From the Dean’s Desk

Dr Wayne Davis, Dean of the College of Engineering

As I write this message, I am in Boston at the American Society for Engineering Education (ASEE) Engineering Dean’s Institute. Following my appointment in March, and having served as Interim Dean since May 2008, I am attending this year’s meeting for the first time as Dean of the College of Engineering.

The theme of the three-day meeting is “Engineering Education in the 21st Century.” Many of our discussions center on the negative impact the economic downturn is having on universities. Fortunately, these are interspersed with more positive conversations about the funding increases for research provided by the federal stimulus package. This financial support will increase the success of the university and the further economic benefits the state and nation. I am particularly excited about the opportunity to also work with our many alumni and friends of the university who are dedicated to assisting us in our mission.

Davis Named Dean of UT Knoxville College of Engineering

The University of Tennessee, Knoxville, has named Wayne T. Davis as the dean of its College of Engineering.

Davis, who has served as the interim dean since May 2008, has worked at UT Knoxville for more than 30 years. His appointment follows a nationwide search.

“Dr. Davis brings a level of experience and expertise to the table that is unmatched,” said UT Knoxville Chancellor Jimmy G. Cheek. “In his time here, he has proven himself not only to be a top-rate administrator, but also an accomplished researcher and educator. He is the right person to lead the college into the next phase of its growth and its continued quest for increased excellence.”

“I am both honored and pleased to accept the position of dean of the college,” said Davis. “I have thoroughly enjoyed my tenure at UT Knoxville and look forward to continuing to work with the students, faculty, heads, deans and the university on our quest to provide an ever-increasing quality education to our students and to developing technology that benefits the state and nation. I am particularly excited about the opportunity to also work with our many alumni and friends of the university who are dedicated to assisting us in our mission.”

The college, home to a number of nationally ranked programs, is also in the midst of major growth, with construction currently underway on the Min H. Kao Electrical Engineering and Computer Science Building. The 150,000-square-foot building, funded in part by a $12.5 million dollar gift from Kao, will house laboratories and classrooms, and will be the campus’ first LEED-certified building. Plans are also in the works to construct a new 110,000-square-foot Civil and Environmental Engineering/Industrial Engineering Building on Neyland Drive behind Pasqua Hall.

“The College of Engineering is vital to the success of the university and the further economic development of our state,” Cheek added. “The field of engineering is poised to serve the needs of the state, nation and the world in a number of areas. The partnership with Oak Ridge National Laboratory (ORNL) is also critical to the success of both our university and ORNL. The college has a history of productive relationships with the lab, and we can do more to enhance this collaboration. Wayne has done a superb job as interim dean, and I am very pleased that he was the final choice.”

Davis received his bachelor’s degree in physics from Pfeiffer College (now Pfeiffer University) in Misenheimer, N.C.; a master’s in physics from Clemson University; and a master’s in environmental engineering and doctorate in civil engineering from UT Knoxville.

He was named an associate professor in 1979 and became a full professor in the department in 1984. Davis also served as assistant dean of the Graduate School from 1985 to 1988 and as the school’s associate dean from 1988 until 1991. He was the university’s 2003 Macebearer and most recently served as COE’s Associate Dean for Research and Technology.

UT Knoxville Vice Chancellor for Research and Engagement Brad Fenwick and Bamin Khomami, professor and head of the Department of Chemical and Biomolecular Engineering, chaired the search.

“The college, as well as the university, are both fortunate to have benefited from Wayne’s many talents, first as a productive faculty member and also as a skilled administrator. The college has made great progress in all areas, and with Wayne’s proven leadership, there can be no doubt that the momentum will continue,” Fenwick said.

Davis’ official tenure as dean began on March 12, 2009.

–Story by Kim Cowart

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Message from the Editor

Please note the following corrections for the “Faculty News” section in the Fall 2008 issue of Tennessee Engineer:
The background information for Dr. Zhili Zhang, a new assistant professor in the Department of Mechanical, Aerospace and Biomedical Engineering, was incorrectly stated. His research interests are radar REMPI, laser diagnostics and plasma dynamics.

Dr. Kivanc Ekici, an assistant professor in the MABE department, does not hold a joint position with the Department of Nuclear Engineering.

Dr. Haitao Liao is the joint assistant professor in the Department of Industrial and Information Engineering and the Department of Nuclear Engineering.

We apologize for the errors.

Kim Cowart, Editor
Tennessee Engineer

Dean’s Desk continued from page 1

changing dramatically as the profession becomes more engaged in addressing the technological challenges of the world, including issues such as energy, transportation, the environment, health care and hunger. Engineers are finding the need for new skill sets as they work to create greener energy, smarter cities, more efficient energy grid systems and greener technologies in an environment in which global sourcing has become the norm.

Our faculty, students and alumni are highly involved in addressing these challenges. As I have met graduates around the country over the past nine months, the scope of our college is visibly strong. Our students are participating in outreach activities including international co-op assignments and the university’s Ready for the World Program.

We recently became members of the Global Engineering Education Exchange (Global E³), the leading international consortium for undergraduate engineering study abroad. They offer student exchanges between 35 engineering colleges in the U.S. and 55 universities in 17 other countries, providing unprecedented opportunity for our students to study abroad and for undergraduate students to come to our university to create a more diverse student experience. We will devote a section of an upcoming newsletter to highlight these programs in more depth.

It is an exciting time to be dean of engineering at the University of Tennessee. I look forward to interactions with our graduates, our corporate partners and our many supporters around the world.

Associated Construction Women Hold Annual Golf Classic to Endow Engineering Scholarship

The Associated Construction Women (ACW) sponsored the 15th Annual ACW Golf Classic on August 8, 2008, to benefit the organization’s scholarship endowment for the UT College of Engineering. The event was held at Three Ridges Golf Course and over 80 players from the construction industry participated in the event.

Co-chairs for the event were Nancy Roberts, P.E., a teaching associate in Department of Civil and Environmental Engineering, Angel Johnson of Rich Construction and civil engineering student Heather Burnett. Over 50 construction-related companies sponsored holes, meals and special contests and also donated prizes and goody bag items.

The 2008 event was the most successful to date. The ACW presented the final $6,000 check to the college at their membership drive meeting on October 9, 2008, at Gettysvue Country Club.

ACW is a local organization composed of women employed in all facets of the construction industry. Founded in 1993 to promote professional development and networking opportunities for women in construction, ACW quickly expanded its focus to include philanthropic ventures. In June 2004, the group voted to endow an ACW Scholarship Fund in the amount of $25,000 for awards to qualified female students enrolled in the COE. For more information about the organization, visit www.acw-knoxville.com
Work On COE Facilities Moves Forward

Progress is continuing on the College of Engineering’s three new building initiatives. The clearing and foundation work on the site for the Min H. Kao Electrical Engineering and Computer Science Building has been completed, and bids are currently being finalized for the construction of the facility, which should begin by late March to mid-April. The completion date for the building is projected to be by the end of 2010.

Design work for the Civil and Environmental Engineering/Industrial and Information Engineering Building is presently being completed. A technologically advanced building has been approved by the state of Tennessee along with $16.6 million in funding. An additional lead gift from a private source has also been secured.

In order to construct this building with essential laboratories and teaching space, however, additional funding is needed. The UT and COE development officers are currently working to raise $5 million to be used for construction of this building.

The new facility will be strategically located on Neyland Drive below the Pasqua Nuclear Engineering Building with its front façade facing the stadium. It will be the featured building for a new and more prominent entrance to campus from that area. A major feature of the CEE/IEE building will be the bridge that connects the fourth level to “The Hill.”

The first four floors of the building will be dedicated to the CEE department with the fifth floor housing the IIE department.

The Joint Institute for Advanced Materials Building (JIAM), which received $25 million in federal funding, will be the first facility to be constructed on the new Cherokee Farm Research Campus. The architectural team for the campus recently submitted a master plan to UT administrators and trustees, which was well received with no major concerns. Work on basic infrastructure such as grading, utilities, etc. should begin later this calendar year. The JIAM Architects, BarberMcMurray Architects and Bullock Smith & Partners, Inc., are currently revising the plans to meet requirements for the new site on Cherokee Farm. Groundbreaking for JIAM is projected for early summer in 2009.

Renovations to the Dougherty Engineering Building, which was damaged by fire in November 2006, are also moving forward. The Tennessee State Fire Marshall’s Office is reviewing the proposals and work will begin after approval from this agency.

–Story by Kim Cowart
The key to one of the world’s most pressing problems could lie in the arrangement of a few infinitesimal atoms. Nanotechnology research may provide the breakthrough that not only scientists but also the entire global population has been waiting for: a truly sustainable means of energy.

Dr. Gerd Duscher, associate professor in the Department of Materials Science and Engineering, is one of the College of Engineering’s dedicated new faculty members on the hunt for such an answer. Duscher earned his master’s degree (Diplom) in physics from the University of Regensburg, Germany in 1990, and his Dr. Sci. in materials science and engineering from the University of Stuttgart in 1996. He taught at Vanderbilt University and North Carolina State University (NCSU) in Raleigh before joining the faculty of the University of Tennessee in 2008. His original areas of research included interface science with transmission electron microscopes and materials simulations.

“Dr. Duscher has a passion for science that is contagious. He is an incredibly gifted researcher and a skilled teacher and mentor,” said Dr. George Pharr, Chancellor’s Professor, McKamey Professor of Engineering, and Department Head. “He is an exceptional fits to our department and we are very fortunate to have him here.”

Duscher’s research focuses on materials for energy research. Lately, however, he has been concentrating more on materials for energy research.

“I want to contribute by teaching the next generation to solve what former generations have messed up. It is the best thing we can do at this point, and I am hopeful that the young scientists and engineers are going to find the way to resolve this problem.”

His fondness towards the next generation of engineers stems from his desire to better his research capabilities.

“I wanted to have a group of graduate students to enhance my workforce and impact in the field,” he said. “To make them effective, I had to teach them, and I expanded that mission to undergraduate students. I received an undergraduate advising award for doing research with undergraduates at NCSU.”

Duscher began his journey in the field of engineering during a time not unlike the present: the economy was down, and he was unable to find a satisfactory position with his undergraduate degree.

“I was always interested in how things work, and I was good at taking them apart,” he commented. “I was not that good at putting things together—that’s what I learned at school. I really got interested in electron microscopy when I was looking for a Diplom (Master) thesis topic, and I found the electron microscopy group playing Star Trek with the microscope with all these knobs. I knew that this was my kind of field.”

Before joining the faculty at the University of Tennessee, Duscher held a joint appointment at Oak Ridge National Laboratory during his time at NCSU.

“The move to UT just brings me closer to the world-wide unique assembly of aberration corrected scanning transmission electron microscopes,” he said.

Now a permanent resident of Knoxville, Duscher whiles away his free time working in the garden (mostly at the behest of his wife) and tending to his aquarium teeming with exotic fish.

“Another nice side effect of my job,” he added. “I work with Silicon Carbide, which can be used as an intelligent switch for high power devices such as hybrid vehicles,” Duscher added. “I try to discover how to make cheap solar cells more efficient. I hope to shift in the long run to interfaces between biological and crystalline materials. I want to see how, for example, nerve cells bond to semiconductors and how one could control that.”

Duscher is not only a qualified research scientist but an adept teacher as well.

“I have only one teaching tactic and that is straightforward: get the students interested and keep their interest,” he said. “For undergraduate students, motivations range from making money to hip topics. Graduate students are more interested in how a subject helps them doing their research. A tactic I use often is to let people do something with their hands in class. An experiment, a computer simulation—it does not really matter. As humans we have to have a starting point to remember and doing something helps us.”

Duscher joins an esteemed team of research scientists/teachers in the MSE department under the guidance of Dr. George Pharr, Chancellor’s Professor, McKamey Professor of Engineering, UT-ORNL Joint Faculty and MSE Department Head.

“We are very fortunate to have Dr. Duscher with us,” Pharr said. “He is a world-class scientist who will help us enormously in developing our capabilities in electron microscopy and the science it supports. His strong interest in materials for advanced solar cells also comes at a very opportune time.”

Duscher, too, recognizes the pertinence of his energy research.

“We somehow have to solve the energy crisis and the global warming problem,” he said. “As a part of the university and the field of engineering, I want to contribute by teaching the next generation to solve what former generations have messed up. It is the best thing we can do at this point, and I am hopeful that the young scientists and engineers are going to find the way to resolve this problem.”

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Now a permanent resident of Knoxville, Duscher whiles away his free time working in the garden (mostly at the behest of his wife) and tending to his aquarium teeming with exotic fish.

“I also enjoy traveling to foreign countries, another nice side effect of my job,” he added. But Duscher is not merely man of science. When asked if he would like to impart any final words, he said that he, like Goethe’s legendary character Faust, was searching “was die Welt im Innersten zusammenhält.” Translated from the vernacular, it means “the quest for the true essence of life.”

“I just do it more literally than him,” Duscher said.

—Story by L. Ashley Susong
Dr. David B. Clarke has been appointed as the Director of the UT Center for Transportation Research (CTR). Clarke received his undergraduate, master's and Ph.D. degrees in civil engineering from UT in 1979, 1982 and 1995, respectively. He was previously employed as a civil engineer for Bechtel Power Corporation and Science Applications International Corporation (SAIC). Clarke was the assistant director of the CTR from 1990 to 1998. He served as a research director of CTR in 1997 but subsequently left UT to accept a faculty position in civil engineering at Clemson University. Dr. Clarke returned to UT in 2004 to direct the Tennessee Transportation Assistance Program (TTAP) for the CTR. He is also a research associate professor in the Department of Civil and Environmental Engineering.

The Center for Transportation Research was created in 1970 to foster and facilitate interdisciplinary research, public service and outreach in the field of transportation. It began operating full-time in 1972 and since then has contributed greatly to the overall research program of the university. The center is a university-level organization administratively positioned within the College of Engineering. CTR's multidisciplinary staff includes approximately 100 full-time researchers and technicians augmented with numerous faculty and students.

Dr. Xiaorui Wang, assistant professor in the Department of Electrical Engineering and Computer Science (EECS), received a National Science Foundation (NSF) Faculty Early Career Development (CAREER) Award. This $420,000 award will support Dr. Wang's research on power and thermal management for virtualized data centers from 2009 to 2014. The CAREER Program is a foundation-wide activity that offers the NSF's most prestigious awards in support of junior faculty who demonstrate the role of teacher-scholars through outstanding research, superior education and the integration of education and research within the context of the mission of their organizations.

In addition to this CAREER award, Dr. Wang is also the recipient of several highly competitive awards, including the Power-Aware Computing Award from Microsoft Research in 2008, the Real-Time Innovation Award from IBM Research in 2007 and a regular NSF Computer Systems Research (CSR) award (sole PI) in 2007. He also received the Best Paper Award at RTSS, the flagship conference in the real-time embedded systems field, in 2008. Dr. Wang joined UT in August 2006, and has already received a total of $912,000 in external research funding.

Dr. George M. Pharr, who received his Ph.D. from Stanford University, has been the MSE department head since 2006. In 2008, Pharr was one of the first group of professors at UT to be named as a Chancellor’s Professor. He received the COE Research Fellow Award in 2004 and 2005 and the Chancellor's Research and Creative Achievement Award in 2004.

In 2005, $20 million in federal funding was secured for JIAM. Construction of the 100,000 square foot building that will house JIAM is projected to begin on the university’s new Cherokee Farm Research Campus in 2009. The building will serve as the anchor for the Cherokee Technology Park, a group of science and engineering building that will house UT, ORNL and public and private research facilities.

As a national leader in the field of materials research, the UT College of Engineering will play a leading role in the research conducted at JIAM. Faculty from the COE's Department of Materials Science and Engineering and the College of Arts and Sciences’ Departments of Physics, Astronomy and Chemistry, as well as researchers and professors from the COE's Departments of Chemical and Biomolecular Engineering and Civil and Environmental Engineering and the Center for Materials Processing, a university Center of Excellence, will conduct joint projects with ORNL researchers and team leaders.

JIAM will enhance the profile of the University of Tennessee and the College of Engineering in the materials field, significantly contribute to the state's economy and infrastructure and lead future efforts to meet the challenging energy and transportation issues currently faced by the U.S. and the world.

Dr. Klaus Blache is the new associate director of the college’s Maintenance and Reliability Center (MRC). Blache is a recently retired manager from General Motors with a background in education and training in the area of reliability and maintenance. Blache has an M.B.A. degree, an M.S. degree in plant engineering and a Ph.D. in civil-mechanical engineering.

Blache also served as chairman for the Society for Maintenance and Reliability Professionals.

He will join current MRC director Tom Byerley in efforts to expand the MRC memberships and research programs and will eventually direct the UT-Monash University graduate student program.

The MRC is a unique industry/academia partnership dedicated to improving productivity, efficiency, safety and profitability through the development of advanced maintenance and reliability technologies and management principles.
Civil Engineering Senior Class Project Offers Hands-On Experience

One of the most engaging aspects of undergraduate study in UT’s College of Engineering is the opportunity to apply classroom learning to real-life situations. Such is the case for seniors in the Department of Civil and Environmental Engineering: each semester, the graduating class embarks on a project meant to hone their skills in problem formulation, site planning, project management, drawing preparation, specification and cost estimating. An outside client with a real design problem is brought in to meet the students and discuss the project objectives. Past projects include a composting plant, business park and parking garage. While none of these plans have made the jump from theory to reality, the most recent CEE graduates could see their hard work take shape in the near future.

Dr. Terry Miller instructed the Fall 2008 CE 400 course, and the client for their project was Terry Shupp, Parks & Greenways Coordinator for the Knox County Parks and Recreation Department. Shupp charged the class with developing a pedestrian bridge to cross the French Broad River adjacent to the Knox County Seven Islands Wildlife Park and to develop plans for several new hike trails and greenways near Ten-Mile Creek, Beaver Creek and along the French Broad River. Many of the students were avid bicyclers and nature buffs, so they were very enthusiastic about the project and hoped that their designs would one day be implemented by Knox County. The project manager was Alex McGrew with team leaders Scott Stanley (transportation), Jeff Gateley (geotechnical), Robert Osborn (structures), Taylor Gwiazdon and Jake Suer (facilities) and Carrie Grosselose (environmental). There were a total of 25 senior civil engineering students in the course.

The Seven Islands Wildlife Park lies in East Knox County near the Sevier County Line. Encompassing 360 acres, this section of the French Broad River Blueway features ample waterways for kayaking and trails for bird watching. Students addressed the environmental impact, construction access and cost of their five different pedestrian bridge designs; a “stressed ribbon method” design came out the clear winner. This planned bridge featured a unique and unobtrusive design, minimal environmental impact, cost efficiency and, at 1,100 feet, would be the longest stressed ribbon method bridge in existence.

Knox County currently boasts over forty miles of paved greenways, and its citizens use these as safe cycling paths, walking loops and nature trails. Two-thirds of all trips made are of a distance of five miles or less, and in an increasingly green-conscious world, it is vital that homes, workplaces, schools, parks, shopping centers and cultural attractions are adequately served by greenways. With this in mind, students drafted preferred and alternate routes for connecting several existing greenways in Downtown, South and West Knoxville.

Due to time constraints, the class concentrated on Shupp’s primary request: engineer a greenway in the Hardin Valley area of West Knoxville that connects the Northwest Sports Complex, Pellissippi State Community College, Nicholas and Ball Camp Parks on Middlebrook Pike and Karns High School. This required students to graph blueprints for paved greenways, bridges, a highway underpass and facilities such as benches and bathrooms. They extensively explored the environmental constraints and costs associated with a greenway of this size and scope.

The plans for Hardin Valley, along with the blueprints, drawings and graphs for the Seven Islands Bridge and greenway extensions, were presented to Shupp and a team of professional engineers and planners in early December 2008. The final design included several bridges, a new park layout and over 20 miles of new bicycle greenways at a total cost of just under $10 million. The students worked on structural designs, alignments, pavement specifications, erosion control plans, geotechnical considerations and environmental issues.

“I appreciate the high quality standards that the class met in this project and the way they stepped up to this challenge,” Shupp said. “The documentation provided is very professionally done, and I am confident that the routes explored by the students will be a good resource for our future planning.”

It wasn’t only the Parks & Greenways Department that appreciated the outcome of the project. Jake Suer, one of the team leaders, felt the project was unique compared to others throughout college because each student had to teach as well as learn different aspects of civil design.

“We learned a great deal about task allocation, time management and team building,” Suer said. “With the various work experiences that individuals have attained in the engineering field, it allowed the senior design class to present a professional project on schedule. The project was a great deal of work, but it was fulfilling to see the completed project.”

In addition to completing their final class together, each graduating class takes the Fundamentals of Engineering Exam—the first test on the road to becoming a certified engineer. The graduating civil and environmental engineering class of Fall 2008 not only produced a tremendous senior project: they had a 92% passing rate, qualifying them as “engineers in training” until they take their licensure exams after five years of experience in the field.

“We are proud of their Engineering Fundamentals test results,” said Miller. “I was lucky to have such an enthusiastic class and client. They produced work equal to that of graduate level students, and they made it a really fun experience.”

–Story by L. Ashley Susong
Whether it’s the rampaging mechanical beings in the science fiction movie *I, Robot* or the humble Roomba mopping the floor, robots are all the rage these days.

Robotics expert Dr. Lynne Parker, a professor in the Department of Electrical Engineering and Computer Science, has just received two significant grants from the National Science Foundation (NSF) and from Lockheed Martin Advanced Technology Laboratories toward her research with these mechanisms.

The NSF grant supports Parker’s work in developing robots that have different sensory capabilities and can share duties in a coalition. The primary goal is to have the robots help one another to solve a problem.

“We use what is called a ‘bottom-up’ technique,” Parker said. “We base the actions on the flow of information when the robots are grouped as a whole. You can see the interaction from an information flow perspective—which means that the robots are not just a list of sensors. The information generated from each robot makes the possible solutions more flexible—the robots can decide how they will work with one another, or even with humans, to achieve a task.”

Parker refers to a solution called “chunking” in which the groups of robots learn to solve a problem or complete a task. If everything is done correctly, this work can be reused the next time the task arises, saving the team from having to re-solve the task.

The quality of information that is given to the robots is important as well. Parker’s research team wants the robots to decide how to cooperate so that they maximize the quality of the information they use. To illustrate these capabilities, Parker’s team provides robots a series of points, from A to B. The robots then have to figure out how work together to share their sensory resources, so that they can follow the waypoints as a team.

One example that Parker demonstrates on video shows a student walking toward a box. The robot senses the action and moves toward the box as well. When the student pushes the box forward, the robot mirrors his action to “help” move the box. All of this happens without the human giving any direct signals or commands to the robot.

“Obviously Lockheed Martin is interested in this research for military applications, where robots can move alongside soldiers and perform helpful tasks, without having to be directly commanded for every action,” Parker said. “However, you can apply it to other areas as well. For example, we could program robots to assist in people’s homes, doing daily tasks or helping elderly people, just by observing what the people are doing and deciding how best to help out.”

Parker’s grants have allowed her to fund two full-time graduate students, a post-doctoral researcher and two undergraduate honors students for her research team. The two undergraduate students are using the research as a topic for their honors theses.

“This technology is relevant for a wide variety of problems and applications,” Parker added. “It will be exciting to see how far we can go with it over the next few years.”

–Story by Kim Cowart

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**Research News**

Dr. Ungtae Kim has joined the Institute for a Sustainable and Secure Environment at the University of Tennessee as a post-doctoral research associate and the Department of Civil and Environmental Engineering as a research assistant professor. Kim received his Ph.D. degree from Utah State University, Logan, Utah, and his master’s degree from Korea University, Seoul, Korea.

Kim was previously a research associate for the Utah Water Research Laboratory. He is a registered professional engineer (PE) in Korea where he served as a military engineer in the Korean Army from 1992 to 1994.

Kim’s primary research focus involves solving various real-world water-related problems with scientific and engineering approaches. Kim is currently collaborating on a SERDP (Strategic Environmental Research and Development Program) project with Dr. Jack Parker, a research professor in the CEE Department.
The Power of Positive Thinking - James Downing

James “Jim” Downing (BS/CEE ’69, MS/EnvE ’74), the former CEO of Barge, Waggoner, Sumner and Cannon, Inc. actually ended up in environmental engineering when he got bored with his first job after graduation.

Downing was born and raised in Nashville, Tenn., and decided to study engineering after showing a strong affinity toward math and science in high school. A relative who worked for the Nashville Bridge Company invited the younger man to attend work with him one day, and that experience led Downing to select civil engineering as his undergraduate major.

He initially attended Middle Tennessee State University for two and a half years, majoring in engineering, but completed his degree at the University of Tennessee so he would graduate with a B.S. from an accredited engineering program.

“I distinctly remember good old Perkins Hall,” Downing said. “I developed many life-long friendships during my years at UT. I also recall going through Civil Engineering Survey School, when I thought I would never make it through those three ‘wonderful weeks’ in the hills of Greenville, Tennessee.”

Downing worked part-time during some summers as a surveyor for the Tennessee Department of Transportation. After graduating, he went to work as a structural engineer for McDonnell Douglas Aircraft in St. Louis, Mo. However, he became bored with the work and decided to take some graduate engineering classes at the University of Missouri, St. Louis. He eventually transferred back to UT to complete his graduate studies in environmental engineering.

During his years at UT, Dr. Bill Drewry, a civil/sanitary engineering professor who eventually served as Downing’s graduate school advisor, was a strong influence.

After receiving his graduate degree, Downing worked with the Knox County Water, Wastewater and Solid Waste and Air Pollution Departments; he then subsequently became the principal of a successful consulting firm for 12 years, focusing on environmental, civil and geotechnical engineering. As principal engineer, he managed major investigations and clean-up designs for soil and groundwater contamination at industry, Department of Energy (DOE) and Department of Defense (DOD) facilities throughout the country.

Downing eventually joined Barge, Waggoner, Sumner and Cannon, Inc. (BWSC) and, as principal engineer, he managed the program to clean-up one of the largest Superfund alternative sites in the United States, located in Copperhill, Tenn. The work included restoration of water quality and ecological conditions within three major watersheds, encompassing over 10,000 acres, which had been severely impacted by copper mining and ore processing operations for over 100 years. Downing recently served a four-year term as CEO of BWSC.

Downing credits his education at UT for a great deal of his professional achievements.

“Both my undergraduate and graduate education at the university provided the technical basis for my career. However, more importantly, the education process instilled in me the confidence to know that I could perform at a high level if I just put my mind to it. I attribute my graduate education as the primary catalyst for this positive thinking and self-confidence.”

Although he has enjoyed a successful career, Downing is concerned about the future of engineering.

“The profession is facing a serious shortage of qualified engineers. Since the baby-boom generation is retiring and fewer students are enrolling in engineering courses, we are dealing with this critical issue on a national level,” he commented.

Downing sees communications as one area where future engineers need to expand their focus.

“Strong skills in technology are a must, but we need engineers who have the social and communications skills that will be necessary if they are to have a voice in shaping our future society,” he added.

Downing and his wife of 38 years, Sue, live in Brentwood, Tenn. The Downing’s daughter, Julie Hanna, lives with her husband, Aaron, and two children, Jacob and Molly, in Augusta, Ga.

—Story by Kim Cowart

COE Faculty, Staff, Students and Alumni Enjoy Engineering Homecoming 2009

On the chilly and windy morning of November 8, 2008, the College of Engineering hosted its annual Homecoming celebration. The college welcomed nearly 200 current students, alumni and their family and friends to “The Hill” for food and fun. Although the Volunteers fell to the Wyoming Cowboys 13-7, the College of Engineering’s Homecoming was a decided success.

Famous Dave’s Barbeque and Aramark Food Services provided brunch and lunch options before the early kick-off time. There were student and departmental displays from the ACSE Steel Bridge and Concrete Canoe contests, Challenge X, Engineers without Borders, IEEE, Nuclear Engineering, AICE, the Office of Professional Practice and Engineering Diversity Programs.

Attendees, COE faculty and administrators enjoyed interacting with students, viewing the displays and talking with then Interim Dean Wayne Davis. They were also thrilled by the opportunity to reunite with classmates.

The College of Engineering’s Homecoming 2009 will take place on November 7, 2009, against the Memphis Tigers. Please make plans to join us!
Dr. Bill Snyder Named Chair COE Leadership Annual Giving 2009

With characteristic enthusiasm, UT Knoxville Chancellor Emeritus and former Dean of Engineering Bill Snyder said yes—immediately—when asked to serve as the first COE Leadership Annual Giving Chair. “Engineering has been my life,” said Snyder with a smile. “This college provided the foundation of my career by teaching me a way of thinking and problem solving that applies successfully to any endeavor. I am proud to give financially and I am excited to be once again in an official position asking others to join me.”

The Leadership Annual Giving program will focus on unrestricted annual giving to the new College Fund for Engineering. Highlighted briefly in the fall edition of Tennessee Engineer, the College Fund for Engineering provides dollars that enable the dean to strategically move priorities forward and quickly support emerging opportunities. Throughout the year, Snyder will serve as the spokesperson for all COE annual giving efforts—attending COE alumni events, visiting with individuals and writing to our engineering graduates. “We have never concentrated on annual giving in quite this way at UT,” noted Dorothy Bryson, Interim Senior Director of Development. “We are asking every alumnus and alumna to make an unrestricted gift in addition to other philanthropic support they may provide.”

The initial 2009 goal for the College Fund for Engineering is $150,000. “Engineers should be able to exceed this. Our ultimate goal,” Snyder emphasized, “is to involve everyone. Giving is a way of life that brings great satisfaction – perhaps more to the giver than to the recipient.”

To make an annual gift to the College Fund for Engineering or other funds please use the enclosed envelope or go http://www.utalumni.utk.edu/giveto/ and click on Give Now. For information about establishing a legacy through an endowment or through your estate, please contact the COE Office of Development at 865-974-2779 or engrdev@utk.edu.

Dorothy Barkley Bryson Interim Senior Director
Denis Tippo Director
Tierney Bates Assistant Director
Chris Parsons Advancement Specialist

College of Engineering • Board of Advisors

Dr. Bert Ackermann Jr. (BS/NE ’65, MS/NE ’67, PhD/NE ’71) CEO, SPINLAB Knoxville, Tenn.

Mrs. Karyl Bartlett (BS/ME ’84, MBA ’00) Director, Composite Manufacturing Center Boeing Fabrication The Boeing Company Seattle, Wash.

Mr. Howard E. Chambers (BS/ME ’64) Vice-President and General Manager Boeing Company Foundation Seal Beach, Calif.

Dr. Tom F. Cheek Jr. (BS/EE ’61, PhD/EE ’69) Vice President of R & D Epic Systems, Inc. Dallas, Texas

Dr. Dana C. Christensen Associate Laboratory Director for Energy and Engineering Sciences Directorate Oak Ridge National Laboratory Oak Ridge, Tenn.

Mrs. Nancy C. Cole (BS/ME ’63, Ms/ME ’88) Engineering Consultant Fernandina Beach, Fla.

Mr. Joe C. Cook Jr. (BS/EE ’65) Founder and Principal Mountain Group Capital, LLC Nashville, Tenn.

Dr. Mark E. Dean (BS/EE ’79) IBM Fellow and Vice President J. T. Watson Research Center Yorktown Heights, N.Y.

Mr. Dennis A. Denihan (BS/Chem ’72) Consultant, Race Trac Petroleum, Inc. Atlanta, Ga.

Mr. Ron Green (BS/EPh ’70, MS/EPh ’78) Chairman ADVATECH, LLC Charlotte, N.C.

Ms. Kimberly S. Greene (BS/EPh ’88) Chief Financial Officer Tennessee Valley Authority Knoxville, T. N.

Dr. Michael W. Howard (BS/EE ’80, PhD/Eng ’96) Senior Vice President for R & D Electric Power Research Institute Charlotte, N.C.

Mr. Dwight N. Hutchins (BS/CE ’86) Partner Accenture Washington, D.C.

Dr. Steven D. Lucas (BS/CE ’81 MA/CE ’83) COO Denark Construction, Inc. Knoxville, Tenn.

Dr. H. Lee Martin (BS/ME ’78 PhD/ME ’86) Managing Member Charity Resources, LLC Knoxville, Tenn.

Mr. Edwin A. McDougle (BS/CEE ’69, MS/CEE ’75) Principal Ross Bryan Associates, Inc Engineers Nashville, Tenn.

Mr. Mark A. Medley (BS/ME ’69, MBA/Ind. Mgmt., ’70) President and CEO Control Technology, Inc. Knoxville, Tenn.

Mr. Andrew K. Phelps Vice President Bechtel Jacobs Company, LLC British Columbia, Canada

Mr. James B. Porter Jr. (BS/ChemE ’65) Retired Wilmington, Del.

Mr. Richard T. Snead (BS/EE ’73) Retired Carrollton, Texas

Mr. Eric L. Zeannah (BS/EE ’84) President/Owner American Accessories International Knoxville, Tenn.
1950s

Daniel Bruce Puckel (BS/CH'E '54) was inducted into the U.S. Army Advanced Marksmanship Unit Hall of Fame. He lives in Kingsport, Tenn.

1970s

Leif E. Bouffard (BS/CH'E '73) was named “Engineer of the Year” by the Central Florida Section of the American Institute of Chemical Engineering. He lives in Mulberry, Fla.

Terry Tyler (BS/NE '75, MBA '83) was promoted to the position of EVP Strategic Initiatives and CIO of ENMAX Corporation in Calgary, Alberta, Canada. He was appointed in November 2008. He lives in Calgary.

Robert Micahel White (BS/ES '79) was elected to the Board of Governors for Infocomm International for a second term as governor at large. He lives in Maryville, Tenn.

1980s

Werner J. Dahm (BS/ME '81) was named chief scientist of the U.S. Air Force. He lives in Ann Arbor, Mich.

Cesar A. Penalba (BS/EE '84) joined Barge, Waggoner, Sumner and Cannon as an electrical utilities engineer. He lives in Managua, Nicaragua.

Zina D. Shannon (BS/CH'E '86) was promoted to director of worldwide sourcing for General Mills, Inc. She lives in Eden Prairie, Minn.

1990s

Robert D. Adams (BS/AE '90) received a NASA Spaceflight Awareness Honoree Award for his work leading to the discovery of metal debris in moving parts on the International Space Station. He lives in Houston, Texas.

James Steven Powell (BS/ME '94) received a master's degree in mechanical engineering from George Washington University. He lives in Fredericksburg, Va.

Robert D. Adams (BS/AE '90) received a NASA Spaceflight Awareness Honoree Award for his work leading to the discovery of metal debris in moving parts on the International Space Station. He lives in Houston, Texas.

James Steven Powell (BS/ME '94) received a master's degree in mechanical engineering from George Washington University. He lives in Fredericksburg, Va.

Stefan M. Duma (BS/ME '95) was appointed a John R. Jones Faculty Fellow mechanical engineering by the Virginia Tech Board of Visors. He lives in Blacksburg, Va.

2000s

Michael Eric Nocton (BS/CE '02) joined Barge, Waggoner, Sumner and Cannon as a structural engineer. He lives in Knoxville, Tenn.

Patrick Lynn Edwards (BS/CICS '03) received his doctor of jurisprudence degree from George Washington University. He lives in Alexandria, Va.

David Allen Marcum (BS/CE '06) accepted a position as a project manager for J.R. Wauford and Co. He lives in Maryville, Tenn.

Memorials


James Edward Clark (BS/EE '48) died January 17, 2009. He lived in Sun City Center, Fla.

Joseph Black Bogle (BS/EE '49) died February 9, 2009. He lived in Portland, Ore.

Roy C. “R.C.” O’Brien, Jr. (BS/ME '51) died March 5, 2009. He lived in Knoxville, Tenn.

Robert D. Scillian (BS/CH'E '51) died February 23, 2009. He lived in Florence, Ala.

Robert Allen Patterson (BS/ME '53) died January 25, 2009. He lived in Spartanburg, S.C.

Norman Clark Schlemmer (BS/CE '53) died February 5, 2009. He lived in Huntsville, Ala.

Charles Franklin Brown (BS/IE '56) died November 2, 2008. He lived in Decatur, Ga.

James King (BS/IE '56) died February 1, 2009. He lived in Port St. John, Fla.

Rex Ernest Leuze (MS/CE '56) died February 13, 2009. He lived in Lenoir City, Tenn.

Hudson Bluford (Jack) Eldridge (BS '58, MS/Liberal Arts '61) died November 4, 2008. He also received his Ph.D. from UCLA. He lived in McMinnville, Tenn.

Thomas Lee Call (BS/IE '62) died March 6, 2009. He lived in Lexington, Ky.


Terry M. Fox (BS/IE '79) died October 22, 2008. He lived in Lawrenceburg, Tenn.

Colin Renae “Chuck” Jones (BS/CH'E '80) died January 13, 2009. He lived in Antioch, Calif.

In the News

Mark Bryant (BS/NE '79) was named by Lockheed Martin as vice president of the External Tank Program at the NASA Michoud Assembly in New Orleans, La. in November 2008. Bryant is now responsible for External Tank (ET) design, production, delivery and flight. Bryant’s career with Lockheed Martin began in 1985. Starting as a facilities engineer, he rose through the ranks to director of Material Sourcing in 2002. He also served as ET deputy project manager in several different capacities in 2003 and 2007 before being named to his present position. A native of Red Bank, Tenn., Bryant holds an MBA from Tulane University in addition to his B.S. from UT.

Scott Painter (BS/NE '85; MS/NE, '87; Ph.D./NE, 1990) was promoted to Institute Scientist of the Center for Nuclear Waster Regulatory Analyses in the Geosciences and Engineering Division at Southwest Research Institute (SwRI) in San Antonio, Texas. The position of Institute Scientist, Engineer or Analyst is the highest technical level an SwRI staff member can attain. Painter joined SwRI in 1998 and was previously a staff scientist. He specializes in computer modeling of flow and transport in the subsurface of the Earth. His current work investigates radionuclide migration processes for the Nuclear Regulatory Commission and nuclear waste programs in Europe.

Check out the College of Engineering’s online newsletter TENNESSEE engineer online

http://www.engr.utk.edu/TNengr
COE Receives Grant from Alcoa

Alcoa Inc. Campus Partnership Program has awarded the UT College of Engineering a two-year grant valued at $80,000 to support outreach and cooperative engineering programs. The multi-year grant will help fund programs to promote the engineering profession by integration of student study plans with extracurricular activities, global educational dimensions, diversity and service learning. A part of the funding will support a co-operative program which creates a hands-on learning environment for engineering students by offering the opportunity to hold paid full-time positions in a professional setting related to their academic and career goals.

COE Alumnus and Board of Advisor Member Honored by University of California-San Diego

Dr. Joseph C. Cook, Jr. (BS/IE ’65) will be honored with the Life Science Leadership Award at the Rady Pinnacle Awards and Alumni Gala on May 17, 2009. The Rady School of Management at the University of California-San Diego sponsors the event. Cook is a long-term member of the college’s Board of Advisors. He is the Founder and Principal of Mountain Group Capital, LLC in Nashville, Tenn.

S & ME Engineering Company Donates Funding to CEE

The S & ME Engineering Company donated $5,000 to the Department of Civil and Environmental Engineering in support of its academic and research programs. Vice President Michael R. Stomer, P.G. and Materials Engineer Randy Rainwater, P.E. from S & ME presented the check to COE Development Director Denis Tippo and CEE Department Head Dayakar Penumadu in November, 2008.

Engineering Student Receives Study Abroad Scholarship

Lauren Johnson, a double chemical engineering and chemistry major, is one of fifty-nine University of Tennessee students who have received the first round of study-abroad scholarships funded by a new international education fee collected from undergraduates. Johnson is taking classes in both of her major programs this semester at Abo Akademi University in Turku, Finland.

Nuclear Engineering Major Leads Pride of the Southland Band

Students in the College of Engineering engage in a wide variety of extracurricular activities, but Ben Farr, a student in the Department of Nuclear Engineering, fills his spare time with an activity that puts him more in the public eye than most of his classmates: he is the drum major for the Pride of the Southland Marching Band.

“I was confident UT was the right choice academically as well,” he added. “It is a privilege to be enrolled in nuclear engineering.”

Farr participated in concert and marching bands during his time at Maryville’s William Blount High School, and he even attended a drum major school at the University of Georgia.

“I was a goal to actually be selected for that position. “It was a goal to eventually audition for drum major,” Farr began, “but it was a choice academically as well,” he added. “It is a privilege to be enrolled in nuclear engineering.”

“Skills that are learned in engineering can be useful outside of the classroom or an engineering job,” Farr said. “Engineers are analytical and talented problem-solvers; this mind set is very complementary to any leadership position.”

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<td>Dr. Wayne Davis, Dean of Engineering</td>
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<td>Dr. Wes Hines, Interim Dean for Research &amp; Technology</td>
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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 covered veteran status.

**COE Welcomes Students, Faculty and Donors to First Student Scholarship Luncheon**

The University of Tennessee College of Engineering hosted its inaugural Student Scholarship Luncheon on Thursday, November 13, 2008 at the University Center Ballroom on the Knoxville campus.

Over 160 students, selected COE faculty, donors, alumni and staff attended the event, which provided an opportunity for students who have scholarships to meet the donors who provide funding for their academic studies.

UT, Knoxville Chancellor Emeritus William T. Snyder was the keynote speaker for the event. Dr. Snyder, who is now the Community Relations and Development Director for the Tennessee Theatre, offered an entertaining presentation about the restoration of the historic landmark. COE Interim Dean Wayne Davis presented Snyder with a College of Engineering “chair,” a recreational seat-in-a-bag with the COE logo, at the end of his talk.

The event replaced the traditional Honors Banquet, which is usually held during the spring semester.

Faculty awards and honors that have previously been presented at the Honors Banquet will be given out at the Faculty and Staff Awards Dinner, currently scheduled for Thursday, April 23, 2009 at the Knoxville Convention Center. The Nathan W. Dougherty Award, the college’s most prestigious honor, will also be presented at this event.