WE ARE MORE COMMITTED THAN EVER TO EXCELLENCE AND INNOVATION

It is with great pleasure and enormous pride that we present this report on the activities of the Tulane University School of Engineering during calendar year 2002. This is the first time in recent memory that we have published such a report and it is really quite a shame that we have been remiss in doing so. Our School of Engineering, established in 1894, enjoys a rich tradition of high quality undergraduate and graduate education, cutting edge scholarship, and extensive professional and public service. An annual report such as this is an excellent way to chronicle our achievements and their relevance in the world of engineering and science. It is our intention to hereafter publish such a report at the end of each calendar year.

The School of Engineering at Tulane University is not large. As we began the current academic year in the fall of 2002, our ranks consisted of 54 faculty members, 22 staff members, and approximately 700 undergraduate and 200 graduate students. Despite this modest size, we have enjoyed a remarkable level of productivity and international recognition. We also welcomed our most qualified freshman class ever, as measured by average high school class rank and average cumulative SAT score.

We received word that all six undergraduate programs that had been reviewed in the fall of 2001 by the Accreditation Board for Engineering and Technology (ABET) were successful in receiving accreditation under the new EC 2000 outcomes-based criteria. Efforts toward greater diversity in enrollment began to show remarkable results. Research grants and contracts awarded to the school by government and industry nearly doubled over the previous fiscal year. And generous gifts from alumni and friends, allocated directly to the School of Engineering, have seen growth thanks to our Endowment funds. These are but highlights in a year marked by research breakthroughs in advanced materials, biengineering and technology, energy and environment, and information technology and computational science – all spearheaded by our School of Engineering.

We hope that you enjoy reading about the achievements of our school during the past year. We are certain that you will see why we take such great pride in being one of America’s best engineering schools at one of America’s greatest universities.

3RD ANNUAL TULANE ENGINEERING FORUM

The Tulane Engineering Forum, sponsored by the School of Engineering and the Society of Tulane Engineers, held a very successful 3rd Annual Forum in September 2002 and provided an opportunity for professionals to meet with current students and academic experts at this one-day conference. This year’s topic was National Energy Policy and the Future of Energy Production, and featured a panel of distinguished industry and government officials. Also featured were concurrent sessions focusing on construction/maintenance, information technology, manufacturing, petrochemical, power and transportation. Engineers in attendance were able to earn six professional development hours.

The 2003 Tulane Engineering Forum will be held Friday, September 26, 2003 at the Hilton Riverside and Towers in New Orleans. Read more about speakers, topics and register online at www.eng.tulane.edu/efl.

RECOGNIZING EXCELLENCE IN TEACHING AND AWARDING OUTSTANDING RESEARCH

2002 LEE H. JOHNSON EXCELLENCE IN TEACHING AWARD RECIPIENT

PROFESSOR KYRANOS PAPADOPOULOS

Kyranos Papadopoulos is a Professor of Chemical Engineering at Tulane University, having joined its faculty in 1981 and having served as department chair from 1998 to 2001. He received his BS (1978), MS (1980) and DEngSc (1982) in chemical engineering from Columbia University. His industrial experience includes March Sharp & Dohme Research Laboratories (Summer 1985) and Eniricerche (June 1987–July 1988). His research is in the stability of dispersions and their transport through porous media. A member of the Editorial Board of Colloids & Surfaces, Dr. Papadopoulos has developed the “capillary video-microscopy” technique that has uniquely led to the visualization of several new phenomena, on which he has published in the last nine years. He has taught a variety of undergraduate and graduate courses. In addition to being the recipient of the 2002 Lee H. Johnson Excellence in Teaching Award, he also received in 1999, he has been honored with four departmental awards and one campus-wide teaching award at Tulane.

2002 OUTSTANDING RESEARCHER AWARD RECIPIENTS

PROFESSOR FREDERICK E. PETRY

Dr. Fred Petry received BS (Loyola University) and MS (Louisiana State University) degrees in physics and a PhD in computer and information science from The Ohio State University in 1975. He has served on the faculties of The University of Alabama in Huntsville and The Ohio State University, and is currently a Professor in the Department of Electrical Engineering & Computer Science. His recent research interests include representation of imprecision via fuzzy sets and rough sets in databases, GIS and other information systems, and artificial intelligence including genetic algorithms. His research has been funded by NSF, NASA, DOE, NIH, and various DOD agencies, as well as industry. He has directed 20 PhD students in these areas in the past 15 years. Dr. Petry has over 280 scientific publications including nearly 100 journal articles/book chapters and five books written or edited. His monograph on fuzzy databases has been widely recognized as the definitive volume on this topic. He is currently an associate editor of IEEE Transactions on Fuzzy Systems, Neural Processing Letters and area editor of information systems for Fuzzy Sets and Systems and has been a general chairperson of several international conferences. He received the K.S. Fu Award from NAVIPS in 1986 and was selected as an IEEE Fellow in 1995 for his research on the use of fuzzy sets for modeling imprecision in databases.

PROFESSOR NASTALIA A. TRAYANOVA

Dr. Natalia Trayanova joined the faculty at Tulane School of Engineering in 1995. She is currently a Professor of Biomedical Engineering and the Director of the Computational Cardiovascular Electrophysiology Laboratory. She received her MS degree in physics from Sofia University, Bulgaria in 1980 and a PhD from Bulgarian Academy of Sciences, Sofia, Bulgaria (in section in biengineering) in 1989. She was a Postdoctoral Fellow and Research Assistant Professor at Duke University from 1989 to 1995. Her broad research interests center around understanding the normal and pathological electrical behavior of the heart. The majority of her current federally funded research focuses on ventricular defibrillation. Her research is currently supported by NIH (2 grants), NSF, and the American Heart Association (2 grants, including the Established Investigator Award). She has also received funding from industry and the Whitaker Foundation.

Dr. Trayanova is the author of more than 150 scientific publications including approximately 80 refereed journal articles and book chapters. She is currently an associate editor of the IEEE Transactions on Biomedical Engineering, and serves as a reviewer to 17 scientific journals. Dr. Trayanova is also a reviewer for federal granting agencies such as NIH (CSA Study Section) and NSF. In 2002 she was awarded a Distinguished Fulbright Visiting Professorship at the University of Oxford, UK. She has also received numerous teaching awards.

OUTSTANDING RESEARCHER AWARD

Recognizing the need to honor deserving scholars and to increase the visibility of the school’s research activity, the Outstanding Researcher Award was established in 2001 by the faculty of the School of Engineering upon the recommendation of the School of Engineering Research and Graduate Studies Committee. The Award is given according to the following criteria:

• The quality and quantity of publications, with particular emphasis given to archival publications, research presentations and citations of published work.
• The total amount of research funding.
• The contributions to the mission of the university in graduate education, training and mentoring, including graduate students and post-doctoral scholars.
• National and international recognition as evidenced by honors and awards, journal editorships and participation in editorial boards, national and international scientific committees and boards, and professional patents.

OUTSTANDING TEACHING AWARD

Recognizing the need to honor deserving scholars and to increase the visibility of the school’s research activity, the Outstanding Teaching Award was established in 1976 by the Society of Tulane Engineers to recognize teaching excellence by a member of the School of Engineering Faculty. In 1986 the Society changed the name to the Lee H. Johnson Excellence in Teaching Award as a tribute to Dean Johnson upon his retirement after serving as dean for 22 years. It is presented each spring at the Tulane Engineers Awards Banquet.

THE TOTAL AMOUNT OF RESEARCH FUNDING.

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UNDERGRADUATE

E-WEEK KICKS OFF YEAR OF E-VENTS

March 11-15, 2002 saw Engineering Week hit the scene. Hosted by the Engineering Student Council (ESC), the week began with a “cheap pizza” lunch and ended with a crawfish boil and auction. Sandwiched in between were events ranging from a presentation by keynote speaker William Conway, Chairman and CEO of Mudpacks and Masters, Inc. to special activities for high school students interested in Tulane engineering student organizations. A special event involved our students serving lunch to the homeless at the Ozanam Inn Shelter.

ENGGINERING STUDENTS CONTINUE THE TRADITION OF LEADERSHIP

The Tulane Engineering and Computer Science Honor Society (TECHS) was extraordinarily active this year. In addition to their usual activities of hosting prospective students and mentoring new freshmen, TECHS organized the second annual Tulane University Robotic Battle Olympiad (TURBO) during E-Week. Contestants designed and built robots to meet constraints of cost, size, and power. Teams from Tulane, Xavier, and Dillard Universities competed in a series of timed events in which robots battled to the death. In October, the TECHS Charity Shindig raised $1200 to buy new band uniforms for Woodson Middle School.

A new organization, the Society of Hispanic Professional Engineers (SHPE) was chartered in fall of 2002. In spite of being a new organization, it has been quite active, hosting a series of meetings and events.

IMPROVING THE EXTERNAL PROGRAMS

The Study Abroad Program is becoming a vibrant international opportunity for our undergraduate engineering students. The program, which has existed for many years, is expanding both the schools of choice and the availability of time periods, be it a semester or a year. For example, the program at the Technical University of Dresden is a sophomore semester abroad program. Other opportunities are being explored in Australia, Colombia and Hong Kong. The 2002 applications showed a great increase over recent years.

While our students have been obtaining internships for years, this year we set out to formalize the program. Springing from a growing database of companies and a compartmentalized email distribution system to students, the increased opportunities for the Internship Program have been significant. Our vision is to have the premier internship program for undergraduate students in the United States. Our best advertisement for the program will come from the companies and the students who jointly profit by the experience. If your company has internship opportunities, contact Dr. Jack Grubbs at jgrubbs@tulane.edu.

UNDERGRADUATE ENROLLMENT

INDIVIDUALLY DESIGNED MAJORS

The Engineering Science major was re-engineered in 2002, emerging with a new focus and a new name: Individually Designed Majors (IDM). Under the old design, students enrolled in a mandatory menu of required courses, ranging from Heat Transfer to Circuits to Chemical Engineering Design. Only seven slots for career-relevant elective courses were open.

The new program allows enormous flexibility in the choice of science, technical, and liberal arts. The major boundary condition is that a student’s well-designed major must meet the distribution requirements of at least 48 hours of engineering topics and 20 hours of humanities and social sciences, in addition to math and science courses. A faculty committee, with one representative from each of the school’s five departmental units, approves each proposed IDM.

Under the new program, students’ transcripts will actually list the title of the new IDM for example, “BSE in Engineering Finance.” According to Prof Cedric Walker, Director of the IDM Program, “this change overcomes a major shortcoming of the old program, under which all graduates were simply listed as earning degrees in Engineering Science. Now they can enter the job market with a clear statement of their expertise right at the top of their resumes.”

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Our Graduate Student Body: Quality and Diversity

For the fourth year in a row, our incoming graduate student class has a total in the verbal and quantitative components of the GRE higher than 1300.

One of the reasons that the School of Engineering is able to attract such outstanding graduate students is the continuing success of our Louisiana Board of Regents Fellowships program. Since this program started, in 1995, we have had more than thirty-five students that have benefited from the generous BOR Fellowships, with a total support of more than $3 million. Our proposals for Graduate Fellowships have always ranked within the first three in the State and our school has received more Graduate Fellowships than any other school or college in Louisiana.

Women and minority students are attracted by the quality of our graduate programs. Last year, 11% of our graduate students were members of minority groups and 30% were women.

Dual-degree Program Underscores Importance of Diversity

Capitulating on a very successful dual-degree undergraduate program between Tulane University and Xavier University, a historically black university, a new Xavier-Tulane Five Year Bachelor/Master’s Program was developed. Selected outstanding Xavier students complete the undergraduate component in science at Xavier and the master’s degree requirements in engineering at Tulane. The students take prerequisite undergraduate courses at Tulane during their senior year at Xavier. Summer research and a thesis round out this robust program.

2002 Was a Banner Year for Research Funding

This past year, our new grant awards increased from $5.3 million to $16.4 million. As this income is being spent by the principal investigators, our annual research expenditures are expected to also jump to more than $8 million. The School of Engineering is well-positioned to make yet another quantum jump in research funding that will bring us recognition as a research university.

The Center for Ballistic Missiles Research (CBMR) is supported by a grant from the Department of Defense. Faculty from the Departments of Electrical Engineering and Computer Science as well as Mechanical Engineering and Physics collaborate in the activities of this center.

The Tulane Institute for Macromolecular Engineering and Science (TIMES) is supported by NASA. It is housed in Chemical Engineering and faculty from Mechanical Engineering, Physics and Chemistry participate in its activities.

These new research centers, along with other interdisciplinary projects are helping make Tulane an international focal point in applied scientific research.

The Livingston Digital Millennium Center for Computational Science brings together the resources of Tulane and Xavier Universities to create an interdisciplinary research center.

The concept of an infrastructure where people could overcome the barriers of their disciplinary fields and work together was born from collaboration between mathematics, biomedical engineering and chemical engineering departments.

In 2001, the center began to receive funds from the U.S. Department of Energy and quickly established a technology center in the Richardson Building. The Silicon Graphics Inc. supercomputer with multiple processors and individual workstations are the backbones of the CCS. “The SGI network provides a high-speed computing facility with a lot of shared memory,” says Donald Gaver, Professor of Biomedical Engineering and an associate director of the new center.

Among the many projects taking advantage of this computational power are studies of the structure and dynamics of DNA, development of a comprehensive computational modal of the electrical activity of neurotransmitter cells, dynamics of interfaces in viscoelastic fluids and surface and interface processes on the atomic level. Much of this research requires complex simulations and 3D modeling featuring a large number of particle interactions. Such delicate analysis necessities the use of high-definition graphics and image processing. Until recently such models were very difficult to produce. Today, Dr. Donald Gaver (Biomedical), Dr. Daniel DeKee (Chemical) and postdoctoral researchers Dr. Ali El-Afif (Biomedical) are able to study microscopic physicochemical hydrodynamics, Dr. Natalia Trayanova (Biomedical) can visualize an individual hypothalamic nerve cell as a series of multidimensional graphs and Dr. Daniel Lacks (Chemical) can create complex computational simulations to help prevent metal corrosion.

The Center for Quantum Information Processing (QIP) is supported by a grant from the Louisiana Board of Regents. It is housed in the Tulane Department of Computer Science.

The Center for Computational Engineering (CCE) is supported by a grant from the U.S. Department of Energy. It is housed in the Tulane Department of Chemical Engineering.

The Center for Electronic Structure Theory (CST) is supported by a grant from the U.S. Department of Energy. It is housed in the Tulane Department of Chemistry.

The Center for Computational Materials Science (CCMS) which was founded by the late Dr. John Richardson and was supported by a grant from the U.S. Department of Energy.

The Center for Distributed and Parallel Learning (CDPL) which was founded by Dr. William Richardson and was supported by grants from the U.S. Department of Education and the National Science Foundation.

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When Kay C. Dee, Assistant Professor of Biomedical Engineering, began attending schoolwide faculty meetings six years ago, she heard assertions such as, “Everybody knows if you want to get good teaching evaluations, you have to give an easy class.” As a new faculty member, these broad statements about education disappointed Dee. She said, “Maybe everybody knows that, but I don’t.”

“Her contribution to the department is enormous,” said Rich Hart, Professor and Chair of Biomedical Engineering. Dee has developed new courses, including Brave New World, a study of ethics and scientific thought. Plus, she instituted Teaching Engineering: a new required course for graduate students. Dee joined with other department faculty members in revising the undergraduate curriculum, which is now used as a model for departments around the nation.

“We, as a team, put our students first,” said Dee. “We’re willing to put our time and energy into making our department and our courses better.”

Tulane’s Department of Biomedical Engineering, a now required course for graduate students, focuses on developing ethics and scientific thought. Plus, she instituted Teaching Engineering: a new required course for graduate students. Dee joined with other department faculty members in revising the undergraduate curriculum, which is now used as a model for departments around the nation.

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State in Assumption to a Curious Engineer, and You Can Bet She Will Ask for Proof

Dee got busy investigating the teaching literature. She began to treat learning as a scholarly activity. And in the process, Dee became an exemplary teacher. This year the Council for the Advancement and Support of Education and the Carnegie Foundation for the Advancement of Teaching have recognized her as the 2002 Louisiana Professor of the Year. Tulane recruited Dee from Rensselaer Polytechnic Institute, where she earned a PhD in 1996. She came to Tulane to start a new sub-discipline—cell and tissue engineering—in the biomedical engineering department.

In order to develop active-learning experiences for our classes, the Biomedical Engineering Department has developed new junior-level ‘bridge’ courses that interweave fundamental engineering analysis with biomedically-relevant problems. The topics for these courses are Cell and Tissue Engineering, Biomechanics, Biomaterials, and Biostatistics. In addition, the department has long offered a course titled Biomedical Electronics that is a bridge-type course. The department successfully applied for funds from the Louisiana Board of Regents (P.I.: Gaver and Hart) and the National Science Foundation (P.I.: Gaver, Hart, and O’Neal) (Psychology) to develop the laboratory facilities for these courses and evaluate their efficacy. These grants have allowed us to develop a new teaching laboratory that is located in Boggs 241.

A NEW TEACHING LABORATORY

A collaborative research project between Tulane’s Department of Biomedical Engineering and the LSU EYE Center has had its 5-year, half-million dollar renewal grant funded by the National Eye Institute, beginning July 2002. The grant, entitled JOINT-Related Injuries and Failure in the Optic Nerve Head, follows a 4-year collaborative grant between the Principal Investigator, Claude Burgoyne at the LSU Eye Center, and Professor Richard T. Hart as Principal Investigator of the Tulane subcontract. In the renewal, Professor J.A. Francis Sub-Joh has added an Office of Biomedical Engineering student in lab.Tulane Engineering is “Far-Sighted”

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The Tulane Institute for Macromolecular Engineering and Science (TIMES) is a research and education initiative to build on existing expertise in polymer science and technology. TIMES is a home-away-from-home to sixteen faculty members in engineering and science representing six departments.

Professor Daniel DeKez is the Director and Professor Brian Mitchell is the Associate Director of the new interdisciplinary research venture. This year, TIMES was awarded a $2.5 million grant from NASA for research in polymers. Specifically, the grant covers the development of new high-performance, high-temperature materials for use in space. Specialized polymers will help NASA in the construction of re-entry shields, astronaut suits, fuel tanks, composite cabling for power lines, etc. TIMES’ impact will reach far into space, but it may have a significant effect much closer to home. Louisiana ranks second in the nation in resin production but has fallen far behind in the area of polymeric applications. By creating courses, publications and seminars on polymers, Tulane will help provide a trained workforce for the state and keep jobs here in Louisiana.

The Tulane Institute for Chemical Sciences is a collaboration between the Departments of Chemical Engineering, Chemistry and Biochemistry. The objective of the institute is to foster interdisciplinary research and to enhance the visibility of research in the chemical sciences both internally and to constituencies external to Tulane University.

NANOTECHNOLOGY PRESENTS US WITH AN OPPORTUNITY AMOUNTING TO A NEW INDUSTRIAL REVOLUTION

Yun Lu, Assistant Chemical Engineering Professor, is engaged in research to create some interesting and useful small things. Lu’s specialty is in the field of nanotechnology. Nanotechnology presents us with an opportunity amounting to a new industrial revolution. It will revolutionize the way medicines, electronic components, and other products are manufactured and used. A few of the anticipated benefits include detecting cancers before they spread, creating materials with superior strength and vastly increasing data storage and processing capabilities.

Many aspects of nanotechnology are already moving into the realm of fundamental research to commercial applications. “I have a research grant to develop a thin film material for use in separating the different layers making up a computer microchip,” says Lu. Using a fabrication process unique to the scale of nanostructures, Lu’s computer chip film is “self-assembled” by the predictable, spontaneous actions of individual molecules. He has also designed fabrication techniques for nanocomposite thin films for use as super-tough coatings. “These films are modeled on the structure of seashells,” says Lu. “If you look at a section of an abalone shell under an electron microscope, you see layers of calcium carbonate. Between them are layers of organic bio-polymer, a protein. Cracking cannot propagate through the whole structure—you can only break individual layers. So the structure is very tough.”

Lu is also working on materials with medical and biological applications. He has developed a nanomaterial that self-assembles in the form of an onion-like structure of concentric spheres. The structure can be used for the timed release of drugs or other chemicals by placing them inside the spheres at the manufacturing stage.

COMING TOGETHER ON POLYMERS

The Chemical Engineering department fosters an environment where undergraduates are given every opportunity to participate in research. Many of our undergraduates carry out research projects with journal publications as desired outcomes.

Christopher Rives, Djordje Nikolic, Alex Lei, Carlos Villa and Carrie Giordano have participated in journal paper submission and publication with Professors Dan Lackis, Yuryko Papavassiliou and Kim O’Connor. Carlos Villa and David Johnson served as co-authors in the paper competition of the student chapter of the ANS/NUPEC Region C conference meeting this year in Puerto Rico, placing 3rd overall and 3rd in section respectively. Hong Song is the recipient of the Outstanding Graduate Student Award, American Institute of Chemical Engineers. He is also the recipient of the Outstanding Teaching Assistant Award, Omega Chi Epsilon (Alpha Iota Chapter).

Many of our students are active in community and volunteer services. Jonathan Dandy does tutorial at Allen Elementary. Catherine Oswald is the CACTUS Project Coordinator for Blood Services. Catherine runs all the campus blood drives. She is also a volunteer for the New Orleans Children’s Hospital. Louisa Lawson is the Secretary for the Louisiana Section of the American Society of Agricultural Engineers. Michelle Walton volunteers with Odyssey House, a drug rehabilitation home. Eric Hampsey sings with his church choir and with other church groups. Handeke Azem was featured in the Times Picayune as a participant on the LAMP program.

A vibrant Graduate Student Seminar Series has been set up by the graduate students. They have also established a media center to facilitate development of communication media for conference presentations.

Louisa Lawson and Carrie Giordano at the Atomic Force Microscope

STUDENTS CONTRIBUTE TO RESEARCH AND TO THE COMMUNITY


Richard Gonzalez served as a panelist for the SBIR program run by the National Science Foundation. Richard is a member of the Senate Committee on Defense 2001-2002, the Senate Committee on Appropriations and the Senate Committee on equal opportunity.

Richard Gonzalez, Brian Mitchell, Yunfeng Lu, John Kline-Popovics, Dan Lackis are Principal Investigators of National Science Foundation grants and Ken O’Connor and Daniel DeKez are principal investigators in NASA grants.

Victor Lawrence participated in workshops on Particle Technology as a member of the National Academy of Sciences (NAS). The workshop was sponsored by the National Science Foundation and the U.S. Army Research Office.

Daniel Lackis received the B.V. Bailey Teaching Award in Chemical Engineering and was invited to serve as a consultant at Northeastern University, University of Wisconsin, Pennsylvania Polytechnic Institute, and O.C. Tanner.

Victor Lawrence also received the B.V. Bailey Teaching Award, the Presidential Designated Excellence Award in Engineering in Chemical Engineering program, Vic is an active participant in the Tulane-Columbia Energy Research Institute.

Yunfeng Lu is one of only 26 researchers throughout the country to be selected as an Officer of Naval Research Young Investigator. The designation comes with a $100,000 grant that will help fund Lu’s research in developing high-efficiency solar cells. Lu’s research could be used for widely diverse purposes, from creating a cool-decking coating for soldiers’ cold-weather clothing to providing the solar panels that power a space station.

Brian S. Mitchell and Ken O’Connor were presented to full professors.

Brian Mitchell is the recipient of an Alexander von Humboldt Foundation Research Fellowship Award. Brian will be spending his sabbatical (Spring ’03) at the German Space Agency in Cologne, Germany. Brian was selected Chair of the ASME New Orleans Local Section. He accompanied students to the ASME Southern Regional Conference in San Juan, Puerto Rico in April.

Ken O’Connor gave invited talks at Rice University and at Cooper Union College. She organized a workshop and gave an invited talk at the NALLA SCLG Science Conference.

Yuryko Papavassiliou received the Lea Johnson Award for Chemical Engineering undergraduate Education in the School of Engineering. She also gave an invited lecture at Columbia University.
BRIAN BAETZ
Chief, Department of Civil & Environmental Engineering

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THE GOVERNMENT FINDS HELP THROUGH TULANE PROFESSOR

Steinberg is on the SAB’s Drinking Water Committee, which is assigned to provide guidance to the EPA’s Office of Water, Administrator of the Safe Drinking Water Act. “Traditionally, environmental engineering meant design of water and waste treatment systems,” says Steinberg. She is interested in studying natural hazards and their impact on infrastructure. She recently completed a study funded by the National Science Foundation that postulated cases of toxic chemical release triggered by natural disasters. “What I am interested in is how to respond to these releases in the midst of a natural disaster, and how we prevent them from occurring,” says Steinberg. To obtain data, Steinberg travels to disaster sites throughout the country and sometimes farther afield. In 2000 and 2001, Steinberg traveled to Turkey to gather information after a massive earthquake. The EPA appointment isn’t the first time the government has tapped Steinberg’s engineering expertise. After the September 11 tragedy, she was contacted by governmental agencies concerned about the potential effects of terrorist acts.

THE SCOPE OF ENVIRONMENTAL ENGINEERING HAS CONSIDERABLY BROADENED SINCE THE 1970’S DUE TO LAWS AND REGULATIONS RESULTING FROM GROWING ENVIRONMENTAL CONCERNS

On April 11, 2002, President Scott Cowen and Dean Nicholas Albro welcomed friends and members of the Tulane community. Professor Walter E. Blissey (CE ’40, G ’43) and his wife Ruth, Walter E. Blissey, Jr. (CE ’97) and his family to the rededication and naming celebration of the Civil Engineering Building. Dr. Robert Englekirk (CE ’56), who led the fund raising campaign to renovate and rename the building in Blissey’s honor and his wife were among the many key contributors who honored the Blissey Family by attending the event.

The renovation of this historical building could not have been accomplished without the generous contributions of many individuals. Several key donors were also in attendance, including Mr. John Hildebrandt, whose gift honors his late husband, William C. Hildebrandt (ME ’41), and Mr. Scott Derickson whose father, Gaydon Derickson (CE ’34), had previously donated the Donated Derickson Library. A generous bequest from Mrs. Gayden (Nancy Maugh) Derickson provided funds to establish the Derickson Departmental Office Suite. A reception in the newly renovated building followed the ceremony with current civil engineering students providing tours of the building. Walter E. Blissey Hall is one of the four original buildings on Tulane’s campus. The renovation successfully combined the elements of the old architecture with current needs of faculty, staff and students.

BLESSEY HALL REDEDICATION AND NAMING CEREMONY

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The government believes that natural-hazards researchers have some expertise in this area, because these are both types of unexpected events,” says Steinberg. “So I was an invited participant at a meeting at the White House conference center last year on infrastructure vulnerability. My contribution was how critical infrastructure can be better engineered to meet the demands placed on it by unexpected events,” says Steinberg. Steinberg also was a participant at a National Science Foundation meeting, “Preparing for the Unexpected,” and has been contacted by governmental agencies concerned about the potential effects of terrorist acts.
MISSILE DEFENSE RESEARCH TAKES OFF

The world’s unsettled political climate has heightened the U.S. government’s interest in creating defenses against ballistic missile attacks. And while missile defense technology is still in development phase, many of its first and essential steps will take place here on campus, thanks to a $2.64 million contract awarded to Tulane by the U.S. Department of Defense’s Missile Defense Agency.

Tulane has been involved in missile research going back to the 1980’s, when the Strategic Defense Initiative Program was under way, according to Buckles. He anticipates the Missile Defense Agency and related agencies will begin to look upon Tulane as a prime people resource. He expects that “they will send young officers here for a period of time, and they’ll send civil servants who plan a career path in this area.”

Finally, in this year, Dr. Urvash Gidwani who received his Ph.D. from University of Massachusetts in 2001, joined the department and is interested in research in image processing, digital signal processing, algorithmic research, and nondestructive evaluation.

Additionally, Dr. Brij Singh, a graduate of the Indian Institute of Technology (1986), and Dr. Martin Simina, a graduate of Georgia Institute of Technology, both joined us the previous year.

Considering that the department has an open search for filling four other faculty positions in the next two years, the department will have about ten faculty who will complement the existing faculty in using their diverse talent and years of experience in solving challenging research and educational problems.

WE PROVIDE BETTER INFORMATION EARLIER ALLOWING MORE TIME FOR DECISION-MAKING IN THE PERIOD OF ENGAGEMENT

“We work on fundamental research,” says Bill Buckles, Professor of Computer Science in the Department of Electrical Engineering and Computer Science and Tulane’s missile-research project leader. Tulane researchers will produce abstract solutions and methods of operation, largely in the form of algorithms, which are step-by-step solutions to problems.

“We’re basically working on sets of projects,” says Buckles, “that would result in methods that would increase the time available to make engagement decisions. Other tasks are geared to maximizing the effectiveness of sensors aboard missile interceptors in satellites and on the ground. In particular, these tasks involve improving sensor performance in a debris-filled environment where a previous engagement, harmless boost-stage hardware or decoy objects produce a cloud of debris.

The result of this work will be, says Buckles, “a complete algorithmic research, and pattern classification.

One of the important events for the Department of Electrical Engineering and Computer Science was the addition of three faculty in academic year 2001-02.

Dr. Dale Joachim, a graduate of Michigan State University, joined us in August 2001 after serving as the principal investigator of R&D projects at Sanders/Lockheed. Dr. Jing Peng joined us after serving as a faculty of computer science in Oklahoma State University and is interested in machine learning, content-based image retrieval, and pattern classification.

Dr. Brij Singh is leading the efforts in the new area of nanotechnology and strengthening departmental ties with National Science Foundation by attending several of NSF workshops.

A NEW GENERATION OF FACULTY

Director of the EECS Graduate Program, Dr. Benedetto Bollino has led the department in bioinformatics and bioremediation research activities, expanding several disciplines including molecular biology, biochemistry, pharmacology, medicine, and computer science.

Dr. Mark R. Bernard served as the EECS Advisory Chair for Undergraduate Studies and received the Earl Teacher Award in the department.

Dr. Paul Benard is organizing and participating in IEEE Region 5 Patrician Committee. He also accomplished an additional two students in the 2002 IEEE Paper Contest.

Dr. Johnette Hassell coordinated the introductory computer science course offerings in the department for all departments in School of Engineering.

Dr. S. T. Haaks served as Director of US/China Energy and Environmental Technology (USCEET). He created several venues for Tulane and USCEET representatives to collaborate with China scholars.

Dr. Dale Joachim is working with multiple universities and creating monitoring and training tools.

Dr. Kostas Koutsouras completed the EECS Web Site design and has started to move “Tulane Technology” into classrooms.

Dr. Andrew Martinez and his colleagues at NRL have registered two patents entitled Autonomous Survey System and Shipboard Wave Amplification System.

This minor will introduce students to robotics and other intelligent systems applications as found in a range of applications: construction, manufacturing, power generation, transportation, medicine, and space exploration.

Dr. Drakunov and Dr. Qidwai with students in the new Robotics Lab

Robotics Minor is Cross-disciplinary

Dr. S.T. Hsieh served as Director of Neuroscience and Systems Research during his tenure at the Florida Institute of Technology (1996), and S.T. Hsiing was awarded a fellowship in recognizing his contributions in the field of biomimetics.

Dr. Fred Patry received the NRL Summer Distinguished Researcher Grant and Self-Directed Research Award in 2002.

Dr. Jing Peng led the department in computing and exciting several well-known speakers in the department.

Dr. Martin Simina worked with the four EECS Graduate Student winners to attend the FLAIRS Conference in Florida. The cost of the travel was shared by one of the departments in School of Engineering.

Dr. Brij Singh is leading the efforts in the new area of nanotechnology and strengthening departmental ties with National Science Foundation by attending several of NSF workshops.

EECS uses all necessary Levels to collect an efficient Circuit

EECS uses all necessary Levels to connect an efficient Circuit.
NEW PROGRAM OFFERS STUDY ABROAD

Beginning Fall 2002, seniors in Mechanical Engineering can spend one semester abroad at the Institut Français de Mécanique Avancée (IFMA) in Clermont-Ferrand, France. This program is the result of an exchange agreement made between the IFMA and the Mechanical Engineering Department.

IFMA, the French Institute for Advanced Mechanics, provides training for high-level, multi-skilled engineers who specialize in manufacturing design of mechanical and automated equipment for industry. IFMA possesses the latest technology in an academic environment, which fosters collaborative work and an international focus.

Dr. Michael Larson of mechanical engineering and Dr. Jean Luc Paris of IFMA oversee this program.

In order to continue their normal progress towards a degree in mechanical engineering, students must have a year through some courses through a Distant Learning Program. In Fall 2002, Professor Mike Lynch taught the course MCEN 467-Control Systems through this program.

This program allows seniors to collaborate with their French counterparts on research projects while they continue to progress towards their engineering degree.

FOCUS ON RESEARCH

ME faculty members worked on a range of projects in 2002, ranging from exploring implications of urban heat island mitigation on air quality and heat-related mortality to developing improved urban atmospheric modeling capabilities that use remotely sensed surface characteristic data.

Research has been conducted to implement desiccant and heat pipe dehumidification systems to improve the indoor air quality of all types of buildings. Desiccant and heat pipe dehumidification systems are two energy-efficient, cost-effective, and environmentally safe technologies which are used as primary air handling systems in buildings. Other research is being conducted on the local applicability of photovoltaic roofing shingles which keep the rain out and contain a material that generates electricity from sunlight. These shingles cover a portion of the roof generating up to 3kW. The shingles cover a portion of the roof generating up to 3kW.

This project demonstrates energy savings for residential and commercial entities.

The Mechanical Engineering Department continues to host the South Central Regional Center of NIGEC in Washington State University, which supports from the U.S. Department of Energy, continuing to host the South Central Regional Center of NIGEC models which will allow us to predict how and when buildings will perform under different scenarios.

This work, carried out under the South Central Regional Center of NIGEC, is one of the major contributions to global climate change research annually.

Research in Advanced Materials and Mechanics, another ME Department targeted strength area, continued with projects funded by MDA, NASA, and DOE. These projects include understanding how materials fail under the action of lasers and studying the endurance and reliability of microelectronic components. As computer components get smaller and lighter, they must also be strong enough to withstand transportation and harsh environments such as outerspace.

A team comprising of three ME students pictured above: Melissa Ritz (right), Alex Hessler (2nd from right), and Joe Cook (left), won the Tulane University Robotics Battle Olympiad (TUBO) Competition. This annual event, which drew 15 competing teams, took place during National Engineering Week in March.

Melissa Ritz (ME ’03) placed third in the ASME Heat Transfer Division of the ASME 2002 Mini-Baja competition. This research is funded by the U.S. Missile Defense Agency.

ME 03) placed third in the ASME Mini-Baja competition. This research is funded by the U.S. Missile Defense Agency.
HOORAY FOR YAHOO! FOUNDER CHAIR

David Filo, who earned his BSE in Computer Engineering from Tulane in 1988, endowed the Yahoo! Founder Chair in Computer Science and Electrical Engineering. Filo, along with friend Jerry Yang, began their company in 1994. Yahoo!, Inc., a global Internet communications, commerce and media company, offers a branded network of services to millions of users daily. Today, many Tulane Engineering students look to David Filo as a role model whose success they hope to emulate.

Tulane University President Scott Cowen welcomed Filo back to the campus on December 20, 2002 when Professor Bill P. Buckles was invoked in the Yahoo! Founder Chair in Computer Science and Electrical Engineering. Cowen noted that Filo’s gift is especially valuable to the School of Engineering as it provides a permanent source of research support for teaching.

As Dean Nicholas J. Altieri explained to the audience, “an endowed faculty chair is the most prestigious honor that a faculty member can be given and it is an internationally recognized measure of the faculty member’s contributions and stature.” The Yahoo! Founder Chair in Engineering will enable Tulane to recruit and retain worthy successors to Professor Buckles looking far into the future.

Buckles, whose research has been supported by NASA, NSF, the State of Louisiana and the Missile Defense Agency, received the NASA Technical Innovation Award in 1989 and 1982. Professor Buckles, a Tulane faculty member since 1987, has received three departmental teaching awards in the past decade.

Other endowed chairs are:

- Catherine and Henry Bob Chair in Civil Engineering
- Herman R. Brown Chair in Chemical Engineering
- John L. and Mary Wright Elbaugh Chair in Mechanical Engineering
- Entergy Chair in Electrical Power Engineering
- Alden J. “Doo” Labode Chair in Mechanical Engineering
- Cornelia and Arthur L. Jung Chair in Mechanical Engineering

MAJOR GIFTS IMPACT THE SCHOOL OF ENGINEERING.

The School of Engineering was named as the recipient of major gifts that provide significant immediate impact as well as establish funding for future needs. The most recent contribution was the gift of Catherine G. Spar’s husband, William H. Spar, named in honor of the School of Engineering. Mrs. Spar’s bequest directed the use of her gift for permanent endowment by the Department of Civil and Environmental Engineering. Income from the endowment will provide graduate student fellowships and funds for infrastructure for the department in perpetuity. Alumni and friends who have made significant contributions that established new scholarships, created specific purpose endowment funds, added to existing endowment funds and in numerous ways provided financial assistance for faculty and students.

In a letter written to a scholarship donor, one student recently stated, “I had always hoped to attend college but the financial burden had been insurmountable….through your generosity, I attend, with great pride, this fine institution. What I have gained here at Tulane, the education and support, is invaluable.”

ENHANCEMENT SCHOLARSHIP FUNDS CONTINUE TO INCREASE

The School of Engineering recently received another endowed scholarship fund through the bequest of Marjorie B. Janssen. Mrs. Janssen honored her husband’s memory with a gift that provides permanent scholarship support for students in Engineering through the Herman John Jansen Memorial Scholarship Fund—Endowed. Hermann Jansen earned his BSE in Chemical Engineering from Tulane in 1940 and a MSE in 1945. Other endowed scholarships are:
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