The college has a Director of Engineering Advising Services.
- The college has a Director of Technology.
- The college has a Director, Composite Manufacturing Center.
Jackie Young proves that being an engineering student doesn’t have to be all problem sets and late nights. Young is not only an accomplished rising senior in the Department of Nuclear Engineering, she is also an accomplished musician who will graduate with a minor in clarinet performance.

“I chose UT because of its status as a top engineering college,” Young said. “I also wanted a university where I could play in the marching band and wind ensemble.

Young got just that: during her freshman year in the University of Tennessee’s College of Engineering, she marched in the Pride of the Southland Band. She has also played in the Wind Ensemble, Clarinet Choir and Clarinet Quartet.

“I have been playing in ensembles since middle school,” she said. “Music is one of my true passions.”

She became interested in her other passion—engineering—through her high school AP calculus and physics teacher.

“I gravitated towards math and science, so I decided engineering was the best path for me,” she commented.

It wasn’t until her freshman Engineering Fundamentals class that she decided to pursue nuclear engineering. Dr. Lee Dodds, department head of nuclear engineering, made a presentation to her class outlining reasons to become a nuclear engineer.

“Interesting work, diverse job opportunities, a growing industry known as the ‘nuclear renaissance,’ a way to affect change in the world’s energy needs—these reasons really made the nuclear discipline stand out to me,” Young said. “I also know that being close to Oak Ridge would provide extra opportunities for my nuclear experience.”

Like many other students, Young has taken advantage of the Office of Professional Practice’s Co-op Engineering Program. She interned at Dominion Virginia Power in the summers of 2008 and 2009 where she worked in the Nuclear Analysis and Fuel department, focusing on analytical work in nuclear safety and nuclear core design.

“My internship gave me insight for my schoolwork,” Young said. “Working at a nuclear facility has been an invaluable experience. Experience means everything when it comes to landing that full-time position.”

Young is involved in many extracurricular activities. She is the President of the American Nuclear Society Tennessee student chapter; Vice President of Women in Nuclear Tennessee student chapter; Secretary of the Institute of Nuclear Materials Management Tennessee student chapter; Treasurer of the Society of Women Engineers Tennessee student chapter; and a member of the Tau Beta Pi Tennessee Alpha Chapter.

“The University of Tennessee has been such a great place for the past four years,” she said, “I will definitely consider staying to obtain my master’s degree.”

She has big plans for the future and the intellectual wherewithal to achieve them.

“I desire to be a major player in the second generation of nuclear power,” Young concluded. “The nuclear plants that are currently online will be decommissioned, and in order to keep up with the rising need for energy, the United States will need to build more plants. I would love to be a part of making it happen.”

Outstanding Undergraduate Student Jackie Young

A Major Player
Identical majors, identical GPAs, identical twins. Scott and Sean DeNeale are rising juniors in the Department of Civil and Environmental Engineering. The DeNeales naturally tend to do things in pairs. They graduated as co-valedictorians from Halls High School in North Knoxville, Tenn., and they both chose civil engineering for altruistic purposes.

“While all engineering disciplines serve the advancement of society, I found civil engineering to provide the most direct impact on a community as a necessary part of its infrastructure,” Scott said.

“I chose civil engineering because it offers such a wide range of ways to help humanity and is a high demand profession,” Sean said.

Both twins are members of the American Society of Civil Engineers as well as the Chancellor’s Honors Program, and they both plan on pursuing master’s degrees at UT after graduation. They receive the HOPE Scholarship with General Merit supplement and Volunteer Scholarship.

Perhaps the easiest way to differentiate the DeNeales is by looking at their financial aid awards: Sean receives the Terry P. Scholes Scholarship and Allen & Hoshall, Inc. Scholarship while Scott receives the Ina B. Howard Scholarship and John L. Callaway Scholarship.

Scott and Sean—who is four minutes the elder—have been known to cause a bit of confusion in the College of Engineering.

“This past semester, our professor in one of our civil engineering classes gave us each other’s grades by mistake,” Scott said. “Before we changed the grades, Sean had a slightly higher grade than me, but after the change, I beat him out by a bit! A little brotherly rivalry there.”

“There have been many times when friends of mine have asked why I didn’t acknowledge them on the way to class, and I had to explain to them that there are two!” Sean added.

The TLSAMP program completed the first five years (Phase I) of the program in 2008 and received funding in 2008 from the NSF for Phase II through 2013. The TLSAMP program completed the first five years (Phase I) of the program in 2008 and received funding in 2008 from the NSF for Phase II through 2013.

The TLSAMP Alliance consists of Tennessee State University, the lead institution, the University of Tennessee-Knoxville, Middle Tennessee State University, the University of Memphis, LeMoyne-Owen College and Vanderbilt University.

In addition to the TLSAMP 2008 Summer Bridge program for new students, the Office of Diversity Programs held its 19th annual summer pre-college program for middle school and high school students during the summer of 2008. Twenty-two middle school students, 14 high school sophomores and 17 high school juniors and seniors participated. The program consisted of the following subjects: Engineering Design, How Engineers Use Mathematics, Computers in Engineering, Making a Map for Manufacturing and Communications in Engineering. The group also participated in field trips to manufacturing companies and standard presentations on career exploration and awareness.

Student participants in the 2008 TLSAMP Summer Bridge Program include (from left to right):

The DeNeale Brothers
Seeing Double

Scott (left) and Sean (right) DeNeale

The Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP) held the 2009 Summer Bridge program for engineering and science students at the University of Tennessee. Funded by the National Science Foundation (NSF), TLSAMP was established to increase the number of underrepresented minority students in science, technology, engineering and mathematics (STEM). The three-week program, managed by the College of Engineering’s Office of Diversity Programs, provided the opportunity for 42 minority students to increase their knowledge in the areas of mathematics, science, technology and language arts. In addition, personal and career development skills and research methods and techniques were addressed. Students from Tennessee State University, Vanderbilt University, University of Memphis, Middle Tennessee State University, LaMoyne- Owen College and the University of Tennessee-Knoxville participated.

The primary goal of the Summer Bridge Program is to bridge the gap between high school and college. Through participating in the program, students were exposed to academic concepts in mathematics, physics, biology, chemistry, computer science, engineering and language arts. The group also practiced in exposing problem-solving skills on experiments, and career and personal development skills were addressed in order to advance their knowledge about university life and nation.
It’s difficult to say where I will take us, but it seems that when Huang first approached materials science and engineering, he was destined to study the crystal structures and mechanical behaviors of materials in a nondestructive manner.

Our research into the crystal structures and mechanical behaviors of materials is an important factor in my decision to come to UT,” said Huang. “I always wanted to go to graduate school,” Huang said. “It is because of Mr. Huang that I am currently the only student out of thirty other graduates and post-docs attending the Los Alamos Neutron School at the Los Alamos National Laboratory,” said Woods. “I have found him to be an excellent teacher and mentor, and I’m fully confident that he will continue to have the same positive effect on his peers and future students.

Huang’s research shows that his goal of creating provenance procedures in a world where his touch, he has experienced rewarding discoveries during his time in the MSE Department. In late July 2008, Huang saw the real-space transmission-electron-microscopy image that proved his 2006 prediction of in-situ neutron diffraction analysis of the crystal structures of microstructure evolution and the mechanical behavior of superalloys, respectively,” Liaw said. “E-Wen works very hard on his projects and devotes himself fully to his research activities.”

My plan is to be a faculty member at a college so I can teach the young generation about the importance of engineering, said Huang. “My education from the UT-MSE Department, work with NSF-IMI and the nearby Oak Ridge National Laboratory (ORNL), and experience attending the Los Alamos Neutron School at the Los Alamos National Laboratory,” said Woods. “I have found him to be an excellent teacher and mentor, and I’m confident that he will continue to have the same positive effect on his peers and future students.

Huang has a variety of research interests, including Dr. Wei-Ren Chen of ORNL, in using synchrotron and neutron radiation to study microstructure evolution and the mechanical behavior of superalloys, respectively,” Liaw said. “E-Wen is very enthusiastic about his research, and he is very eager to interact with people on different kinds of research fronts, including Dr. Rozaliya Barabash and Dr. Wei-Ren Chen of ORNL in using synchrotron and neutron X-ray techniques to study microstructure evolution and the mechanical behavior of superalloys, respectively,” Liaw said. “E-Wen works very hard on his projects and devotes himself fully to his research activities.

“Mr. Huang is always able to provide excellent explanations of underlying phenomena,” Strange added. “I have found him to be an excellent teacher and mentor, and I’m confident that he will continue to have the same positive effect on his peers and future students.

Huang is very enthusiastic about his research, and he is very eager to interact with people on different kinds of research fronts, including Dr. Rozaliya Barabash and Dr. Wei-Ren Chen of ORNL in using synchrotron and neutron X-ray techniques to study microstructure evolution and the mechanical behavior of superalloys, respectively,” Liaw said. “E-Wen works very hard on his projects and devotes himself fully to his research activities.

It’s my hobby to educate myself,” Huang continued. “My engineering goal is to try new procedures and try new pumps to answer them and hopefully, my efforts would work for others.”

Huang’s research investigates the crystal structures and mechanical behaviors of materials in a nondestructive manner.

One of his research areas involves neutron-scattering experiments that allow for statistical modeling.

“My confidence in his knowledge is very high,” said Woods. “I have found him to be an excellent teacher and mentor, and I’m confident that he will continue to have the same positive effect on his peers and future students.

His research interests include neu-
The College of Engineering’s three new building initiatives are moving forward. Clearing and foundation work on the site for the Min H. Kao Electrical Engineering and Computer Science Building has been completed, and construction of the facility is moving along rapidly—steel girders were raised in mid-June. The projected completion date for the building is the end of 2010.

The new Civil and Environmental Engineering/Industrial and Information Engineering Building is currently on schedule for an official groundbreaking in December 2009. The state of Tennessee has provided $23.1 million in funding, and a private donor has added a significant gift to enhance the building initiative. Additional funding is still needed, however, and UT and COE development officers are currently working to raise $5 million for construction of this building.

The CEE/IIE facility, which will be strategically located on Neyland Drive between the Pasqua Nuclear Engineering Building and the river, is slated to be the featured building for a new entrance to campus from that area. One of the major features of the building will be a bridge that connects the fourth level to “The Hill.” CEE will occupy the first four floors of the facility and IIE will be housed on the fifth floor.

Work on basic infrastructure such as grading, utilities, etc. has continued on the Cherokee Farm Research Campus. The Joint Institute for Advanced Materials (JIAM), the recipient of $25 million in federal funding, will be the first new facility to be constructed on the research campus. Groundbreaking for JIAM is projected to take place by the end of 2009.

Efforts are also underway to renovate 12,000 square feet of the Dougherty Engineering Building, which was damaged by fire in November 2006 and by flooding in June of 2009. A committee led by Dr. Wes Hines, the COE’s former associate dean for research and technology, has put together a $2 million proposal that will be submitted to the National Science Foundation (NSF) for financial support available through the Academic Research Infrastructure Proposal (ARI), a revived program currently supported by stimulus funds provided through the American Recovery and Reinvestment Act. This renovated space will be used for 21st-century energy related research, including fuel cells, clean fuels and other related technologies.

The college welcomed 561 incoming freshmen in the fall of 2008. ACT test scores for this group remain high with an average composite score of 28.3 and 18.7 math score.

During the 2008 academic year, the college had 2,140 undergraduate students, 414 master’s students and 349 Ph.D. students for a total enrollment of 2,901. The numbers of both undergraduate and graduate students increased from academic year 2007.

Engineering Enrollment Trends by Academic Year

Undergraduates

<table>
<thead>
<tr>
<th>Year</th>
<th>Masters</th>
<th>Engineering Degrees Granted in 2008 – 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>181</td>
<td>Bachelors (B.S.)</td>
</tr>
<tr>
<td>2005</td>
<td>167</td>
<td>Masters (M.S.)</td>
</tr>
<tr>
<td>2006</td>
<td>178</td>
<td>Doctorate (Ph.D.)</td>
</tr>
</tbody>
</table>

The College of Engineering is a dynamic and diverse school with a vibrant research and educational environment. The college has been named one of the top 10 engineering schools in the nation by U.S. News & World Report, and its engineering programs are highly ranked by a number of national organizations.

The college is committed to providing its students with the best possible education, and it is dedicated to ensuring that its graduates are prepared for successful careers in a wide range of fields. The college is also committed to advancing knowledge through research, and it is home to a number of world-class research centers and institutes.

The college is located in one of the most beautiful and culturally rich cities in the United States. Knoxville is the home of the University of Tennessee, which is one of the top public universities in the country. The city is also home to a number of other major universities, including the Knoxville College and the University of Tennessee at Chattanooga.

The college is proud of its long history of excellence and its commitment to excellence in the future. The college is dedicated to continuing its tradition of excellence and to providing its students with the best possible education.
Eric Boder, an associate professor in the Department of Chemical and Biomolecular Engineering (CBE), is a young faculty member who is discovering cutting-edge research topics in his field.

Boder’s research areas are molecular biotechnology and bioregulating, protein engineering, and directed evolution. A primary goal of his work is to change properties of molecules in order to create proteins that might be useful as components of drug delivery devices or therapies. He is collaborating with a former colleague at the University of Pennsylvania to study and engineer a protein that regulates the capability of immune cells to adhere to blood vessel walls at sites of inflammation, a capability that would be desirable for delivering therapeutics.

As a supporter of and participant in multidisciplinary engineering, Boder is also beginning to work with several professors at the University of Tennessee.

“I’m becoming involved in a sustainable energy project with a number of faculty members here at UT, including Paul Frymier in CBE. We are working our efforts to develop an approach for producing hydrogen from sunlight using biological materials,” Boder said. “I will also be working with Barry Bruce, a professor in the Biochemical, Cellular and Molecular Biology Department and Hugh O’Neil, who is a biochemist at Oak Ridge National Laboratory (ORNL).”

The National Institutes of Health (NIH) and NSF are Boder’s primary sources of research funding. He has also received grants from the Whitaker Foundation and Merck Foundation.

“Historically, our research has been biomolecular focused,” Boder added. “Although we still have a lot of interest in protein science, in the laboratory, thanks to the environment and colleagues at UT and ORNL.”

Boder currently is working on a research publication that will outline his results with NSF BRC, a protein functionally programmed in regulating immune responses. Boder’s research team used a computer tool that could better understand how antigens might induce an immune response and allow fine-tuning of those responses.

“Our hope is that our research will point the way to new ‘smart’ materials for use in biosensors and to enhanced approaches to vaccination,” Boder said. “We’ve got a lot of work ahead, but I’m tremendously excited about the possibilities.”

Looking for “Smart” Materials to Save Lives

Research

Dr. Brian J. Edwards

Associate Professor, Department of Chemical Engineering

Edwards was also named as a Research Fellow in 2007. Edwards’ research interests include thermodynamics, fluid mechanics, molecular modeling, and sustainable energy.

Dr. BaoShan Huang

Associate Professor, Department of Civil and Environmental Engineering

Huang was recognized as a Research Fellow in 2007. His research interests include construction materials, environmental engineering, constitutive modeling and numerical analysis and geotechnical engineering.

Dr. Syed K. Islam

Associate Professor, Department of Materials Science and Engineering

Islam’s research encompasses semiconductor devices, among others, and VLSI and monolithic sensors.

Dr. Veerle Keppens

Associate Professor, Department of Materials Science and Engineering

Keppens’ research areas include plasticity and lattice dynamics of novel materials, including transition metal oxides, frustrated magnets and open glasses and thermoelectric materials.

Dr. Philip Rack

Associate Professor, Department of Materials Science and Engineering

Rack received the Research Fellow recognition in 2006 and 2007. His research areas include electronic and optoelectronic materials and devices and thin-film processing.

Dr. Lawrence W. (Larry) Miller

Professor, Department of Nuclear Engineering

Miller was recognized as a Research Fellow in 2006 and 2007. His research areas include nuclear transport theory, theoretical nuclear physics and space radiation protection.

Dr. Philip Rack

Associate Professor, Department of Materials Science and Engineering

Rack received the Research Fellow recognition in 2006 and 2007. He conducts research in electronic and optoelectronic materials and devices and thin-film processing.

College of Engineering Research Fellows

2009 – 2010

The 2009 College of Engineering Research Fellows are recognized at the college’s Faculty and Staff Awards Dinner following a reception at the College of Engineering. Dr. Brian Edwards, Dr. Jayne Wu, and Dr. Veerle Keppens. Not pictured: Dr. Arthur Ruggles, Dr. Philip Rack.
Three Outstanding Faculty Join COE

College of Engineering Welcomes Governor’s Chairs

The UT Knoxville College of Engineering recently named three outstanding professors as University of Tennessee-Oak Ridge National Laboratory (ORNL) Governors Chairs. The Governor’s Chair program, funded by the state of Tennessee and ORNL, supports efforts to broaden and enhance the unique research partnership that exists between the state’s flagship university and the nation’s largest multi-program laboratory.

The initiative is primarily designed to provide an opportunity for accomplished researchers from around the world to enhance joint research efforts that position the University as a leader in the fields of biological science, computational science, advanced materials and nuclear science. Over $20 million in designated funding resources, programs and research each year. The initiative is primarily designed to provide an opportunity for accomplished researchers from around the world to enhance joint research efforts that position the University as a leader in the fields of biological science, computational science, advanced materials and nuclear science. Over $20 million in designated funding resources, programs and research each year.

In March 2009, the college appointed Dr. Howard Hall, a nuclear chemist and expert in preventing and responding to nuclear terrorism, as the first UT-ORNL Governor’s Chair. Hall has spent the majority of his career at LLNL, where he served in a number of positions since 1983. He earned his bachelor’s degree in chemistry from the University of California, Davis, and his Ph.D. in chemistry at the University of California, Berkeley. Hall holds appointments at ORNL’s Energy and Transportation Sciences Division and is a professor in the engineering college’s Department of Electrical Engineering and was named as the Governor’s Chair in Electrical Energy Storage. Zawodzinski is the third Governor’s Chair Chair in the engineering college and his lab for the university.

Zawodzinski’s research focuses on developing new and better ways to monitor and understand the flow of energy through the nation’s power grid on a large scale. While at Virginia Tech, he led the creation of FNET, the hardware and software network that his group continues to enhance each year.

In 2009, the college named Dr. Xia Liu, an expert in the technologies used to operate and analyze the North American power grid monitoring network, as the second UT-ORNL Governor’s Chair. Liu has spent her entire post-doctoral career at LLNL, where she served in a number of positions since 1989, beginning with a post-doctoral fellowship at LLNL, where she served in a number of positions since 1989. She earned her master’s degree and earned her Ph.D. in chemical engineering from the University of Illinois, Urbana-Champaign, where she was named as the Governor’s Chair Chair in the engineering college and the fifth for the University.

In March 2009, the college appointed Dr. Howard Hall, a nuclear chemist and expert in preventing and responding to nuclear terrorism, as the first UT-ORNL Governor’s Chair. Hall has spent the majority of his career at LLNL, where he served in a number of positions since 1983. Hall received his bachelor’s degree in chemistry from the College of Charleston and earned his Ph.D. in nuclear chemistry at the University of California, Berkeley.

Zawodzinski was previously the F. Alex Osteryoung, dealt with the physical and chemical studies of ambient temperature ionic liquids.

Zawodzinski was previously the F. Alex Osteryoung, dealt with the physical and chemical studies of ambient temperature ionic liquids. From this basis Zawodzinski will help to respond and develop multidisciplinary programs in Electrical Energy Storage, Power Cell, and other relevant areas. Other UT-ORNL Governor’s Chairs include:

• Jeremy Smith, a computational biologist, who came to UT Knoxville and ORNL from the Institute of Cancer Research in Germany. He was appointed in 2006.

• Alexei Sokolov, a polymer scientist who came to UT Knoxville and ORNL from the University of Delaware.

• Thomas Zawodzinski, who came to UT Knoxville and ORNL from the University of Delaware.

• Jeremy Smith, a computational biologist, who came to UT Knoxville and ORNL from the Institute of Cancer Research in Germany. He was appointed in 2006.

• Alexei Sokolov, a polymer scientist who came to UT Knoxville and ORNL from the University of Delaware.

• Thomas Zawodzinski, who came to UT Knoxville and ORNL from the University of Delaware.

From this basis Zawodzinski will help to respond and develop multidisciplinary programs in Electrical Energy Storage, Power Cell, and other relevant areas. Other UT-ORNL Governor’s Chairs include:

• Jeremy Smith, a computational biologist, who came to UT Knoxville and ORNL from the Institute of Cancer Research in Germany. He was appointed in 2006.

• Alexei Sokolov, a polymer scientist who came to UT Knoxville and ORNL from the University of Delaware.

• Thomas Zawodzinski, who came to UT Knoxville and ORNL from the University of Delaware.
Dr. Veerle Keppens knows better than anyone that sometimes “life happens.”

Keppens grew up in Belgium, the daughter of a high school math teacher. She was educated in her native country, eventually receiving a Ph.D. from K.U. Leuven.

Although Keppens had strong math ability, she wanted to go into an applied field and chose physics as her major area of study.

From 1995 to 1998, Dr. Keppens was a Fulbright fellow in the novel materials group at Oak Ridge National Laboratory (ORNL), where she became interested in the elastic properties of new materials. She also had a NATO fellowship. Keppens planned only to stay for a few years. “I did not have the intention to reside in the U.S. permanently,” Keppens said. “I had a J-1 Visa and was going to work a few years at ORNL, and then I was going back to Belgium to begin my professional career.”

Fate intervened, however, and Keppens met her husband, David Mandrus, who was a staff scientist at ORNL. Later, Keppens accepted an offer for an assistant professorship in the physics department at the University of Mississippi, and shortly afterwards she and her husband were married in 2000. Keppens and her husband had a commuter marriage for four years. The couple began researching areas where they could be together and finally the opportunity came when she was offered the position as an assistant professor in UT’s Department of Materials Science and Engineering (MSE).

Keppens’ primary area of research is exploring the capabilities of measuring the elastic behavior of materials and how individual materials respond to strain. She also tries to link her findings to the behavior of other properties.

“Although I have been teaching both undergraduate and graduate classes at UT,” Keppens said, “one of the major classes that I teach is ‘201 – Introduction to Materials Science Engineering.’ Most engineering majors must take the course, and it is often a challenge to help them relate to the field. Many of them will be the only materials class that they will take, so I must get them excited about what we are studying.”

Now an associate professor in the MSE department, Keppens has received numerous honors and awards for her research, including the MSE department’s Departmental Outstanding Young Faculty Researcher Award in 2004; the Chancellor’s Award for Professional Promise in 2007; and the COE Research Fellow Award in 2009.

Keppens is also the faculty advisor to the student chapter of the Society of Women Engineers. She notes that the organization has grown significantly in the years since she first became an advisor.

“Fate has really helped me stay here for a while. This is the longest that I have lived in one place since leaving Belgium. I like Knoxville, although when I first came here I didn’t understand why there wasn’t much public transportation. But now that I have my two boys, I don’t think I can afford to use the car most of the time anyway,” she added.

Outstanding Faculty Member Veerle Keppens
MSE Professor Adapts to Life’s Changes

Dr. Veerle Keppens knows better than anyone that sometimes “life happens.” Keppens grew up in Belgium, the daughter of a high school math teacher. She was educated in her native country, eventually receiving a Ph.D. from K.U. Leuven.

Although Keppens had strong math ability, she wanted to go into an applied field and chose physics as her major area of study.

From 1995 to 1998, Dr. Keppens was a Fulbright fellow in the novel materials group at Oak Ridge National Laboratory (ORNL), where she became interested in the elastic properties of new materials. She also had a NATO fellowship. Keppens planned only to stay for a few years. “I did not have the intention to reside in the U.S. permanently,” Keppens said. “I had a J-1 Visa and was going to work a few years at ORNL, and then I was going back to Belgium to begin my professional career.”

Fate intervened, however, and Keppens met her husband, David Mandrus, who was a staff scientist at ORNL. Later, Keppens accepted an offer for an assistant professorship in the physics department at the University of Mississippi, and shortly afterwards she and her husband were married in 2000. Keppens and her husband had a commuter marriage for four years. The couple began researching areas where they could be together and finally the opportunity came when she was offered the position as an assistant professor in UT’s Department of Materials Science and Engineering (MSE).

Keppens’ primary area of research is exploring the capabilities of measuring the elastic behavior of materials and how individual materials respond to strain. She also tries to link her findings to the behavior of other properties.

“Although I have been teaching both undergraduate and graduate classes at UT,” Keppens said, “one of the major classes that I teach is ‘201 – Introduction to Materials Science Engineering.’ Most engineering majors must take the course, and it is often a challenge to help them relate to the field. Many of them will be the only materials class that they will take, so I must get them excited about what we are studying.”

Now an associate professor in the MSE department, Keppens has received numerous honors and awards for her research, including the MSE department’s Departmental Outstanding Young Faculty Researcher Award in 2004; the Chancellor’s Award for Professional Promise in 2007; and the COE Research Fellow Award in 2009.

Keppens is also the faculty advisor to the student chapter of the Society of Women Engineers. She notes that the organization has grown significantly in the years since she first became an advisor.

“Fate has really helped me stay here for a while. This is the longest that I have lived in one place since leaving Belgium. I like Knoxville, although when I first came here I didn’t understand why there wasn’t much public transportation. But now that I have my two boys, I don’t think I can afford to use the car most of the time anyway,” she added.
Dongarra was born and raised in Chicago. Growing up, he had a strong interest in science, math, and technology. He received his bachelor’s degree in mathematics from Chicago State, but became interested in computers during his senior year. Shortly after graduating, he was accepted into an undergraduate internship program at Argonne National Laboratory, and his colleagues at the lab encouraged him to pursue a master’s degree in the Illinois Institute of Technology (IIT). Dongarra received his M.S. in computer science from IIT.

He then went back to Argonne with an internship program, working part-time at the lab and studying for his Ph.D. degree in applied mathematics at the University of New Mexico, which he received in 1980. From 1980 until 1989 he worked in the Mathematics and Computer Science Division at ORNL. Dongarra’s mathematics background was invaluable; it provided him with methods to measure computer performance, and his presence at UT has been a continual stream of proposals and ideas with support from the National Science Foundation (NSF), the Department of Energy (DOE), the Defense Advanced Research Projects Agency (DARPA) and the Department of Defense (DOD), among others.

Dongarra’s career has four areas of research: algorithms and software in linear algebra; high performance and distributed systems, and his presence at UT has been recognized by the joint computer initiatives directed at government and commercial funding sources.

Dongarra and his ICL staff keep a continual stream of proposals and ideas directed at government and commercial funding sources. “We have a group of 40 people in ICL, including research faculty, post-docs, research support staff and staff assistants,” Dongarra said. “Last year, our research budget was $4 million with support from the National Science Foundation (NSF); the Department of Energy (DOE), the Defense Advanced Research Projects Agency (DARPA) and the Department of Defense (DOD), among others.”

ICL has four areas of research: algorithms and software in linear algebra; high performance and distributed computing; performance evaluations and benchmarking; and digital libraries.

One of Dongarra’s most public activities is his involvement with two of the world’s fastest high-speed computers at Oak Ridge National Laboratory (DOE) and DOE’s Argonne and the University of Tennessee’s Kraken supercomputer as the world’s fastest supercomputer. The new 1.64-petaflop Cray XT Jaguar features more than 116,000 processing cores, each with 3 gigabytes of local memory. The University of Tennessee’s Kraken supercomputer is officially the world’s most powerful academic supercomputer and the highest- fastest overall on the planet. Dongarra pioneered the use of measures of computer speed, and his presence at UT has enhanced the joint computer initiatives with ORNL.

Dongarra also teaches a graduate course in the EESCS department, “High Performance Computing For Engineers.”

“Teaching can be rewarding, but it takes a lot of effort to do it well,” Dongarra commented. Dongarra is a member of the 2001 class of the National Academy of Engineering, a highly distinguished honor. He was also designated as Distinguished Research Staff in the Computer Science and Mathematics Division at ORNL. Dongarra’s awards include the Institute of Electrical and Electronics Engineering (IEEE) first IEEE Medal of Excellence in Scientific Computing in 2003 and the Sid Ferbach Award in 2004 as well as the U.S. Walton Visitor Award from the Science Foundation Ireland in 2004. He is a fellow of the American Association for the Advancement of Science (AAAS), IEEE, the Association for Computing Machinery (ACM) and the Society for Industrial and Applied Mathematics (SIAM).

Future plans for computer science faculty and staff include the new Min H. Kao Electrical Engineering and Computer Science facility that is completed in late 2011. The computer science and electrical and computer engineering departments were merged in 2007. Dongarra and his group, however, will remain in their current home in Claxton Hall.

“I’ve been very comfortable having a part of the engineering college,” Dongarra said. “Change is sometimes difficult, but it’s not necessarily a bad thing. It looks as though computer science is just too big to move into the Min Kao building. So we will continue to stay where we are and do what we do best.”

What Dongarra “does best” is to address some of the most important computational scientific issues of our time.
Outreach

COE Establishes New Engineering Outreach Office

“Some of our best outreach efforts will always be putting our students out in the community and letting them demonstrate their resourcefulness.”

Roger Parsons

On April 17, 2008, the University of Tennessee announced The Campaign for Tennessee, a major $1 billion fundraising initiative that includes all UT campuses and institutes. The College of Engineering is a major component of the university’s effort with a goal of $75 million. This goal is itself part of college funding priorities that currently total $193 million.

Priorities identified for this campaign are imperatives for structuring our future as a national leader. Financial resources must be secured for college and department endowments that will enable us to aggressively pursue new engineering frontiers. Endowed professorships and faculty development funds will help us recruit and retain top educators to equip our students for leadership in industry. Contributions for new buildings enhance the learning environment. All of these elements build momentum towards new success for the College of Engineering.

The college is proud to have eight outstanding alumni leading these efforts with their personal philanthropy and time.

Co-chairs:
Charles Chad H. Holliday (BS/IE '70, Ph.D. E.E. '79, Knoxville, TN, President and CEO of Advanced Medical Technologies, co-founder and former CEO of Computer Technology and Imaging Inc. (CTI), new Siemens Medical Imaging
Malcom H. Colditz
Michael C. Crabtree

Campaign

College of Engineering Campaign Committee

Bill J. Moore (BS/EE '93, MS/EE '95), Mentor, MN, former Chairman, CEO and President, General Corporation

Ronald Nutt (BS/EE '61, MS/EE '62, Ph.D./EE '69), Knoxville, TN, President and CEO of General Corporation

Min H. Kao (MS/EE '74, PHD '77), Oakland, CA, President and Management Consultant, Outlook Technology, Inc. (CTI), now President of Bracken Corporation

Ronald L. Turner (BS/AE '68), Minneapolis, MN, retired Chevron Texaco, now consulting with Race Track Petroleums, Inc.

Dennis A. Denihan (BS/ChE '72), Shalott, NC, retired Chevron Texaco, now consulting with Race Track Petroleums, Inc.

Contributions for new buildings enhance the learning environment. All of these elements build momentum towards new success for the College of Engineering.

The college is proud to have eight outstanding alumni leading these efforts with their personal philanthropy and time.

Co-chairs:
Charles Chad Holliday (BS/IE '70), Knoxville, TN, President and Managing Director, Advanced Medical Technologies, co-founder and former CEO of Computer Technology and Imaging Inc. (CTI), new Siemens Medical Imaging
Malcom H. Colditz
Michael C. Crabtree

Charles Chad Holliday

Ronald L. Turner

Min H. Kao

Bill J. Moore

Ronald Nutt

Maloic H. Colditz

Michael C. Crabtree

Dennis A. Denihan

On April 17, 2008, the University of Tennessee announced The Campaign for Tennessee, a major $1 billion fundraising initiative that includes all UT campuses and institutes. The College of Engineering is a major component of the university’s effort with a goal of $75 million. This goal is itself part of college funding priorities that currently total $193 million.

Priorities identified for this campaign are imperatives for structuring our future as a national leader. Financial resources must be secured for college and department endowments that will enable us to aggressively pursue new engineering frontiers. Endowed professorships and faculty development funds will help us recruit and retain top educators to equip our students for leadership in industry. Contributions for new buildings enhance the learning environment. All of these elements build momentum towards new success for the College of Engineering.

The college is proud to have eight outstanding alumni leading these efforts with their personal philanthropy and time.

Co-chairs:
Every beginning engineering student hears the creation of physics, discovering key concepts that allow across this established field. But who knew these principles could apply to philanthropy too? Almost certainly applied. The Campaign for Tennessee offers opportunities across the college for leveraging to ensure that, despite the international economy, the dynamic of engineering at UT moves forward.

As of the close of fiscal year 2009, the College of Engineering has received commitments totaling $44,715,998 towards the $75,000,000 goal, or 60%.

During the fiscal year 2008-2009, $5,921,689 was raised for all departments and programs in the college.

In particular we want to highlight how the pledge made by Dr. Min H. Kao and his wife, Fan Kao, became the leverage that created a greater reaction and initiated transformational change. This change extends through many other donors, which have been directed to existing endowments and department enrichment funds.

For the five fiscal years prior to and including the year Dr. and Mrs. Kao issued the matching challenge, the department averaged $104,000 annually in gifts and pledged funds for endowments and department enrichment funds.

In the next four years (FY2005 through FY2008), excluding and Mrs. Kao’s gift, the department has averaged $1,254,300 annually in gifts and pledges for endowments and department enrichment funds. The challenge was successfully realized spring 2009.

There are collective funds from many graduates and friends of the department, which have been directed to existing accounts, and many significant new funds established as a result of the challenge should be noted.

The Campbell Fund has provided major support to encourage research and teaching through work being done by Dr. Leon Tolbert, the Min H. Kao Professor. The CTI Molecular Imaging Chair was established by an endowment of CTI Molecular Imaging. – Ron Hunt, Mike Craven

MCI Engineering Building II-VI Foundation has given major support to encourage excellent research and teaching through work being done by Dr. Kevin Tomovonic, head of the Min H. K. Department of Electrical Engineering and Computer Science, holds this important endowed position. A charitable levering campaign resulted in the establishment of the J. Frank Pierce Electronics & Computer Science Building.

The J. Frank & Joan Uhl Pierce Engineering Endowment was funded by Mr. McConnell, who passed away in 2008, through his will. The City of Knoxville and Joan Uhl established the scholarship created in 2008 which has been directed to existing endowed faculty position. A charitable levering campaign resulted in the establishment of the J. Frank Pierce Electronics & Computer Science Building.

The J. Frank & Joan Uhl Pierce Engineering Endowment was created in 2008 which has been directed to existing endowed faculty position. A charitable levering campaign resulted in the establishment of the J. Frank Pierce Electronics & Computer Science Building.

The campaign for Tennessee has the potential to create leverage for the entire College of Engineering, focusing philanthropic energy on priorities that will create a greater reaction.

The Campaign for Tennessee offers opportunities for the College of Engineering, focusing philanthropic energy on priorities that will create a greater reaction.

Contact Dorothy Bryson, Interim Senior Director of Development to:

- Establish an endowment
- Discover gift recognition opportunities in the new Civil, Environmental, & Industrial Engineering Building or the Min H. Kao Electrical Engineering & Computer Science Building
- Find out how a gift annuity can provide an immediate tax deduction, guaranteed income for the lifetime, and ultimately benefit the College of Engineering

Contact Dorothy Bryson, Interim Senior Director of Development to:

- Establish an endowment
- Discover gift recognition opportunities in the new Civil, Environmental, & Industrial Engineering Building or the Min H. Kao Electrical Engineering & Computer Science Building
- Find out how a gift annuity can provide an immediate tax deduction, guaranteed income for the lifetime, and ultimately benefit the College of Engineering

Jan 1, 2009
John Tickle’s eyes light up as he talks about his business, Strongwell Corporation, the world’s largest producer of composite structural components and the largest fabricator of structures utilizing composite materials. The company is one of his passions, along with his commitment to philanthropy and his love for the University of Tennessee.

Tickle grew up in Bristol, the southeastern town that shares a border between Tennessee and Virginia. He attended public schools and graduated in 1950 from Tennessee High School. A strong affinity for math and science led him to decide on a career as an engineer.

After attending East Tennessee State University, majoring in pre-engineering, and following a stint at the Naval Academy, he committed to a career as an engineer. In 1960 from Tennessee High School. A strong affinity for math and science led him to decide on a career as an engineer.

Between Tennessee and Virginia. He attended public schools and graduated in 1950 from Tennessee High School. A strong affinity for math and science led him to decide on a career as an engineer.

After attending East Tennessee State University, majoring in pre-engineering, and following a stint at the Naval Academy, he committed to a career as an engineer.

Tickle grew up in Bristol, the southeastern town that shares a border between Tennessee and Virginia. He attended public schools and graduated in 1950 from Tennessee High School. A strong affinity for math and science led him to decide on a career as an engineer.

After attending East Tennessee State University, majoring in pre-engineering, and following a stint at the Naval Academy, he committed to a career as an engineer.

Tickle grew up in Bristol, the southeastern town that shares a border between Tennessee and Virginia. He attended public schools and graduated in 1950 from Tennessee High School. A strong affinity for math and science led him to decide on a career as an engineer.

After attending East Tennessee State University, majoring in pre-engineering, and following a stint at the Naval Academy, he committed to a career as an engineer.

Tickle grew up in Bristol, the southeastern town that shares a border between Tennessee and Virginia. He attended public schools and graduated in 1950 from Tennessee High School. A strong affinity for math and science led him to decide on a career as an engineer.

After attending East Tennessee State University, majoring in pre-engineering, and following a stint at the Naval Academy, he committed to a career as an engineer.

Tickle grew up in Bristol, the southeastern town that shares a border between Tennessee and Virginia. He attended public schools and graduated in 1950 from Tennessee High School. A strong affinity for math and science led him to decide on a career as an engineer.

After attending East Tennessee State University, majoring in pre-engineering, and following a stint at the Naval Academy, he committed to a career as an engineer.

Tickle grew up in Bristol, the southeastern town that shares a border between Tennessee and Virginia. He attended public schools and graduated in 1950 from Tennessee High School. A strong affinity for math and science led him to decide on a career as an engineer.

After attending East Tennessee State University, majoring in pre-engineering, and following a stint at the Naval Academy, he committed to a career as an engineer.

Tickle grew up in Bristol, the southeastern town that shares a border between Tennessee and Virginia. He attended public schools and graduated in 1950 from Tennessee High School. A strong affinity for math and science led him to decide on a career as an engineer.

After attending East Tennessee State University, majoring in pre-engineering, and following a stint at the Naval Academy, he committed to a career as an engineer.

Tickle grew up in Bristol, the southeastern town that shares a border between Tennessee and Virginia. He attended public schools and graduated in 1950 from Tennessee High School. A strong affinity for math and science led him to decide on a career as an engineer.

After attending East Tennessee State University, majoring in pre-engineering, and following a stint at the Naval Academy, he committed to a career as an engineer.

Tickle grew up in Bristol, the southeastern town that shares a border between Tennessee and Virginia. He attended public schools and graduated in 1950 from Tennessee High School. A strong affinity for math and science led him to decide on a career as an engineer.

After attending East Tennessee State University, majoring in pre-engineering, and following a stint at the Naval Academy, he committed to a career as an engineer.
When a young man who wanted to move up in the world and a small-town lawyer crossed paths, an incredibly successful engineering career was born. Howard Chambers, the Vice President/ Director of Programs for the Boeing Commercial Airplane Program, The Boeing Company, is the recipient of the 2009 Nathan W. Dougherty Award.

Chambers grew up in Monteagle, Tenn., a small town in Scott County, about 60 miles northwest of Knoxville. Chambers attended public schools and enjoyed both athletics and drama during his high school years. Although he wanted to attend the University of Tennessee, Chambers admitted that he would not be in school for very long. “I knew why Chambers was not planning to attend when a lawyer who attended his high school graduation asked him about his plans for the future. The lawyer was Howard H. Baker Jr. Chambers had done well in school, and the lawyer wanted to know why Chambers was not planning to attend the University of Tennessee. Chambers admitted that he would not be able to afford to attend. Baker got him an application for a scholarship and Chambers filled it out and sent it in, hoping for the best. I received a freshman scholarship to study engineering,” Chambers said. “It changed the direction of my education and my life.”

Chambers credits his engineering school training with shaping his career. “I received my first engineering scholarship to study engineering,” Chambers noted. “I made the decision to direct my education and my life.

Chambers had always had an affinity for math and science, and he was excelled at this engineering studies and the university, was commissioned as an officer in the U.S. Air Force. The service assigned him to be an Aircraft Maintenance Officer, which exposed him to aircraft and corporate businesses.

After his service in the U.S. Air Force, Chambers joined Rockwell International in 1982. As Rockwell, he served in management positions in Test, Logistics, Business Development and Program Management. Chambers was named associate program manager for the B-1B Support Program, and he later became vice president and program manager of the B-1B program.

Chambers is currently the vice president and deputy program manager of the 787 Commercial Airplane Program. The 787 Commercial Airplane Program Executive of the program, the vice president and general manager of the 787 Commercial Airplane Program, is one of the most advanced jetliners ever built. The program is a joint venture of Boeing and the Kawasaki Heavy Industries Ltd. The 787 is the largest of Boeing’s “Dreamliner” family of aircraft.

He is a recipient of the Silver Star of Aviation, and he was named as the 2005 recipient of the Amelia Earhart Award, Austin AIAA President’s Outstanding Service Award, and the recipient of the 2005 Crystal Arts and Humanities Award for the International City Theater in Long Beach.

Chambers credits his engineering degree at UT for the foundation of his success.

“The degree led to my training and assignment in the Air Force, which allowed me to get into the aircraft and aerospace military and commercial field, I have been in this business since graduating in 1964-1965! Chambers commented.

Chambers is a member of many professional organizations and is active in his local community. He is Chairman of the College of Business Administration National Defense and space products. This includes assets of the company’s intelligence and security programs and technology. He was Chairman of Spectrolab, Inc. and Chairman of the Board and CEO of Spectrolab Satellites, Inc. and Chairman of the Board of Spectrolab, Inc.

He is a member of many local and national boards and organizations. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics.

He is also a member of the U.S. Senate Intelligence Committee, the highest-ranking Republican on the committee. He also served as Minority Leader of the Senate at the end of this third term in January 1985. He was a member of the 1980 Republican presidential nomination and served on President Ronald Reagan’s Chief of Staff from 1987 to 1990. For the next thirteen years he worked in several Tennessee law firms. In 1995, President George W. Bush appointed him to the U.S. Ambassador to the U.N.

“withouth your career and my wife’s direction would have been very different if I had not received that scholarship from the University of Tennessee,” Chambers added. “Thank you Senator Baker, and thank you UT!”

Chambers’ wife is the former Debra Paskell of Torrance. Ca. They have been married for 25 years and have a son, Bryan, who has been accepted into the physical therapy program at Loma Linda University, and a daughter, Melissa, who attends El Camino College where she is studying to be a guidance counselor.

And the small-town lawyer who helped Chambers to apply for admission to UT Howard H. Baker Jr. went on to serve three terms as a U.S. Senator from Tennessee (1987-1995) and rise to national prominence during the Watergate Hearings of 1973-1974 as counsel to the Senate Watergate Committee, the highest-ranking Republican on the committee. He also served as Minority Leader of the Senate from 1979 to 1985, retiring for the next thirteen years he worked in several Tennessee law firms. In 1995, President George W. Bush appointed him to the U.S. Ambassador to the U.N.

“withouth your career and my wife’s direction would have been very different if I had not received that scholarship from the University of Tennessee,” Chambers added. “Thank you Senator Baker, and thank you UT!”

Chambers’ wife is the former Debra Paskell of Torrance. Ca. They have been married for 25 years and have a son, Bryan, who has been accepted into the physical therapy program at Loma Linda University, and a daughter, Melissa, who attends El Camino College where she is studying to be a guidance counselor.

And the small-town lawyer who helped Chambers to apply for admission to UT Howard H. Baker Jr. went on to serve three terms as a U.S. Senator from Tennessee (1987-1995) and rise to national prominence during the Watergate Hearings of 1973-1974 as counsel to the Senate Watergate Committee, the highest-ranking Republican on the committee. He also served as Minority Leader of the Senate from 1979 to 1985, retiring for the next thirteen years he worked in several Tennessee law firms. In 1995, President George W. Bush appointed him to the U.S. Ambassador to the U.N.

“withouth your career and my wife’s direction would have been very different if I had not received that scholarship from the University of Tennessee,” Chambers added. “Thank you Senator Baker, and thank you UT!”

Chambers’ wife is the former Debra Paskell of Torrance. Ca. They have been married for 25 years and have a son, Bryan, who has been accepted into the physical therapy program at Loma Linda University, and a daughter, Melissa, who attends El Camino College where she is studying to be a guidance counselor.

And the small-town lawyer who helped Chambers to apply for admission to UT Howard H. Baker Jr. went on to serve three terms as a U.S. Senator from Tennessee (1987-1995) and rise to national prominence during the Watergate Hearings of 1973-1974 as counsel to the Senate Watergate Committee, the highest-ranking Republican on the committee. He also served as Minority Leader of the Senate from 1979 to 1985, retiring for the next thirteen years he worked in several Tennessee law firms. In 1995, President George W. Bush appointed him to the U.S. Ambassador to the U.N.

“withouth your career and my wife’s direction would have been very different if I had not received that scholarship from the University of Tennessee,” Chambers added. “Thank you Senator Baker, and thank you UT!”

Chambers’ wife is the former Debra Paskell of Torrance. Ca. They have been married for 25 years and have a son, Bryan, who has been accepted into the physical therapy program at Loma Linda University, and a daughter, Melissa, who attends El Camino College where she is studying to be a guidance counselor.

And the small-town lawyer who helped Chambers to apply for admission to UT Howard H. Baker Jr. went on to serve three terms as a U.S. Senator from Tennessee (1987-1995) and rise to national prominence during the Watergate Hearings of 1973-1974 as counsel to the Senate Watergate Committee, the highest-ranking Republican on the committee. He also served as Minority Leader of the Senate from 1979 to 1985, retiring for the next thirteen years he worked in several Tennessee law firms. In 1995, President George W. Bush appointed him to the U.S. Ambassador to the U.N.

“withouth your career and my wife’s direction would have been very different if I had not received that scholarship from the University of Tennessee,” Chambers added. “Thank you Senator Baker, and thank you UT!”

Chambers’ wife is the former Debra Paskell of Torrance. Ca. They have been married for 25 years and have a son, Bryan, who has been accepted into the physical therapy program at Loma Linda University, and a daughter, Melissa, who attends El Camino College where she is studying to be a guidance counselor.

And the small-town lawyer who helped Chambers to apply for admission to UT Howard H. Baker Jr. went on to serve three terms as a U.S. Senator from Tennessee (1987-1995) and rise to national prominence during the Watergate Hearings of 1973-1974 as counsel to the Senate Watergate Committee, the highest-ranking Republican on the committee. He also served as Minority Leader of the Senate from 1979 to 1985, retiring for the next thirteen years he worked in several Tennessee law firms. In 1995, President George W. Bush appointed him to the U.S. Ambassador to the U.N.

“withouth your career and my wife’s direction would have been very different if I had not received that scholarship from the University of Tennessee,” Chambers added. “Thank you Senator Baker, and thank you UT!”

Chambers’ wife is the former Debra Paskell of Torrance. Ca. They have been married for 25 years and have a son, Bryan, who has been accepted into the physical therapy program at Loma Linda University, and a daughter, Melissa, who attends El Camino College where she is studying to be a guidance counselor.
FY 2009 Total Expenditures: $107.3 Million

- Externally Funded Gift, Grant & Contracts: $73,400,720
- Recurring & Nonrecurring State Funds: $33,928,337

FY 2009 Recurring & Nonrecurring State Funding Expenditures: $33.9 Million

- Salaries & Benefits: $25,550,223
- Equipment: $1,401,623
- Miscellaneous Operating Expenses: $6,976,491

FY 2009 Gifts, Grants & Contracts: $73.4 Million

- Research Centers: $45,919,984
- Material Science & Engineering: $6,078,049
- Electrical Engineering & Computer Science: $5,398,467
- Civil & Environmental Engineering: $5,252,861
- Nuclear Engineering: $3,306,509
- Mechanical, Aerospace & Biomedical Engineering: $2,737,137
- Chemical & Biomolecular Engineering: $2,292,620
- Industrial & Information Engineering: $487,497
- Administration: $1,852,654
- Engineering Fundamentals Division: $83,562
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:

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

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

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

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

Partnering with academic, industrial and government entities that share and enhance the mission of the College of Engineering so that our educational and collaborative efforts result in the maximum, positive, economic impact locally, regionally, nationally and globally.

College of Engineering
Annual Report 2009

Writer and Editor
Kim Cowart,
Communications Director

Design
Mitchell Williamson,
Graphic Designer

Writer
L. Ashley Susong,
Graduate Student Assistant

Photography
Rip Noel,
Rip Noel Studios

Nick Myers
UT Video and Photography

Outdoor photography was shot in the UT Trial Gardens

The information in this report reflects the time period from July 1, 2008 through June 30, 2009.

The University of Tennessee is an EEO/AA/Title VI/Title IX/Section 504/ADA/ADEA institution in the provision of its education and employment programs and services.

All qualified applicants will receive equal consideration for employment without regard to race, color, national origin, religion, sex, pregnancy, marital status, sexual orientation, gender identity, age, physical or mental disability, or veteran status.

Publication Authorization Number:
2511234 4-13 08-10   DOF: 9/09