

OSU IMPACT



BREAKING
NEWground
in *engineering, architecture & technology*

2002 OKLAHOMA STATE UNIVERSITY

BUILDING THE EDUCATIONAL INFRASTRUCTURE

“Almost every week we celebrate another significant accomplishment in the College of Engineering, Architecture and Technology. And, many of those accomplishments are “breaking new ground.” This issue of *Impact* celebrates these accomplishments.

Several members of the CEAT faculty received national and international honors this past year, including the prestigious Alexander von Humboldt Research Award for internationally recognized scholars, and the U.S. Department of Agriculture’s highest award. Our architecture students continued to earn first place awards in national competition, and CEAT student chapters and their advisors continued to be ranked among the best in the nation. The CEAT Student Council received the “Most Improved Chapter Award” at the national student council convention.

CEAT counts among its graduates many distinguished alumni whose groundbreaking contributions have improved our lives. The list includes

one of the most influential engineers of our time, H. Edward Roberts, the inventor of the world’s first personal computer. Read the wonderful story about Ed Roberts and his influence on the launch of Microsoft.

With new grants and contracts totaling more than \$17.7 million, the CEAT achieved a record year in funding in 2002. CEAT bolstered support to industry with the inception of its new Center for Engineering Logistics and Distribution (CELDI) and the creation of a new Product Development Center (NPDC). CEAT received an additional \$5.3 million from a special allocation from the Oklahoma legislature to support the efforts of two research teams working on the early detection and mitigation of bioterrorism agents.

Construction is nearing completion on a new 10,000-square-foot laboratory for the Department of Fire Protection and Safety Technology (FPST). When the FPST laboratory is fully furnished, the outmoded laboratories in the old campus fire station will be “retired.” Because of an

unusual gesture of support from friends and alumni of the School of Civil and Environmental Engineering, ground will be broken in March 2003 for a new Structures Research Laboratory.

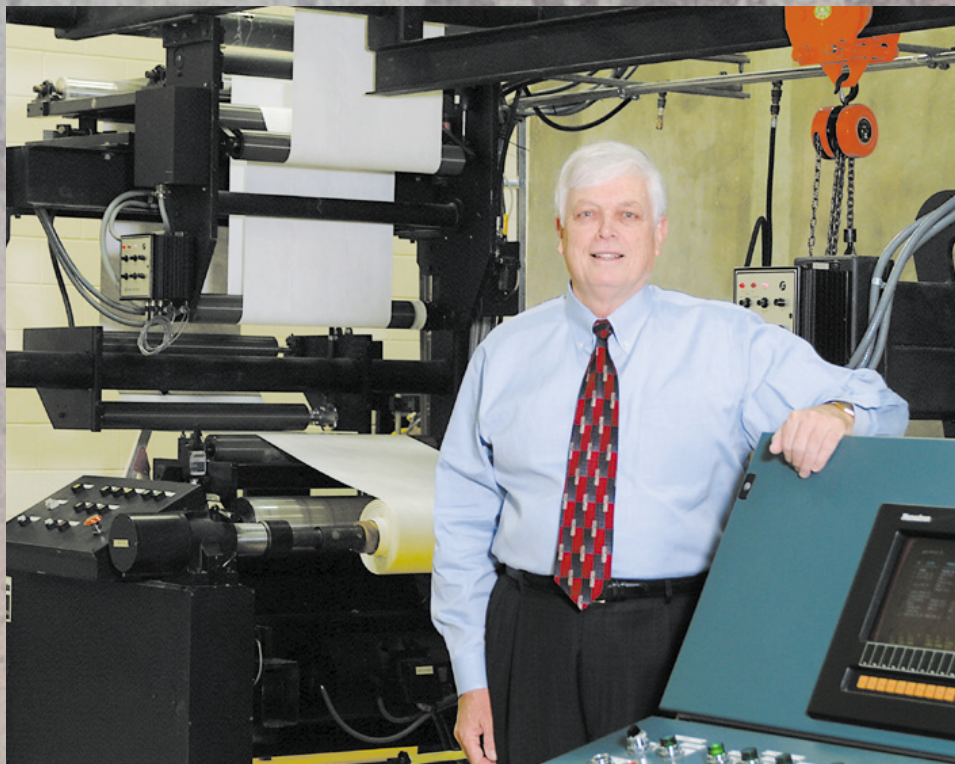
The newly completed Design and Manufacturing Laboratory is increasing the instructional and enrichment opportunities for undergraduate students in three disciplines, while the expansion of the Master of Science in Engineering and Technology Management program and the addition of courses in legal studies in the engineering curriculum are creating new opportunities for both graduate and undergraduate students.

In May 2002, we celebrated the first mechanical engineering graduates who took all their coursework at OSU-Tulsa. This landmark event occurred 100 years after OSU produced its first three engineering graduates and the first engineering building was opened. We’ve certainly broken many acres of ground since 1902, but the CEAT tradition of flexibility, forethought and commitment to *preparing our graduates to be competitive with the best* demands that we continue to break new ground everyday.”

Karl N. Reid

Karl Reid, Dean
College of Engineering, Architecture
and Technology

Dean Karl N. Reid tours the Web Handling Research Center, an industry/university cooperative research center founded by the College of Engineering, Architecture and Technology in 1986, an effort Reid spearheaded. The Web Handling Research Center, which advances the engineering science underlying the transport and control of thin, flexible continuous-strip materials through processes such as printing, drying, coating and laminating, is the only center of excellence of its kind in the world.



Heath Shelton

I M P A C T

VOLUME 9, 2002

BREAKING NEWground in Engineering, architecture & technology

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The OSU College of Engineering, Architecture and Technology
broke new ground in every respect in 2002.

From faculty, student and alumni achievement to the creation of innovative programs
to the construction of state-of-the-art facilities, the CEAT continued
building an academic infrastructure that attracts and nurtures intellectual leaders.

By supporting the development of new knowledge and its application to real world problems,
the CEAT consistently prepares architects, engineers and technologists to IMPACT the world.

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IMPACT is a publication of the Oklahoma State University College of Engineering, Architecture and Technology and is designed to provide information on college activities and accomplishments while fostering communication among the CEAT family and friends.

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This publication, issued by Oklahoma State University as authorized by the College of Engineering, Architecture and Technology, was printed by the Audio Visual Center, University Printing Services at a cost of \$13,103.30. 16M/April 2003/job# 1074.

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ON THE COVER: In designing and building our infrastructures, graduates of the College of Engineering, Architecture & Technology profoundly influence our lives. None among the many, talented CEAT alumni has affected our communication and information systems more so than Dr. H. Edward Roberts featured here with his invention, the Altair 8800 — the world's first personal computer. *The related story is on page 10.*

VIP INVITATION

The CEAT wants you to have access to up-to-date information on everything from the continuing development of the Advanced Technology Research Center to the establishment of new academic programs on the Stillwater campus and in Tulsa.

We invite you to be our guest for a VIP visit to campus and the CEAT. Contact Dean Karl Reid by phone at (405) 744-5140, by FAX at (405) 744-7545, or by e-mail at kreid@okstate.edu. If a trip to campus is not possible, visit the CEAT homepage through the OSU website at www.okstate.edu.

'Preeminence,' Becoming the Norm

Talented, energetic and high-achieving students and faculty distinguish the College of Engineering, Architecture and Technology. Engineering and architecture professional organizations consistently recognize OSU student chapters and their advisers among the nation's best.

The national organization selected the OSU chapter of Alpha Pi Mu, the industrial engineering honor society, as the outstanding chapter in the nation for 2000-2001 and Allen Schuermann as outstanding adviser. The OSU chapter placed second in the nation for the 2001-2002 academic year.



OSU named professor of industrial engineering and management Allen Schuermann, shown here with industrial engineering students Kristin Hinrichs and Mukul Patki, the CEAT's top faculty adviser for the 2001-2002 academic year.

Schuermann, professor of industrial engineering and management, also received the OSU designation as CEAT's top faculty adviser for the 2001-2002 academic year.

The OSU American Institute of Architectural Students (AIAS) chapter, selected from a pool of 120 accredited architecture schools, received a National Chapter Honor Award at the 2002 annual AIAS Grassroots Conference recognizing it as co-national chapter of the year. This recognition follows another national merit award the chapter received in 2001 for its innovative program, Architecture Students Teaching Elementary Kids (ASTEK). Mohammed Bilbeisi, associate professor of architecture, advises OSU's AIAS chapter.

For four of the past five years, the OSU student chapter of the American Institute of Chemical Engineers (AIChE) has received the "Outstanding Chapter" award from the AIChE national organization, placing the chapter in the top nine nationally. Randy S. Lewis, associate professor of chemical engineering and OSU's AIChE adviser, received the AIChE student chapter Adviser of the Year award in 2000.

EILEEN MUSTAIN

Architecture Students Document Oklahoma Arts

For the second consecutive year, OSU architecture students won the contest initiated to assemble a unique collection of historic art recognizing and celebrating Oklahoma's centennial year of statehood.

Team projects completed by OSU students accounted for four prize-winning entries, including overall grand champion, in *Collage 2002: An Oklahoma Centennial Project*. Fifth-year seniors Charles Brant and Wes Rutledge won grand champion and \$2,000. Flynn Testerman and Hwa-Sook You took a second-place award, and entries by Shawn Brown and Matthew Radcliffe and Jean-Phillipe De Visscher and Mathieu Jourquin received honorable mentions.

Participants address the theme, different each year, in the form of a 3-by-5-foot collage and explanatory essay. This year's theme, "Arts and Entertainment: Celebrating Our Creative Talent," covered the breadth of arts in the state from prehistoric days to the present.

The grand champion 3-by-5-foot collage by Charles Brant and Wes Rutledge presents the evolution of Oklahoma's varied musical forms from jazz and gospel to classical and country-western.



School of Architecture

The theme of Rutledge and Brant's grand champion collage is the relationship between Oklahoman's fascination with the state's ever-changing, sometimes violent weather and the radical evolution of its many forms of music. Their composition strives to convey the energy and movement of dance with a frenetic arrangement of pictures of artists such as Chet Baker, Vince Gill and Patti Page in the image of a tornado on the horizon.

The prize-winning entries are currently part of a touring exhibition appearing at various Oklahoma sites. When the contest/Centennial Collage Project culminates in 2007, the best of all entries will be included in Oklahoma's centennial exhibition on the National Mall in Washington, D.C.

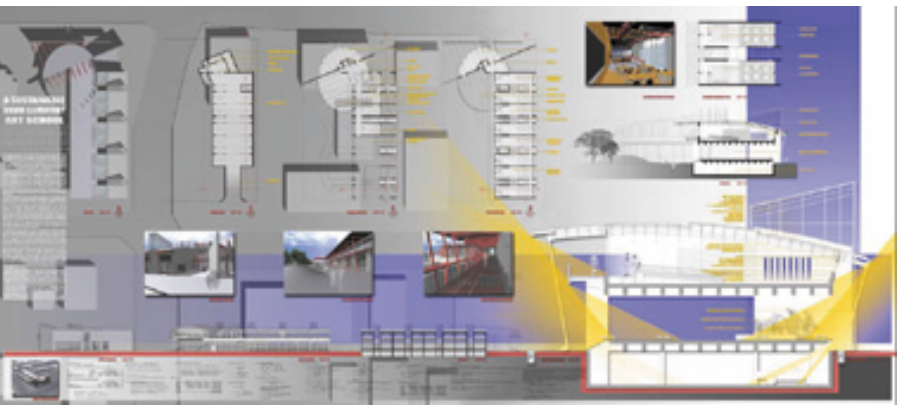
ADAM HUFFER

OSU architecture students took top honors in the *Collage 2002: An Oklahoma Centennial Project*. (Front row; left to right) are Hwa-Sook You, Shawn Brown, Mathieu Jourquin and Jean-Phillipe De Visscher; and (back row) Flynn Testerman, Charles Brant, Matthew Radcliffe, Wes Rutledge and Bob Wright, professor of architecture and faculty adviser for the competition studio.



Adam Huffer

**BREAKING
NEWground**
in student achievement



Brian Winterscheidt and Cullen McCann's prize-winning entry in the 2002 Leading Edge Student Design Competition features four glass towers, doubling as stairs, used for ventilation, light and heat, strategically located windows and innovative climate control such as adjustable vents, louvered skylights and reactive electric lights.

Heath Shelton



Architecture students Brian Winterscheidt, left, and Cullen McCann with faculty critics John Womack and Jeff Williams, earned themselves \$3,000 and the school \$1,500 with their first-place win in the competition, "Painting the Urban Fabric – A Sustainable Urban Elementary Art School."

Cowboys Paint the Urban Fabric

The design of a passively lighted, cooled and heated elementary school in Los Angeles, California – where state schools spend approximately \$450 million on energy – was the basis for another national prize captured by students in the OSU School of Architecture.

Now fifth-year seniors, Brian Winterscheidt and Cullen McCann won first place in the 2002 Leading Edge Student Design Competition, "Painting the Urban Fabric – A Sustainable Urban Elementary Art

School," under the direction of faculty critics John Womack and Jeff Williams.

The competition, which focused upon sustainable and energy-efficient building methods, required competitors to explore the use of new materials and design strategies while integrating the aesthetic and technological aspects of a K-3 grade school. The students designed a two-story, 21,000-square-foot facility with a 25,000-square-foot exterior playground on a 39,000-square-foot site. The

site also had to contain parking for 30 vehicles.

"Not only was the site limited in available square footage, there were also issues of perimeter vehicular traffic volume, noise, odors, etc. Cullen and Brian also had to fit the building into a rather diversified visual context – and that was a difficult task in itself," says Womack, associate professor of architecture. "Their design fronted its two major streets in a very provocative yet humane way."

Using recyclable materials such as fly ash concrete, steel and glass, McCann and Winterscheidt used computer graphics to illustrate their uncomplicated, elegant layout. Their project elicited praise from the judges who called their entry a "mature, clean plan" and "refreshingly simple."

"In addition to the current programmatic and functional elements of an art school for young children, the design had to consider adaptability to other uses if

and when the curriculum or theories on education changed," Womack says. "Part of their design's sustainable considerations was how it took into account the embodied energy that a building retains during its lifetime.

"They had to ask, 'What might this facility be 50 years from now, and will its functional and aesthetic presence continue to be appreciated and valued by the community to such a degree that it won't simply be leveled one day?'"

ADAM HUFFER

Marshall Scholar Just Another E-Kid

Last November, just one year after OSU senior Bryan McLaughlin won the prestigious national Goldwater Scholarship, the British Foundation named the electrical and computer engineering major from Oklahoma City a Marshall Scholar.

McLaughlin plans to use the Marshall Scholarship, valued between \$35,000 and \$37,000 per year, to earn master's degrees in both optical-electronics and high-speed circuit design during his two years of study at the University of Cambridge in Britain.

He believes electrical engineering with a specialization in optics will produce some of society's biggest improvements in the next few decades. "We are just beginning to break ground in the use of laser-driven circuitry in everything from defense and medical instruments to communications systems and image processing," he says.

After Cambridge, McLaughlin plans to work in industry, obtain a Ph.D. and then teach at the college level.

"Bryan has proven repeatedly that he is fully capable of competing with the top students in the nation," says Karl Reid, dean of the College of Engineering, Architecture and Technology.

"His Goldwater Scholarship was an important achievement, but he did not rest on his laurels. He decided he wanted to build a solid technical base by studying in the UK, so he pursued the Marshall Scholarship. He's the kind of highly motivated, goal-oriented young man whose abilities convince you there is no doubt he'll achieve his goals."

McLaughlin describes engineering as a "service" field. "I enjoy engineering because engineers translate developments in science and math into

products and devices that are used to help people every day," he says.

As a junior, McLaughlin began delivering the "engineering" message to fifth-grade students with Engineering Kids (E-Kids), a program he developed to raise student interest in science and engineering through simple hands-on engineering projects in the classroom.

While serving as president of the OSU chapter of the Institute of Electrical and Electronics Engineers and as vice president of OSU's American Indian Science and Engineering Society (AISES), McLaughlin carried that message to high school students and to his peers. During his one-year term as president, membership in OSU's IEEE student chapter increased from 35 to 112 members.

Many current CEAT students have benefited from McLaughlin's aptitude for

electronic devices, engaging him no less than 10 hours a week for tutoring in the college's Fundamentals of Circuits course. He has also found time to mentor other students in competition for scholarships such as the Goldwater and Marshall.

"Bryan has been tireless and determined, broadening himself academically and performing public service," says Robert Graalman, OSU's director of Scholar Development. "It's really hard to imagine anybody getting done what he gets done."

ADAM HUFFER



Heath Shelton

Combating a National Crisis at Home

"Our national shortage of engineers is quickly becoming a crisis," says Karl Reid, dean of the College of Engineering, Architecture and Technology. "The number of bachelor's degrees in engineering awarded in the U.S. has dropped 20 percent in the past 15 years while the demand for engineers continued to rise. At the rate we're going, the demand will outstrip the supply almost 50 percent by 2008."

"The Third International Mathematics and Science Study" finds U.S. fourth-graders score well above the international average in mathematics and science performance and well below the international average by the final year of high school, Reid notes. "Something happens to make students lose interest in math and science during those years."

Solutions to stem the shortfall in engineering talent must address wide-ranging problems from the K-12 curriculum and teacher education to engineering stereotypes, he says. "In our society the James Bond image is much more likely to stir a youngster's imagination than the engineers who create his high-tech tools."

While CEAT, under Reid's leadership, is pursuing several initiatives to K-12 math and science education and enhancing awareness of the fields of engineering and architecture, CEAT students are tackling the problem at the community level with programs that nurture student interest in the study of engineering.

Engineering student Travis Tidwell portrays mad scientist "Dr. Snookers" in an engineering mentorship program presented to Stillwater-area fifth-graders by OSU's student chapter of the Institute of Electrical and Electronics Engineers.

JUNIOR GIRL SCOUT DAY

Several CEAT programs and services provide engineering career information to pre-college students. The OSU chapter of the Society of Women Engineers sponsors the Junior Girl Scout Day, held annually for the last 11 years and attended by more than 1,000 nine- to

11-year-old scouts from across the state. Junior Girl Scout Day gives participants the opportunity to explore basic science and math principles in a series of hands-on educational modules to interact with female engineering students and to learn about career options for women in science, engineering and technology.

REACH

CEAT has held Reaching Engineering and Architecture Career Heights (REACH) summer academies every year since 1996. The two-week academy's multi-disciplinary curriculum introduces a select group of high school senior women from across the state to the career opportunities available in engineering fields. Since the academy's inception, nearly 200 Oklahomans have participated in REACH, and at the beginning of their collegiate studies, more than 60 percent majored in engineering, architecture or technology.

CREW

Women in Engineering, Architecture and Technology introduced a new community service program in the fall of 2002 for fourth- and fifth-grade students in the Stillwater Public School System. Women CEAT students from the Collegiate Role Models for Educating Women (CREW) peer-mentoring program assist science teachers using the inquiry method to ask questions that pertain to the technology, earth science or physical science modules that students are studying. The modules focus on design and motion, electricity and land and water. Each of the 36 students who have agreed to serve as volunteers during the 2002-2003 school year will spend one hour per week in a classroom for four weeks.

CHEMKIDZ

Three years ago, OSU School of Chemical Engineering students Greg Beckham, Darren DeNardis and Robert Jackson founded ChemKidz to make learning about chemistry fun for fifth-graders. Chemical engineering students visit area elementary schools using hands-on demonstrations of basic chemistry experiments and principles and to talk about the jobs of engineers.

During the 2001-2002 schedule, students volunteering in the ChemKidz program visited every Stillwater Elementary School and participated in OSU's I-Wonder Fair, an annual event that brings 2,500 elementary students to campus from around the state.

ASTEK

Architecture students initiated Architecture Students Teaching Elementary Kids (ASTEK) three years ago. The 10-week program, which is wholly supported by members of the OSU chapter of the American Institute of Architecture Students, teaches fifth-graders about the importance of architecture to society and helps prepare them for the art portion of their standardized tests. ASTEK meets with students weekly for one-hour lessons from the 60-page workbooks developed by OSU architecture students.

The course, which covers such topics as basic geometry, building structures and shading devices, culminates with a two-week project in which each child designs and constructs a model building. In 2002, approximately 400 Stillwater fifth-graders received instruction through ASTEK.

EKIDS

OSU engineering students Bryan McLughlin and Patrick Clark developed Engineering Kids (EKIDS), an engineering mentorship program, in response to the declining numbers of graduates in engineering and the natural sciences. Presented to Stillwater-area fifth-graders by OSU's student chapter of the Institute of Electrical and Electronics Engineers, the EKIDS program uses hands-on experiments and the presence of college students to spark interest among children in engineering, math and the sciences. Classroom projects include a do-it-yourself electric motor, a fruit-powered watch and computer disassembly. ▲

EILEEN MUSTAIN



courtesy of CEAT student organizations

Patrick Clark



Keeping the Fleet Airborne

The Center for Aircraft and Systems/Support Infrastructure (CASI), a consortium of Oklahoma's institutions of higher education, developed from the need to expand technologies and maintenance methods to extend the operational lives of the nation's military and civilian air fleets.

"Aircraft are becoming increasingly more expensive to develop and deploy," says John W. Nazemetz, associate professor of industrial engineering and management and the OSU director of CASI. "Fewer are being built, and existing aircraft are often kept for service periods that exceed the original design lifetime.

"While it remains important for military aircraft logistics facilities, such as the Oklahoma City Air Logistics Center, to rely on original manufacturers and secondary industrial support for fleet maintenance, it's essential to have alternative approaches to augment the aircraft and support infrastructure," Nazemetz says.

OSU, the University of Oklahoma and the University of Tulsa initiated the program in 2000 to leverage the state's resources in the development of improved systems and logistical support for Department of Defense aircraft fleets. These institutions share the primary operational responsibilities for CASI, which is funded by the State of Oklahoma and the DOD.

CASI is a statewide academic center that uses a multidisciplinary approach for conducting applied research, modeling, technology insertion and engineering support activities for aircraft maintenance.

"By working in close collaboration, the CASI institutions are able to provide integrated solutions to the most challenging technical and operational problems facing the industrial/military aerospace complex," Nazemetz says.

Although CASI is primarily supporting Oklahoma's Tinker Air Force Base, the commercial sector will also benefit through dual-use technology transfer, he says. "CASI will also reduce system operation and maintenance expenses; extend aircraft service lifetimes; improve overall system readiness; enhance safety and environmental compliance and reduce hazardous waste."

EILEEN MUSTAIN



BREAKING
NEWground
in program development



A Testimony to CEAT Programs

OSU aerospace engineering graduate Tony Buratti is profiled in *U.S. News and World Report's* 2003 edition of "Best Graduate Schools." The publication features a picture of Buratti, who is employed with Lockheed Martin, working on an F-22 fighter plane in a section titled, "Picking a Dream Job." The edition hit newsstands in December 2002.

U.S. News

CATT Bolsters Military Readiness, State's Economy

OSU's Computer-Assisted Technology Transfer (CATT) program originated in 1994 to facilitate parts procurement for the country's aging military equipment and has since developed into one of OSU's most successful business-military-academic partnerships.

"On the average, our airplanes are in the air three times longer than originally expected. The extended life makes it increasingly more difficult for the Department of Defense to purchase replacement parts when a part breaks on an aircraft such as the B-52 or the KC-135, which Boeing no longer manufactures," says Camille DeYong, industrial engineering and management associate professor and faculty coordinator for OSU projects for CATT.

"Many of the original manufacturers can no longer afford to make parts in small quantities; some are no longer in business, and many small companies feel overwhelmed by doing business with the federal government," she says. Difficulty accessing or replicating manufacturing data, obsolete processes and materials and corrosion problems associated with extending the equipment's life expectancy, all add to the supply problem.

The Defense Logistics Agency, DOD's purchasing agent for all branches of the U.S. military, funds the CATT program and designated it as a National Reinvigoration Laboratory in 1994. The CATT program provides basic research and development; re-engineers problem parts; develops, tests and transfers logistics support technologies; and facilitates participation for small- and medium-sized manufacturers.

In order to form a supply chain that can react quickly and cost-effectively to meet DOD needs for small-quantity replacement parts, CATT created the "virtual enterprise." The virtual enterprise is a network of small to medium-sized manufacturers that work together to respond appropriately to a bid request and to provide a broad range of capabilities for the different steps in a manufacturing process. This manufacturing network, linked by the Internet, has access to software that streamlines the bidding process and to CATT personnel who serve as mentors in doing business with the federal government.

"OSU's major role is research and development, which is applied here and elsewhere in re-engineering parts and knowledge transfer," DeYong says. "We've contributed the development and insertion of leading-edge technology into existing weapon systems — such as new processes for reducing corrosion and new materials technologies for ceramic bearings.

"But we also work to create manufacturing capabilities, particularly with smaller business enterprises, and to enhance the DLA's flexibility. Our goal is to help assure our country's military readiness."

While expansion of the DOD supplier base remains the CATT program's most important achievement, the program's success is also readily measurable by its duplication in other states, Alaska, Idaho, Mississippi, Ohio, Georgia and Utah, and by its stimulation of the Oklahoma economy. Since the program began, the state's manufacturers and vendors have gained \$9 million in contracts, generated nearly 100 local jobs and made \$1.5 million in capital investments.

EILEEN MUSTAIN



Party Pix

Master of Science in
ENGINEERING & TECHNOLOGY MANAGEMENT
MSETM
Program Expands

The OSU master of science in engineering and technology management (MSETM) program, one of the unique master's degree programs created by the College of Engineering, Architecture and Technology, has expanded its ongoing effort to provide accessible, career-enhancing educational opportunities to practicing professionals.

MSETM now offers a certificate program developed by program directors Paul Rossler and Brenda Johnson. The program, funded by a grant from Halliburton, includes courses on topics ranging from managing virtual project teams to leadership and legal issues.

"There are a lot of working professionals who desire high quality continuing education but don't want or need a master's degree," Rossler says. "This course series also appeals to registered engineers who are now being required to take continuing education courses."

The MSETM program, the first of its kind in the nation when inaugurated in 1998, is designed for working engineers, scientists and technical professionals whose careers involve the management of people, projects, technology and strategy. It is delivered to corporate and public sites and individuals throughout the country via distance learning technologies including videoconferencing and CD-ROM.

In 1999, at the start of its second year, the program boasted 100 students, more than double initial projections. Today, more than 250 students from over 100 companies make up the student body, which is comprised of professionals employed full-time in technical fields.

Although an increasing number of universities are now attempting to emulate the MSETM program, it remains a work in progress, Rossler says. "The challenge now and in the future is to continue to evolve the program as industry changes, innovate in the ways that our program is delivered and enhance the national reputation of the program."

ADAM HUFFER

Success Breeds Success

Although a small manufacturer's viability depends on innovation and bringing new products to market, the research and development needed to evolve and introduce new products is too costly for most small- and medium-sized firms.

In response to that need, OSU's College of Engineering, Architecture and Technology and the College of Agricultural Sciences and Natural Resources have launched the New Product Development Center.

Years in the making, the center recently received seed-funding, including \$300,000 from the Oklahoma Department of Commerce and \$100,000 from the Oklahoma Water Resources Board, for a pilot study of the concept. In time, funding in the amount of \$5 million per year will be needed to make the impact needed in Oklahoma's manufacturing sector.

The new center provides collaborative research teams composed of university faculty, students and staff to lead prototype development, perform comprehensive evaluation, including feasibility and market studies, and expedite turn-arounds on prototypes.

The New Product Development Center will augment the Oklahoma Alliance for Manufacturing Excellence Applications Engineers program, an endeavor in which OSU engineers, contracted by the Alliance, provide technical assistance to the state's small- and medium-sized manufacturers.

In 2001, the return on the Oklahoma Center for the Advancement of Science and Technology investment in the Applications Engineers program was 23 to 1, for a total economic impact of just over \$20 million. Organizers of the New Products Development Center believe it could produce an investment return of 50 to 1.

ADAM HUFFER

New Center Boosts Industry Support

"CELDi is helping industries remain 'real world' relevant," says Ricki Ingalls, associate professor of industrial engineering and co-director of the new OSU Center for Engineering Logistics and Distribution (CELDi).

Launched in June 2002, the new center is a multi-university, multi-disciplinary National Science Foundation sponsored Industry/University Cooperative Research Center to study and improve logistical supply chain performance in member industries, he explains. "We bring basic and applied research together to help solve their problems."

CELDi's academic partners, the University of Arkansas, the University of Louisville, the University of Oklahoma and OSU, each focuses unique and complementary expertise on basic research needs of CELDi's industry partners, who help fund and drive research efforts. "Projects are very company specific," Ingalls says, "but the center's research must also be broadly applicable to all members. The intellectual property rights belong, royalty free, to all members."

Full membership in CELDi entitles companies to determine research areas, but associate memberships for companies with fewer than 50

employees and affiliate memberships are also available. OSU's full member industries are the Oklahoma Department of Transportation, ConocoPhillips and Smith Tool.

"We've just completed phase one of an ODOT project for freight movement modeling," Ingalls says. "We developed a modeling structure to determine how freight moves in the state and how best to plan for that movement."

Other current research includes the success factors in e-procurement and e-trading in the petroleum industry for ConocoPhillips and manufacturing and distribution strategies in the petroleum industry's shrinking boom/bust cycle for Smith Tool. "No basic research has addressed how to run a business and manage personnel and equipment during the transitions in a shortened six- to nine-month boom/bust cycle," Ingalls notes.

Aside from the prestige of having a National Science Foundation Center on the OSU campus, CELDi is also instrumental in building OSU's graduate program, Ingalls says. "The center currently funds six graduate students, and we expect it to support even more talented students in the future."

EILEEN MUSTAIN



Law Courses Complement Curriculum

In response to the inundation of contract, patent and product liability issues on engineering practice, the College of Engineering, Architecture and Technology initiated a pilot course on intellectual property and patent law last fall. Eyeing an eventual legal studies minor in engineering, administrators in the college have adopted the philosophy, "If you can't beat 'em, join 'em."

The intertwining of engineering and law has made it necessary to give students the opportunity to supplement their engineering education with knowledge of general legal principles, says Marty High, associate professor of chemical engineering. High conceived the course after a recent contract negotiation required 50 percent more time for legal wrangling than the stated duration of the research project.

"In my 20-year career as an engineer, I have noticed that I encounter legal issues more and more frequently," High says. "The course is a way of further rounding-out our students' educational background while supporting our mission to provide an education that opens the door to many career options."

Plans are being formulated to offer a series of legal studies classes as electives to avoid diluting engineering curriculums already packed with courses, High says.

"Fundamental engineering principles will remain the foundation of the education our college provides, but this will help students communicate fluently with attorneys," he says. "Students who want to practice law can use the program to get a head start."

Like the pilot course, classes in the planned minor program will not carry an engineering science designation and, therefore, will be open to students university-wide. However, in modeling it on the existing pre-med option available in a number of its departments, the college hopes to attract additional students into engineering disciplines, according to Karl Reid, CEAT dean.

"Engineers are often viewed as detached from social and human issues, an incorrect assumption we are working to change," Reid says. "We hope to capture the attention of socially conscious students with legal aspirations who have traditionally opted for majors in the social sciences."

"We have been very successful in offering the pre-med option, enabling many students with aspirations in health care to obtain a professional degree on the way to medical school or to work in areas such as biomedicine and pharmaceuticals, and we would like to duplicate that success with this endeavor."

High hopes to complement the intellectual property course with other classes in environmental law and product liability and an introductory course on general legal principles. He is consulting attorneys and a number of CEAT graduates in designing them.

ADAM HUFFER

Ricki Ingalls, co-director of the new OSU Center for Engineering Logistics and Distribution, expects the center to attract talented graduate students like Loay Sehwal and Rajesh Veliyanallore, who are currently working with CELDi.



Sharon L. Sanders

Degrees Engineered for Success!

Building on 40 years of educational excellence in associate degree and certificate programs, OSU-Oklahoma City has partnered with OSU-Stillwater to bring the bachelor of science in engineering technology to the Oklahoma City campus.

For many years, OSU-Oklahoma City has offered two-year technology programs in both Fire Protection and Safety and Electrical Engineering Technology. Now students can also earn a four-year degree in either of these areas without leaving their home campus in the heart of Oklahoma City.

Jason Cruse, the first student to take the majority of his upper division EET courses on the OSU-Oklahoma City campus, graduated last May and accepted a field engineer position with GE Medical

Systems, a General Electric Company subsidiary.

"Two more students are scheduled to complete their degree requirements in May of 2003, and calls come in each week asking about the bachelor's degree opportunity at OSU-Oklahoma City," says Willison.

OSU has the only ABET (Accreditation Board for Engineering and Technology) accredited engineering technology program in Oklahoma. This guarantees acceptance of the courses at other institutions and certifies qualifications and competencies to employers.

"Bringing these outstanding bachelor's degree programs to our campus for students whose jobs and family responsibilities don't leave room for travel to the main campus is a major incentive for them,"

says OSU-Oklahoma City President Jerry D. Carroll. "We look forward to working with faculty members in Stillwater to expand this to other bachelor's programs as well."

OneNet, the state's interactive telecommunications system, combines with OSU-Oklahoma City's state-of-the-art computer laboratories and distance learning facilities to allow students the discussions, presentations and lectures of a traditional classroom.

Distance education opportunities, offering courses and degree programs at sites other than the originating campus, bring much-needed programs to students in ways never before geographically possible. Instruction for these particular programs includes classes also transmitted to OSU-Tulsa and the University of Nebraska. ▲

SHARON L. SANDERS



Collaboration Benefits Students, College

Mechanical and aerospace engineering senior Catie Roy applies her skills in design class held at the new OSU Design and Manufacturing Laboratory.



Heath Shelton

The College of Engineering, Architecture and Technology's facility north of campus has served the college well over the years, first as the Fluid Power Research Laboratory and later as the Mechanical and Aerospace Engineering (MAE) Research Laboratory.

But today, as CEAT's new Design and Manufacturing Laboratory, "The facility has the most outstanding potential for student service of any on campus," says Larry Hoberock, professor and head of MAE. Launched in the fall of 2001 as a hands-on, instructional facility, the Design and Manufacturing Laboratory houses student educational and enrichment opportunities.

In creating the lab, MAE, the School of Industrial Engineering and Management and the Mechanical Engineering Technology Department consolidated resources by pooling equipment and sharing the operational costs.

As a result, organized course laboratories, special projects and extracurricular enrichment projects related to the design and manufacture of mechanical or electromechanical items are all housed in one location, says Hoberock, noting that previously these activities were scattered in multiple locations all over campus.

A single location is only one of many benefits to students, he says. The DML offers computer numerically controlled machining operations (CNC), an open machine shop, welding, wood and structure machine shops, a composites lab, two aerospace design labs and an aerospace vehicle assembly lab. It's also home to a metrology and rapid prototyping lab, an electronics shop, two design shops, large assembly areas with bays, classrooms, conference room,

office space, storage lockers, tool and supply rooms and a special computer and duplicating area students can use at any time.

"As part of our renovation, we added keyless access—so students can get in at any hour — as well as handicap access and exterior lighting. We also dedicate resources to keep the shops open until 11 p.m. and on weekends to meet student needs," Hoberock says.

"Our seniors told me in exit interviews that they needed more hands-on experience to prepare them for the industrial world," he says. "Now, they're appreciative of the hands-on facility, but they want more and better equipment," a need that he acknowledges must be addressed.

CEAT has created an oversight committee charged with raising funds to replace equipment. "Our five-year goal," Hoberock says, "is to make OSU's Design and Manufacturing Lab a state-of-the-art instructional facility that approaches or equals high-quality design and manufacturing facilities in practice."

EILEEN MUSTAIN



Heath Shelton

Construction of the new 10,000-square-foot laboratory facility for Fire Protection and Safety Technology is nearing completion. Donations are being sought from alumni and friends of the program to equip the new facility, replacing fully outmoded equipment in the current fire station laboratories and adding equipment for new laboratories in fire mechanics and dynamics. Plans are for the first laboratory classes to begin in fall 2003. The new facility is the first major infrastructure development for the fire protection program since the 1939 construction of Stillwater Fire Station No. 2.

BREAKING
NEWground
in facility development



OSU-Tulsa Plans New Engineering Research Center

OSU-Tulsa is moving forward on preliminary plans for a proposed \$24 million Engineering Research Center.

The research and laboratory facility is necessary to meet the needs of a growing student population and research-oriented faculty in OSU's nationally recognized engineering programs, says OSU-Tulsa President Gary Trennepohl.

"Our student population has been growing consistently for the last several years," Trennepohl says. "We now have an urgent need for laboratory facilities on campus to enhance student learning and facilitate faculty research."

The 100,000-square-foot facility will be the first new building constructed on the campus since it became OSU-Tulsa in 1999.

The research center, with state-of-the-art technology in the fields of civil, mechanical, electrical and computer engineering, will be an impressive step toward the "2020 Vision" plan for the OSU-Tulsa campus, Trennepohl says, and will help create a synergy among all faculty at OSU-Tulsa and at the nearby Center for Health Sciences.

The architecture for the proposed structure will be consistent with the prairie style evident in the existing buildings.

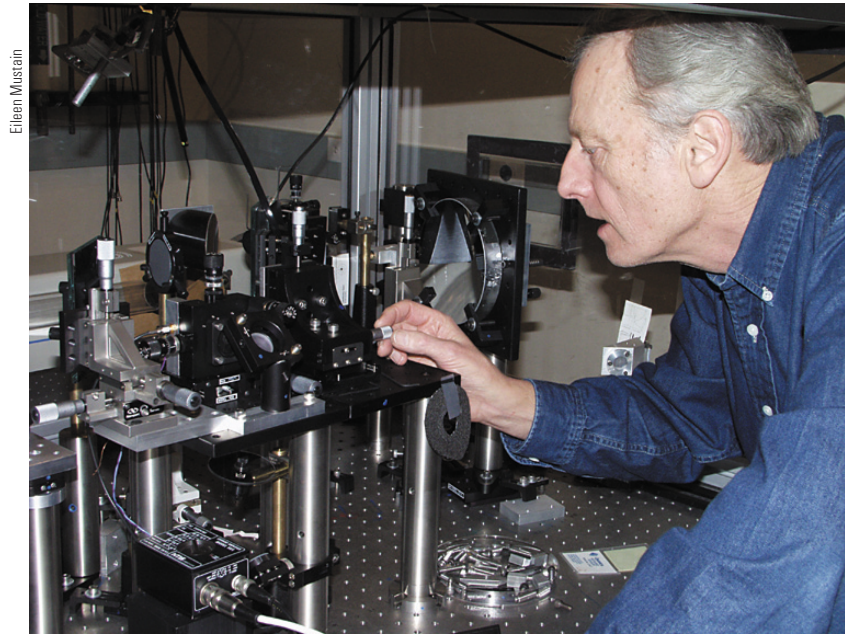
SUZANNE ORTIZ

Photographs, clockwise from the top, show a few of the many students who benefit from class and enrichment activities at the CEAT's new Design and Manufacturing Laboratory: OSU Mini Baja Team members, clockwise from left, are Beelie Biehler, Misty Daugherty, Kristen Tucker, Brian Coles and Kiel Johnson; Tech Mini Baja Team members are, from left, Eric Grotts, Justin Shaner, Mackey Louthan, Justin Weichel and Justin Coff; MAE senior capstone team design project members are, from left, Jeff Schmacher, Jason Robertson, Todd Lester, Megan McConnell and Ryan Baker.



Heath Shelton

Daniel Grischkowsky, professor of electrical and computer engineering, and his colleagues in the Ultrafast Terahertz Research Group are working to produce a device, similar to a smoke detector, to detect airborne poisons, including nerve gases.



Eileen Mustain

Working to Secure the Homeland

A portion of Oklahoma's \$19 million investment in OSU's homeland security research will fund research equipment and laboratory renovations for two research teams in the Advanced Technology Research Center.

The projects include upgrading a laboratory for work with prescription biological and poison sensors and developing a laboratory model of a multi-story air handling system for the study of how contaminants move through structures, such as schools and office spaces. Both facilities will support research on the early detection and mitigation of deadly bioterrorism agents.

The work in the prescription sensor unit merges OSU expertise in bioengineering and materials science. The focus will be on identifying substances with "prescribed" properties that could rapidly alert potential victims to the presence of even tiny amounts of dangerous elements such as anthrax spores or cyanide powder.

College of Engineering, Architecture and Technology scientists on the prescription sensor team are Khaled Gasem, Jim Smay and Sundar Madihally from chemical engi-

neering. Their research grants total \$1.26 million. They plan to add a gas chromatograph, an electro-acoustical spectrometer, a mass spectrometer and a Y-Spectrum analyzer to advance to the next phase of their research.

The continuous air quality monitoring project merges the work of professors Daniel Grischkowsky, Alan Chevillie and Weili Zhang of the Ultrafast TeraHertz Research Group in electrical and computer engineering and Jeff Spitzer and Daniel Fisher of the Building and Environmental Thermal Systems Research Group in mechanical and aerospace engineering, collectively representing \$4.6 million in sponsored research.

Their work, originally motivated by the release of Sarin gas in a Tokyo subway in 1995, became of significant interest after anthrax detection forced the closure of the U.S. Senate Office Building last year. The model HVAC test bed to be constructed as part of the project will be the first of its kind in the world. Coupled with the terahertz spectroscopy equipment and expertise, it will put OSU at the forefront of building contamination prevention and mitigation. ▲

EILEEN MUSTAIN

PC Inventor Opens Door to Information A



Without question, Dr. H. Edward Roberts, “father of the personal computer,” transformed our lives. More than any other invention, the personal computer opened the door to the Information Age, placing the power to communicate in the hands of ordinary people and altering forever the way we work and learn about the world.

Although we take it for granted today, scarcely three decades ago, in 1968, the PC existed only as a concept in the mind of OSU electrical engineering graduate Ed Roberts, who credits his OSU experiences for sparking the idea.

“OSU’s open policy was a bold idea for the times,” Roberts says. “OSU was one of the few universities that gave undergraduates direct access to the school’s mainframe computer instead of making them submit programs to white-coated operators who were the only ones authorized to touch the precious machines.”

As an OSU student, Roberts had access to the IBM 1620 located on the first floor of Engineering South. “We just signed up and used it as

much as we wanted,” he says. “There was never any problem as far as I know with the computer being damaged or abused. Everyone took care of it like it was their own.”

He says the power of computing opened up a whole new world, “and I began thinking, ‘What if you gave everyone a computer?’”

The College of Engineering, Architecture and Technology named Ed Roberts recipient of the 2002 Melvin R. Lohmann Medal, the highest honor CEAT bestows for alumni contributions to the profession.

“Almost every aspect of the multibillion-dollar personal computer industry began with Ed’s inventions and company,” says Karl Reid, CEAT dean. “These contributions include the first computer to be offered in kit form, the first personal computer, the first personal computer publication, the first personal computer convention and the first software publisher micros.

“In addition to his groundbreaking inventions, he exemplifies the very best qualities of the outstanding

engineer,” Reid says. “Ed possesses an inquisitive and inventive mind and a pioneering and generous spirit who uses his talents to improve the quality of life for others.

“He is just the caliber of person who would ask, ‘What if everyone had a personal computer?’ and then proceed to find out.”

By the time the Miami, Fla., native arrived on the OSU campus in 1965, he’d already accomplished a great deal. He held a Heart Association Fellowship at the University of Miami School of Medicine for four years — during which time he worked with heart surgeons who performed over 200 open-heart surgeries on dogs. He had also studied zoology at Stetson University and electrical engineering at the University of Miami, joined the Air Force and taught electronics.

Roberts attended OSU as part of the Air Force’s Airman Education Commission Program. He chose OSU because his brother-in-law had completed an

electrical engineering degree several years earlier and recommended it. Roberts originally planned to study medicine but got “sidetracked” with the Air Force and raising a family, and by the time the Air Force sent him to OSU, he was past the age limit for medical school.

After graduating from OSU, Roberts was assigned to the Weapons Lab at Kirtland AFB in Albuquerque, N.M., as a research officer working on “special weapons,” which at the time were top-secret laser weapons. He recalls, “I was the only electrical engineer in my solid state laser weapons group. Most of the group consisted of Ph.D. physicists involved in making the lasers operate.”

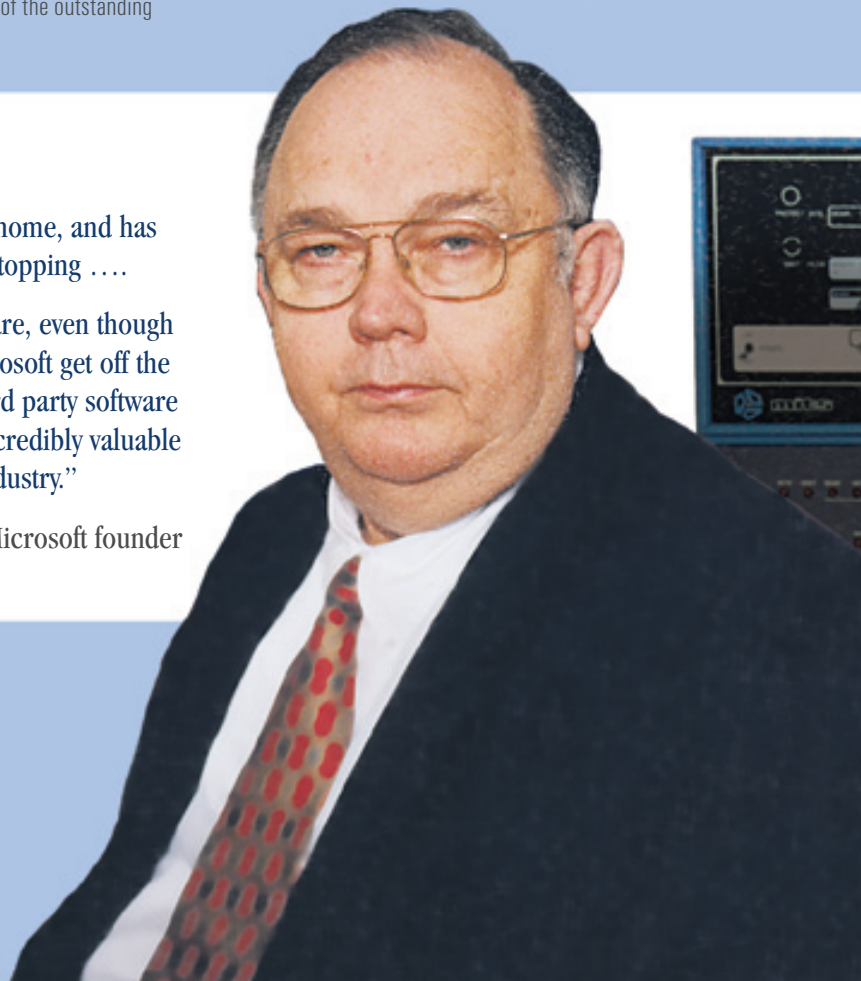
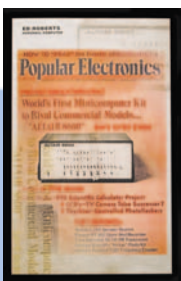
Roberts, who discovered that no one knew how to point these systems with accuracy, spent the next four years becoming an expert on high accuracy pointing systems and designing the first laser fire control system in the U.S. military. “For four years, a new OSU electrical engineering graduate was the Department of Defense expert on laser fire control systems,” he says.



“Ed’s MITS Altair personal computer, launched back in 1975 ... was the first time you could have real computing power in your home, and has inspired a quarter century of innovation that shows no signs of stopping

“He made the decision to license Paul Allen’s and my Basic software, even though we were very young and had no track record. So he helped Microsoft get off the ground. And he incorporated an open bus into his design so third party software developers could write software for his machine. Ed made an incredibly valuable contribution — one that helped shape the modern computer industry.”

— Bill Gates, Microsoft founder



While serving as a commissioned officer in the Air Force, Roberts started his own company called Micro Instrumentation Telemetry Systems. MITS designed and produced one of the first hand-held electronic calculators. When Hewlett Packard and Texas Instruments entered the calculator business, MITS introduced the Altair 8800, the first inexpensive general-purpose microcomputer. It used Intel's new 8080 microprocessor, which, unlike the logic chips that animated calculators or electronic watches, could be programmed to do a significant number of tasks.

When *Popular Electronics* featured the Altair on its January 1975 cover, phone calls poured in from people wanting to sell him software. "We decided that the first person to show up with operating software would be the one we hired," says Roberts, who subsequently hired Bill Gates and Paul Allen to write a basic programming language that could run on the small machine.

"People laughed at us when we said we were building desktop computers," Roberts says. Yet before Roberts sold the company to Perotec in 1977, MITS sold approximately 50,000 Altairs.

Following the sale of MITS, Roberts served as vice president of Perotec and invented what could be considered today as the first laptop computer. Perotec didn't foresee any potential for the product, Roberts says, "so I figured it was time for me to go somewhere else."

Roberts, who signed a five-year, non-compete clause when selling MITS, purchased a 1,000-acre farm in southern Georgia and began producing cattle, hogs, corn and soybeans. In 1978 he started, and served as president of Agridata Inc., a firm that designed management software for farmers and ranchers.

Because age limits no longer affected eligibility for medical school, Roberts then turned his attention to his lifelong dream of becoming a physician and, at the age of 39, entered Mercer University School of Medicine.

In 1988, after a two-year residency at the Medical Center of Central Georgia, Roberts established a practice as doctor of internal medicine in Cochran, Ga., foregoing a more prominent or prestigious medical appointment to serve the small community. During the first 10 years of his medical practice, he also served as president of Data Blocks, a process control computer business, and as an adjunct professor in electrical engineering at Mercer University from 1988 to 1994.

Roberts, who invented a basic relay computer for the heart-lung machine and an electronic vital signs monitor, still tinkers with computers in his machine shop. Most of his work relates to medical applications and involves software rather than hardware, but he says, "I've always loved computers. For me, working with them has been an avocation rather than a vocation."

With his home workshop full of new ideas or inventions, the Georgia Hall of Fame and OSU Hall of Fame member admits, "I see myself as more of an engineer than a doctor."

JANET VARNUM

NAE President, Members Visit OSU

William A. Wulf, AT&T Professor of engineering at the University of Virginia, gave the 2002 Lohmann Lecture, "The Urgency of Engineering Education Reform," which coincided with the spring meeting of the College of Engineering, Architecture and Technology Associates.

Wulf is president of the National Academy of Engineering (NAE), one of the nation's most influential professional groups whose members volunteer their time and counsel to Congress, the White House and high-level government agencies. Election to the National Academy of Engineering is the highest honor paid to an engineer or engineering educator in this country.

Thirteen Oklahomans have been elected to the academy, and four of those are OSU faculty members: Regents Professor Ken Case, adjunct faculty member Marvin Johnson and professors emeritus Joe Mize and Charles Haan. OSU is the only university in the state to produce more than two NAE members.

In addition to Wulf, eight of the 13 Oklahomans who are members of NAE attended a reception and dinner that concluded the associates meeting.

ADAM HUFFER

BREAKING NEWground in alumni impact

CEAT Dean Karl Reid, left, and National Academy of Engineering (NAE) president William A. Wulf, are shown here with eight of Oklahoma's 13 NAE members: Kenneth Richards, Marvin Johnson, Kenneth Case, Joe Mize, Wulf, Kenneth Blenkarm, James Brill, Charles Haan and John Campbell Sr.

Adam Huffer



Alumni Move New Lab Closer to Reality

Contributions by alumni and friends of the OSU School of Civil and Environmental Engineering are bringing the upgrade of the school's teaching and research facilities a giant step closer to reality.

Bert Cooper, CEO and board chairman of Oklahoma City-based W&W Steel, and his son, Rick, the company's president and chief operating officer, spearheaded the endeavor by donating \$200,000 in structural and miscellaneous steel for the construction of a 15,000-square-foot steel and concrete structures research laboratory.

The Coopers have also taken a leadership role in enlisting pledges to fund the \$1.68-million project, an initial cost estimated by the Tulsa-based volunteer construction management coordinator, FlintCo Inc.

Schematics and preliminary architectural designs for the new structures laboratory, contributed by Frankfurt-Short-Bruza of Oklahoma City, feature a massive reaction floor, 20-ton crane, fabrication and electronics shop areas and offices for graduate students.

"This laboratory is needed in the state because Oklahoma has no structural research facility to conduct testing and support academic endeavors we in industry believe need to be pursued," Bert Cooper says. "We recognize that anything we can do to further the economic feasibility of concrete and steel and other construction industries in the state benefits all of Oklahoma."

W&W Steel, a \$125-million-a-year firm whose products are used in major local and nationwide projects, including the Minnesota Wild's hockey arena and the San Antonio Spurs' basketball arena, has had to send its research projects and dollars out of state.

"We have one of the largest steel manufacturers in the country here in Oklahoma, but it has had to send many of its products to the University of Texas to be tested," says Gorman Gilbert, professor and head of OSU's School of Civil and Environmental Engineering. "We at OSU and our industry peers want to keep structures research and its funding in the state."

ADAM HUFFER

In the School of Civil and Environmental Engineering's current structures laboratory, undergraduate Donny Lester (kneeling) and graduate student Giapchuan Goh work on the axial load test frame in a project for Union Oil of California. The company, exploring methods for off-shore drilling at depths up to 6,000 feet, has contracted with the school to determine the durability of casing pipe connectors under the high axial load, tension and fatigue it will encounter at that depth. Emeritus Professor John Lloyd currently heads the project.



Adam Huffer

Tulsa Pioneers Shape Program

Not many graduates from a major university can say they helped create their degree program, but OSU-Tulsa's first mechanical engineering graduates can.

When OSU-Tulsa was established in 1999, the first MAE students, Randy Askey and Alan Wagner, essentially told the decision-makers, "If you build it, we will come."

Nicole Marsden, Cynthia Filbeck and David Chilcoat soon entered the program as well. Gradually, OSU added more courses until nearly all those the students needed could be taken in Tulsa.

OSU-Tulsa President Gary Trennepohl says it was a proud moment when the first MAE class received diplomas. Askey, Wagner, Filbeck and Marsden graduated this past May and David Chilcoat in December.

"They are really pioneers," Trennepohl says. "They not only successfully went through the program but helped build it as well. Their work and dedication have paved the way for students of the future."

MARY BEA DRUMMOND

OSU Hosts International Group

Last August, OSU's School of Electrical and Computer Engineering hosted the 2002 Institute of Electrical and Electronics Engineers (IEEE) International Midwest Symposium on Circuits and Systems at OSU-Tulsa. Next year the symposium will be held in Cairo, Egypt, and the following year in Hiroshima, Japan.

The symposium, attended by some 500 registered participants representing more than 180 universities and 33 countries, serves as a forum for top practitioners and researchers to interact with their peers, technical staff from industry and engineering educators and as a platform for researchers to present their work. Special events include a symposium for top graduate students to present their research and continuing-education short courses.

OSU opted to host the conference in Tulsa to showcase its electrical and computer engineering program at OSU-Tulsa, particularly the Telecommunications and Information Technology Teaching Research Laboratory, says Rao Yarlagadda, conference co-chairman and professor of electrical and computer engineering.

The laboratory, brought online last spring, is tied to facilities in Stillwater via a direct fiber link to support collaboration between the campuses and distance education worldwide. "There's no other telecommunications research laboratory facility in the world that has better equipment and capabilities," Yarlagadda says.

The conference site also allowed OSU to showcase Tulsa's emergence as a burgeoning, international hub of telecommunications and information technology industry, education and research.

More than 20 companies, organizations and individuals, including the National Science Foundation, helped sponsor the conference: Williams Communications, Center of Excellence in Information Technology and Telecommunications, Phillips Petroleum Company, Halliburton Energy Services, Seagate Technology, Frontier Electronic Systems, Agilent Technologies, Optical Datacom, Flight Safety International, Sciperio, Oklahoma Gas & Electric, AFN Communications, Stillwater Designs, Nomadics, AEP-Public Service Company of Oklahoma, McCloud USA, WORLDCOM and Kay and Steve Wyatt.

ADAM HUFFER

Rao Yarlagadda, professor of electrical and computer engineering, shown third from left, served as adviser for Matthew Perry, left, Legand Burge, dean of the College of Engineering, Architecture and Physical Sciences at Tuskegee University, and Meemong Lee, all who earned doctor's degrees in electrical engineering at OSU. Yarlagadda, who co-chaired the 2002 Institute of Electrical and Electronics Engineers International Midwest Symposium on Circuits and Systems, has advised 30 successful doctoral candidates during his time at OSU.



Scott Miller

Alumnus Returns Home With Advice

Hosting the 2002 IEEE International Midwest Symposium on Circuits and Systems in Tulsa this past August gave OSU's School of Electrical and Computer Engineering an opportunity to hear from one of its own outstanding alumni, Matthew R. Perry, who earned a bachelor's, master's and doctorate in electrical engineering at OSU.

In the symposium's final keynote speech, the president and chief executive officer of computer chip manufacturer, Transmeta Corporation, advised the 500-strong, highly technical audience, "I know it's depressing and times are tough out there, but now's the time to look ahead because in two years it will be a whole other world.

"The down cycles are when great companies are really thinking and figuring out the next thing that's going to drive us to the next cycle. The launching point of a new growth cycle may be the growing segment of personal computing," he says.

ADAM HUFFER

"Every decade, there has been a big mover of technology, especially for chips — mainframes, integrated circuits, personal computers, data networking, the dot-com era — and it's absolutely my belief that mobile computing will be one of the big drivers of the next updates."

Perry made his initial mark on the computer chip industry while employed at Cirrus Logic in Austin, Texas. Under his leadership, the company successfully implemented MP3 decoding on an ARM microprocessor, becoming almost instantly the world's leader in audio chips. The chip spawned the Maverick® family of microprocessors found in virtually every portable MP3 player.

CNET wrote that Perry, who sits on the Consumer Electronics Association's board of directors and has advised the Recording Industry Association of America, "just might have as much influence on the shape of digital music as Napster's file swapping service or any of the music studios."

Allen Funds New Scholars

The College of Engineering, Architecture and Technology announces the W. W. Allen Scholars Program and the initial recipients of this prestigious award.

Wayne Allen, former CEO of Phillips Petroleum and sponsor of the new scholars program, is intent on providing financial support and enrichment opportunities to a special group of academically-talented students who exhibit leadership qualities and indicate interest in the petroleum industry as a career. Allen has provided an endowment with the OSU Foundation to fund the W. W. Allen Scholars Program.

CEAT has selected four outstanding individuals who have proven themselves leaders in the classroom and in numerous campus-affiliated organizations as W.W. Allen Scholars for 2002-2003: Matt Engelman, a mechanical engineering sophomore from Westcliffe, Colo.; Andrew Bass, a mechanical engineering sophomore from Midwest City, Okla.; John Soderstrom, a chemical engineering sophomore from Tulsa, Okla.; and Ashleigh Hildebrand, a chemical engineering junior from Wichita, Kan. ▲

BOB HOLLRAH

In the fall of 2001, OSU and Residential Life dedicated new residence halls in honor of individuals who have made numerous contributions to the OSU community.

Ann Halligan, Judith and Wayne Allen and former OSU President James Halligan appear outside the residence hall that now bears the names of distinguished alumni Wayne Allen, an engineering graduate and former chairman and CEO of Phillips Petroleum Company, and his wife, Judith Allen, who obtained a bachelor's degree in humanities.

New halls were also dedicated earlier to engineering graduate John Zink, well-known engineer, inventor, racing enthusiast, entrepreneur and philanthropist, and to Eloise and Sherman Smith, distinguished alumni known for their integrity and generosity. Sherman Smith is chairman and president of SerDrilco Inc., an independent oil and gas drilling company. Wayne Allen, John Zink and Sherman Smith are all members of the College of Engineering, Architecture and Technology Hall of Fame.



Partly Pix



Prepared for Every Challenge

Alyssa Schilling, a spring 2002 graduate of the College of Engineering, Architecture and Technology, has taken her bachelor's degree in chemical engineering and hit the ground running at ExxonMobil Production Company in New Orleans, where she'll no doubt become a company leader — if her OSU record is any indication.

Schilling, a graduate of Shattuck (Okla.) High School, was named as a top ten freshman, accrued accomplishments at a record pace, was named as the 2002 top female senior for both CEAT and OSU and graduated summa cum laude.

In addition to winning both American Institute of Chemical Engineers and Kappa Alpha Theta Foundation Scholarships, Schilling was a President's Distinguished Scholar, a Sir Alexander Fleming Scholar, a Wentz Scholar and a CEAT Scholar.

She provided leadership to a number of organizations including the CEAT Student Council, Big Event Community Service Day, Omicron Delta Kappa National Leadership Honor Society, Camp Cowboy and Mortar Board.

Since starting her job as facilities engineer for two cryogenic gas plants on July 1, 2002, Schilling has had to prepare for a tropical storm arriving one Thursday and a hurricane the next Thursday.

"ExxonMobil is not afraid to give you a full plate," Schilling says. "They expect you to be prepared. I like that. I'm expected to contribute a lot, and I have a lot of responsibility."

She credits the quality education she received from the OSU School of Chemical Engineering for preparing her well for the job. "I received good basic engineering and technical knowledge and the capacity to understand technical knowledge. Opportunity and variety are two words that describe my OSU experience," Schilling says.

DOTTIE WITTER

BREAKING
NEWground
in expanding opportunities

Jackson's Career Takes Flight

Cassie John Jackson came to OSU in 1997 with aspirations to earn an engineering degree and eventually go to work for NASA.

As a participant in the College of Engineering, Architecture and Technology's Co-Operative Education program, the aerospace engineering senior has already served three terms at the Lyndon B. Johnson Space Center and has most likely secured a full-time, career position with the agency well before she graduates.

At the end of her third term, Jackson received a NASA Johnson Co-op Special Achievement Award in recognition of her outstanding work and technical insight and competence, an award reserved for the top 10 interns. She also received NASA Johnson Co-op Flag Awards following each of her previous assignments in 2000 and 2001, recognizing her among the top 10 of 50 interns and the top 15 of 90 interns.

"Just to be selected by NASA as an engineering intern is a distinct honor because these positions are extremely competitive at the international level," says Larry Hoberock, professor and head of OSU's School of Mechanical and Aerospace Engineering. "She has earned high marks for herself and demonstrated that when on the job at a preeminent research and engineering facility, our students can rival those from Stanford, Purdue, Georgia Tech, Penn State and other high-reputation institutions."

At NASA, Jackson worked primarily in the energy systems test division on assignments from fixture design to programming. She completed NASA test director certification and was charged with conducting eight different test programs in the pyrotechnics area with applications ranging from the separation of the space shuttle from its external tank and booster rockets during launch to the stages of parachute deployment and release on the X-38, the International Space

Station emergency-return glider vehicle currently under development.

"Although I didn't use that much textbook theory, what I have learned at OSU helped me to think through any problems we would encounter," Jackson says. "It was a great, hands-on experience to take problem-solving skills and actually apply them."

Having completed the co-op program, Jackson returned to the Johnson Space Center last summer as a regular intern and worked in the fluid systems and propulsion area.

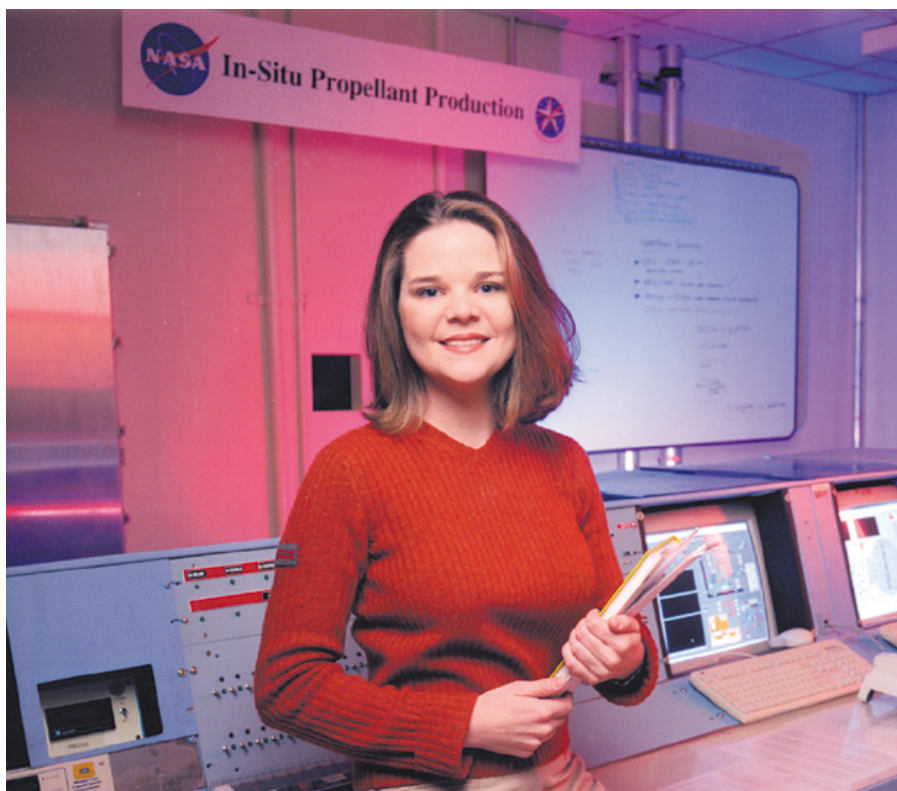
"They wanted me to stay in the Energy Systems division but to work in a different area to ensure that if there isn't an opening in the test area when I graduate in 2003, I could get hired somewhere else in the division," Jackson says. "They have told me that as long as an opening exists and there isn't a government hiring freeze, then I have it, so hopefully, there's a chance."

ADAM HUFFER



Hoberock

Cassie Jackson, the first College of Engineering, Architecture and Technology student to co-op with NASA, received a Johnson Co-op Special Achievement Award at the end of her third term with NASA.



True Grit

Cassie Mitchell, a top student in the School of Chemical Engineering, is well on her way toward graduating in four years from one of the college's most rigorous degree programs, a discipline that typically requires five years. Mitchell, an OSU Valedictorian Scholar from Warner, Okla., has completed the pre-med option in chemical engineering and is now focused on the school's new biomedical option.

"When I came to OSU, I thought about studying chemistry and going pre-med, but I visited the engineering student services office and learned about the engineering pre-med option," Mitchell says. "When I took my first engineering science class, I fell in love."

"I like the whole approach toward engineering, the way engineers think and do design work to solve problems," she says. "I plan to take the introduction to biomedical engineering and may pursue some medical component, but I'm staying in engineering."

Certainly, the college has boasted scholars as gifted as Mitchell but none who have faced obstacles as monumental. Once a high school star fielding track scholarship offers, Mitchell was diagnosed with reflex sympathetic dystrophy syndrome during her senior year. RSDS is a chronic nerve condition characterized by severe burning pain, pathological changes in bone and skin, tissue swelling and extreme sensitivity to touch.

"The week before I got to OSU, I ended up in a wheelchair full time — a scary, major adjustment," she says. Before classes convened, she underwent two surgeries to install a spinal cord stimulator and an intra-spinal pump. She soon developed an infection from the pump port, and the batteries for the stimulator failed.

Cassie Mitchell boasts a 4.0 grade-point average, despite recurring medical interruptions, and is on her way to graduating from the School of Chemical Engineering in just four years.

"I knew I couldn't miss class at the start of the semester so I had surgery on a Friday and was back to school the following Tuesday," she says. "But then two weeks later, the battery in the stimulator died, and I had to have another surgery to replace it."

The stimulator, which sends signals along Mitchell's spine to simulate nerve impulses, requires new batteries every six- to eight-months. For it and other maladies, she has undergone surgery eight times since arriving at OSU.

"It always seems to fall in the middle of a semester," she says, "but I have to get back to school because with chemical engineering, you don't miss class."

Mitchell says that the School of Chemical Engineering has also been one of her biggest supporters. "I got lucky. One door closed and another opened for me, and I ended up here in a school and program I love," she says. "People in the department have gotten to know me for me and not the disability, and they recognize that I'm a real person with real thoughts, real feelings and real aspirations."

"I may not be able to run, but, hopefully, I can become an engineer and be able to help others."

ADAM HUFFER



Adam Huffer



courtesy of IIE

A First First-Place Finish

Katie Frye Lefler, a May 2002 graduate of the School of Industrial Engineering and Management, placed first in the Institute of Industrial Engineers (IIE) Student Technical Paper Competition for her senior design project report and presentation on Ditch Witch's RT 70/90/115 Tractor Assembly Line. IIE held the national competition at the organization's annual conference in Orlando, Fla., in May. Although OSU always competes well, Lefler is the first OSU student to take first place honors in the competition.

Budiyanto Kartawijaya, who graduated in December 2001, was Lefler's project teammate, and Bill Kolarik, IEM professor and head, and Allen Schuermann, IEM professor, were project advisors. Schuermann says Lefler faced stiff competition including students from the University of Pittsburg, Purdue University and the Universite du Quebec a Trois-Rivieres.

Lefler, who is currently living in Tulsa, is employed by SolArc, an energy software management company. Kartawijaya is enrolled in the master of science program in the School of Industrial Engineering and Management.

EILEEN MUSTAIN

Maddoxes Establish West Endowment

Professor Emeritus R. N. Maddox, a member of the School of Chemical Engineering faculty for more than 30 years, including 20 as department head, and his wife, Pauline, recently established the John B. West Endowed Fund to support the OSU student chapter of the American Institute of Chemical Engineers (AIChE). The chapter recently was ranked among the nine best of the nation's 150 chapters.

Named for the architect of OSU's nuclear engineering program in the 1950s, the endowment will give the chapter \$1,000 annually, effectively doubling its operational budget. The fund will enable the chapter to enhance programs, such as ChemKids for fifth-graders; develop projects that have earned recognition from the national AIChE organization for four of the past five years; and fund student travel to AIChE regional and national conferences. ▲

ADAM HUFFER

Studentdigest



Russ Rhinehart

Students, Start Your Reactors!

Besides becoming a new, exciting tradition at OSU, the ChE Car Competition introduces students to the environmental, economic and feasibility questions that challenge chemical engineers in industry, says Randy Lewis, associate professor of chemical engineering.

The ChE Car Competition, a national American Institute of Chemical Engineers (AIChE) student contest inaugurated in 1999, requires designing and building a car powered by a chemical reaction. "It's a natural fit with the reactor course," says Lewis, who serves as AIChE student chapter adviser.

Each homemade car must have components that will fit within a shoebox, must carry up to 500 milliliters of water, travel a specified distance from 50 to 100 feet and stop without a mechanical device. Since students learn the distance and the weight only one hour before the competition, they must calibrate reaction time well in advance to ensure that the chemical reaction ends to stop the car within the competition parameters.

Designs That Challenge

The tradition of the "robotic face-off" continues in MAE 3033, the mechanical and aerospace engineering curriculum's first course in which students must design, construct and test an original mechanism for a specific problem.

Ron Delahoussaye, lecturer and adjunct associate professor of mechanical and aerospace engineering, heads the course and the seven-year-old competition.

Students put their designs to the test atop a four- by eight-foot table. While the challenge alters from academic term to term, the tabletop setting remains the same. Students may design their robots for a combination of offensive and defensive strategy and 'dirty' tactics; however, disabling an opponent is prohibited.

For the spring competition, students, working in teams of three, designed robots to remove billiard balls from a barrier dividing the table in two parts. Whichever team had the fewest number of balls, from a total of seven, on its side of the table at the end of a 90-second round was deemed the winner and advanced in the 24-team, double-elimination tournament.

In what may well become a new tradition, seven teams from OSU-Tulsa traveled to Stillwater for the competition, marking the second straight year School of Mechanical and Aerospace Engineering students from Tulsa have participated.

A Driving Success

From a field of 150 entries, the School of Mechanical and Aerospace Engineering's 2002 Formula SAE Racecar Team made the design semifinals and took second place in the Robert Bosch Corporation Engine Management System Competition.

The team, composed of members of the OSU student chapter of the Society of Automotive Engineers and representing several engineering disciplines, fielded the most technologically advanced car in its five-year history. It featured a proprietary engine management system with radio data logging and troubleshooting capabilities.



courtesy of SAE Formula Racecar Team

OSU Formula Racecar Team members who attended the competition are, front row from left, Ben Alexander, Scott Thomason, Kevin Craig, Brian Welch and Brandon Black; and, second row from left, Jason Edgar, Nick Swezey, Jason Bayless, Dan Fisher, associate professor in the School of Mechanical and Aerospace Engineering and formula team faculty adviser, Blake Mathews, Dustin Webb and Sam Preece.



Jaime Vanrum

Shown from left are robotic face-off judge, Noman Ahmad, who holds a bachelor's and a master's degree in mechanical and aerospace engineering from OSU; Jacob George, MAE master's student and class teaching assistant; Ron Delahoussaye, Engineering 3033 instructor; and student Marie Bice.

Excellence by Design

In what has become the custom, OSU School of Architecture students compete well, nationally and internationally. During 2002, architecture students collected honors, in addition to two first-place wins, in three other major competitions.

Sande Frisen placed second in the 2001-2002 ACSA/Wood Products Council National Student Design Competition. Faculty critics were John Womack and Jeff Williams.

Wes Rutledge received honorable mention in the 2002 ACSA DuPont Benedictus International Student Design Competition. Faculty critic was Bob Wright.

Wright also served as faculty critic for Shawn Brown and Jean-Phillippe De Visscher, who garnered an honorable mention in the 2001-02 ACSA/AISC National Student Design Competition.

Student Savings Earn Dividends

During their summer internship, School of Mechanical and Aerospace Engineering seniors Jason Gooch and Eric Bruce generated calculable and remarkable savings for the Tulsa gauge and industrial control systems manufacturer F.W. Murphy.

F.W. Murphy presented Gooch and Bruce the Gold award, its incentive program's highest honor, valued at \$1,000 and given for concepts that save the company \$10,000 or more. Working respectively in F.W. Murphy's research and development and product engineering divisions, Bruce and Gooch conceived an idea that will expectedly save the firm \$27,000 a year and solidified their status as full-time employment prospects, according to Steve Kennedy, F.W. Murphy vice president of engineering.

Jennifer Prichard, graduate student and project manager for the 2002 squad, and Cristin Leimer of the OSU concrete canoe team get set to paddle in the women's distance race at the ASCE/Master Builders National Concrete Canoe competition on Wisconsin's Lake Mendota.



Adam Huffer

Building Leaders

The ConocoPhillips Scholars program, which combines scholarship aid for four years and various activities to promote leadership excellence and professional development, celebrated the success of its second group of students in 2002. Initiated five years ago and envisioned as a CEO training ground, the ConocoPhillips Scholars program produced three top-20 seniors as recognized by the OSU Alumni Association, Megan Gosnell, Mark Snyder and Patrick Lissonnet.

Innovation Turns Bronze to Gold

Not only did School of Civil and Environmental Engineering students win third-place overall at the American Society of Civil Engineers (ASCE)/Master Builders National Concrete Canoe Competition, but they also received highest honors in "technical innovation" for the process they pioneered to build their craft.

In 2001, OSU became the first school in the nation to construct its canoe using an injection system rather than casting by hand, a process that cuts fabrication time from 13 hours to two and eliminates hundreds of hours of finishing work. The national organization awarded OSU's team the innovation award after the scholars duplicated and enhanced the process for the 2002 competition.

Representatives of the competition's sponsor, Master Builders, called it the most dramatic improvement in canoe construction technology in the contest's history, says Robert Hughes, emeritus professor and the team's faculty adviser.

Dean's Picks Continue Success

The College of Engineering, Architecture and Technology gives three Dean's Awards annually to the top students in each of the college divisions as determined by a committee of CEAT professors. The 2001-2002 Dean's Award recipients were Min Seong Koo, architecture; Donald G. Goosman, engineering technology (fire protection & safety); and Devin Shaffer, civil and environmental engineering.

Koo, who graduated in December 2001 with a bachelor's degree in architectural engineering, started his architectural education at Ajou University in South Korea before transferring to OSU's program in 1997.

While at OSU, Koo received many awards and scholarships including second place in the Pella Prize (given to the outstanding architectural solution during the fifth year capstone design studio); Design Studio Book Award; Golden Key National Honor Society; Tau Beta Pi; and the Locke Scholarship.

He is currently working for Frankfurt-Short-Bruza, the Oklahoma City firm that designed the CEAT's Advanced Technology Research Center.

Don Goosman, Dean's Award winner in the engineering technology division, graduated in May 2002 with a bachelor's degree in fire protection and safety technology. During his time at OSU, the Vernon Hills, Ill., native was a Phillips Scholar and was twice named to the Dean's Honor Roll and four times to the President's Honor Roll. He was the 2001-2002 recipient of the National Fire Protection Association's Charles Morgan Memorial Scholarship, the most distinguished scholarship awarded by the Department of Fire Protection and Safety Technology.

Goosman currently works for Fire Protection Management, a subsidiary of Rolf Jensen and Associates, the most prominent fire protection engineering consulting firm in the United States.

Devin Shaffer, the Dean's Award winner from engineering, graduated in May 2002 with a bachelor's degree in civil engineering. The Enid, Okla., native attended OSU on a regents scholarship.

At OSU, Shaffer was active in the CEAT Student Council, serving a term as president, the student chapter of the American Society of Civil Engineers, Mortar Board and the Phi Gamma Delta fraternity.

Shaffer is currently working on a master's degree in environmental and water quality engineering at the Massachusetts Institute of Technology as a Tau Beta Pi Fellow. He plans to graduate from MIT in June 2003 and work for an environmental design firm to gain the experience to obtain his professional engineer license. ▲



Adam Huffer

KOO



Adam Huffer

GOOSMAN



Adam Huffer

SHAFFER



Noteworthy

In Recognition of Success

Charlene Yauch, Prabhakar Pagilla, David Pratt and Eduardo Misawa are the College of Engineering, Architecture and Technology's newest recipients of the annual Halliburton Foundation Outstanding Faculty Awards that recognize extraordinary contributions to instruction and research.

Yauch, recipient of the Halliburton Excellent Young Teacher Award, is an assistant professor in the School of Industrial Engineering and Management. She has redesigned two of the school's core courses and has developed an undergraduate research course and a cellular manufacturing course for graduate students.

Pagilla, associate professor in the School of Mechanical and Aerospace Engineering, received the Halliburton Outstanding Young Faculty Member Award. His research has garnered approximately \$700,000 in external funding, and after he became its adviser, the student chapter of the American Society of Mechanical Engineers was recognized in 1999 as the "most improved" in the region.

Pratt, associate professor and former graduate program director of the School of Industrial Engineering and Management, received the Halliburton Excellent Teacher Award. He has twice received the school's Pritsker Outstanding Faculty Award, the award given by students to the top instructor, and has also received the Merrick Foundation Teaching Award and the Mortar Board Golden Torch Award.

Misawa, professor of mechanical and aerospace engineering, received the Halliburton Outstanding Faculty Member Award. He has authored papers appearing in 60 technical publications, is responsible for more than \$2 million in research contracts and served as program chair for the 2002 American Control Conference.

'Good' News for Web Handling Research Center

J. Keith Good, the Noble Foundation chair of mechanical and aerospace engineering and researcher in the Web Handling Research Center, has received the international Thomas W. Busch Award from TAPPI, the leading technical association for the worldwide pulp, paper and converting industry. The Busch Award recognizes outstanding contributions to the paper finishing and converting industries. Good was also recently awarded the grade of Fellow in the American Society of Mechanical Engineers, largely due to his research and publications in the field of web handling.

Heath Shelton



Heath Shelton



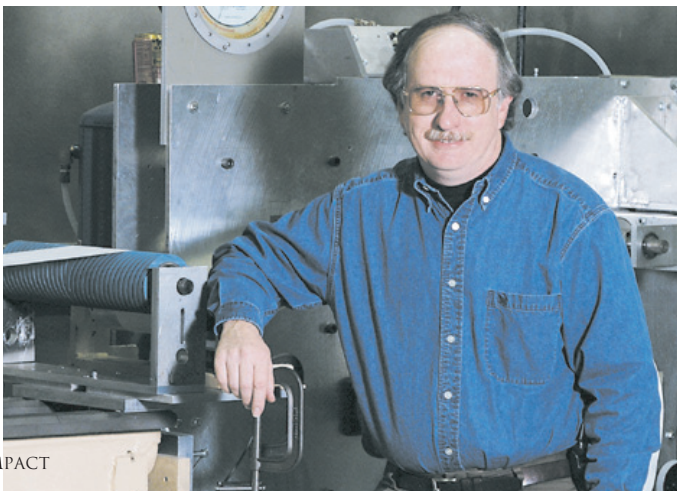
Andy Maxey



Andy Maxey



Heath Shelton



Jane Vanum

NSF Award Provides Research Opportunities, New Lab

In addition to receiving the Halliburton Corporation Excellent Young Teacher Award, Charlene Yauch, assistant professor of industrial engineering and management, also received a National Science Foundation Faculty Early Career Development award to initiate a five-year study of the effects of inter-group competition, cooperation and conflict on manufacturing agility.

The grant, NSF's most prestigious award for new faculty members, has enabled Yauch to provide research opportunities to undergraduates and to establish the Macroergonomics in Manufacturing Research Lab, which has an applied focus aimed at assisting manufacturers with understanding organizational systems and group dynamics in order to improve organizational performance and job satisfaction.

With Yauch, standing, are research assistants Bethany Bramlett, Shraddha Bhat and Mary Kusmanoff.

Among the Best

Camille DeYong, assistant professor in the School of Industrial Engineering and Management, has received top honors for exceptional instruction in the Master of Science in Engineering and Technology Management program and the National Technological University (NTU).

DeYong is one of only two recipients of the 2002 Advancia Excellence in Distance Learning Award, issued by the Lawton, Okla., company, Advancia Corporation, to acknowledge outstanding OSU faculty in the fields of distance learning and management information systems.

She has also been named an NTU Outstanding Instructor. More than 300 professors at approximately 50 of the nation's top schools, such as M.I.T., Georgia Tech, California-Berkeley, Illinois at Champaign-Urbana and Wisconsin, as well as Big XII institutions, Iowa State, Colorado, Kansas State and OSU, instruct courses via the NTU

satellite network. DeYong's NTU Outstanding Instructor designation, based on student evaluations, ranks her among the top 10 percent of the virtual university's faculty.

Camille DeYong accepts the Advancia Excellence in Distance Learning Award during OSU's 2002 fall convocation.



Patty Pix

Distinguished Teacher



Andy Maevy

Gary Young, professor of mechanical and aerospace engineering, received the 2001 OSU Regents Distinguished Teaching Award. His students say it's because he doesn't abandon them to the arduous task of figuring everything out on their own. Instead, he focuses on central concepts and the process of problem-solving.

Amanda Ciskowski, 2001 outstanding engineering graduate in the college, says, "Dr. Young is the most student-oriented faculty member I've known. He never turned us away. He always found ways to challenge us in class without discouraging us."

BAE Teams Receive Highest Honors

In June 2002, U.S. Secretary of Agriculture Ann Veneman presented the U.S. Department of Agriculture's highest award to the Oklahoma Cooperative Extension Service Poultry Waste Management Education Team and the Oklahoma Agricultural Experiment Station's GreenSeeker Sprayer Research Team.

Doug Hamilton, biosystems and agricultural engineering extension waste management specialist, leads the Poultry Waste Management Education Team, which consists of School of Biosystems and Agricultural Engineering colleagues Mike Smolen, BAE professor and extension coordinator for statewide educational programs in water quality; Mitch Fram, area extension water quality specialist; Erica Cook, project coordinator; and 17 additional extension specialists.

The team received the award for providing waste management programs that are helping state poultry producers improve their operations and the environment, despite the producers' initial opposition to the state-mandated education requirements.

John Solie, BAE professor, spearheads the GreenSeeker Sprayer Research Team, which also includes Marvin Stone, a BAE professor specializing in sensors and controls for biological systems, and three colleagues in the Agricultural Experiment Station.

The GreenSeeker team won the award for developing a revolutionary approach to fertilizing wheat crops. GreenSeeker's computerized sensor equipment reads the crop needs and dispenses fertilizer only where it is needed. The GreenSeeker sensors can be mounted on new or existing sprayers and will soon be available for other cereal crops.

Adam Huffer



Top Author

Garold D. Oberlender, professor of civil engineering and coordinator of the graduate program in construction engineering and project management, is one of two authors with more than one book included in the McGraw-Hill 15-book series in Construction Engineering and Project Management that is widely adopted by national and international universities.

He authored *Project Management for Engineering and Construction*, published by McGraw-Hill in 1992 and again in 2000, and collaborated with his mentor, Robert L. Peurifoy, on *Estimating Construction Costs*, revised and released in fifth edition in 2002. Oberlender and Peurifoy also co-authored *Formwork for Concrete Structures*. Now in its third edition, this book is in the McGraw-Hill Professional Series in Civil Engineering and is used by practicing civil engineers throughout the world.

A Powerful Tradition

The Frontiers of Power Conference marked its 35th anniversary in 2002 exploring the ramifications of asset diversification and emerging technologies for the electric utility industry.

Held annually since 1968, the Frontiers of Power Conference is an open and frank discussion of electric utility issues for industry managers, engineers and technical personnel, university researchers and students, says Rama Ramakumar, PSO/Albrecht Naeter professor of electrical and computer engineering who has been involved in the conference from its inception and, as director of the Engineering Energy Laboratory, has organized and conducted the event since 1987.

Keynote speakers at the 2002 conference included Larry Dickerman, vice president of asset management at American Electric Power in Columbus, Ohio, who challenged participants to look at the system as a whole, rather than regionally, and Bimal K. Bose, Condra Chair and professor of

Moretti Earns Humboldt

Peter Moretti, professor of mechanical and aerospace engineering, was recipient of one of 100 Alexander von Humboldt Research Awards for Scientists and Scholars in 2002. The honor, given by a German Foundation for outstanding achievements in research and education, carried an award of approximately \$50,000 and an opportunity to conduct research of his choice with colleagues in Germany.

Moretti was recognized for his work in the intersection of two fundamental engineering science fields, fluid mechanics and structural vibrations. Combining structural dynamics with fluid mechanics theory to remedy vibration became necessary as industrial machinery and processes became bigger and faster, he says. His interest in predicting and preventing autonomous vibration was the basis of his collaboration with Professor Peter Hagedorn at the Technical University of Darmstadt where he spent a semester on his first sabbatical after 30 years at OSU.

Moretti is the second College of Engineering, Architecture and Technology faculty member in the last four years to receive the international honor, which was established in 1972 to foster collaboration between German and foreign researchers. Don Lucca, professor of mechanical and aerospace engineering, received the award three years ago. Typically, just 10 U.S. engineers across all disciplines receive the award each year.

power electronics at the University of Tennessee, Knoxville. Bose detailed the new range and scope of power engineering opened by electronics.

In addition, authors from Kansas, Colorado, Iowa, New York, South Dakota and Oklahoma, among them William Hughes, one-time professor and head of OSU's School of Electrical and Computer Engineering and the conference founder, presented 12 technical papers on topics raging from transmission system reliability planning to stranded renewable energy.

The Frontiers of Power Conference is a component of the energy program in the School of Electrical and Computer Engineering and is organized through its Engineering Energy Laboratory. The energy program has attracted to OSU more than \$3 million in external funding from entities such as the National Science Foundation, the Department of Energy, the United Nations and the U.S. Air Force. It has produced seven U.S. patents, 20 doctoral dissertations, one textbook, an endowed professorship and more than 300 publications.



Adam Huffer



Andy Maevy



Todd Johnson

The Case for Quality

This past year, Kenneth Case, regents professor of industrial engineering and management, received the Excellence in Teaching Award for Region V from the University Continuing Education Association and the Frank and Lillian Gilbreth Industrial Engineering Award.

The Gilbreth Award, the Institute of Industrial Engineers' highest honor, recognizes individuals who have distinguished themselves by contributing to mankind through the use of industrial engineering.

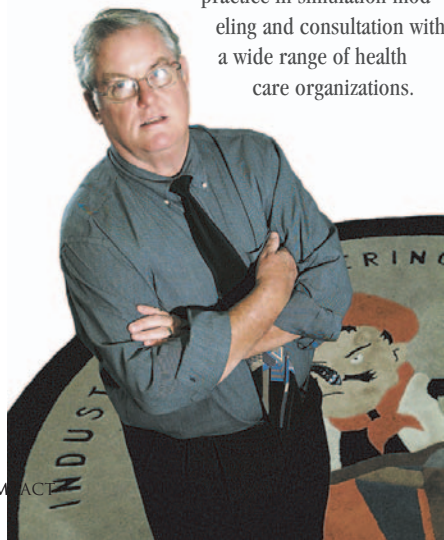
Case is OSU's third recipient of the Gilbreth Award behind H.G. Theusen, who founded OSU's industrial engineering program in 1926, and emeritus Professor Joe Mize. No other higher education institution can claim more than one recipient.

Case, a past president of the Institute of Industrial Engineers (IIE), was also elected president of the American Society for Quality (ASQ), where he will serve a three-year incumbency, including one-year terms as president-elect, president and a final post as board chairman. He is the only person ever elected president of both the ASQ and IIE.

Branson Elected Fellow

Michael Branson, associate professor of industrial engineering and management and program director for OSU's interdisciplinary master's degree specialization in Health Care Administration, has been elected Fellow of Health Care Information and Management Systems Society. HIMSS is the professional organization that provides leadership for the advancement and management of information technology in the health care industry.

The honor recognizes Branson's service, professional participation and experience, which include more than 30 years of academic and professional practice in simulation modeling and consultation with a wide range of health care organizations.



Heath Shelton



A Distinct Honor

Ron Elliott, professor and head of the Department of Biosystems and Agricultural Engineering, has been elected Fellow by the Society for Engineering in Agricultural, Food and Biological Systems (ASAE) for his "professional distinction and extraordinary qualifications."

Elliott, a specialist in environment and natural resources, has been active in interdisciplinary research and teaching and a key contributor to the Oklahoma Mesonet, a unique statewide network of automated weather stations. ASAE Fellow status is a distinction earned by only two percent of society membership.

Komanduri Recognized for Shaping a Technology

Ranga Komanduri, Albert H. Nelson Jr. professor of engineering and regents chair of mechanical and aerospace engineering, received the American Society of Mechanical Engineers (ASME) William T. Ennor Manufacturing Technology Award for 2002.

The award recognizes an individual or team of individuals for developing or contributing significantly to an innovative manufacturing technology, the implementation of which has resulted in substantial economic and/or societal benefits. The ASME recognized Komanduri for "seminal contributions to the field of manufacturing technology." Komanduri, who is internationally known for his innovations in ultraprecision machining, grinding and finishing of advanced ceramics for bearing applications, received the award during the 2002 ASME International Congress.



Andy Mauer

Remembering Carl Estes

Carl B. Estes, 66, died Sept. 13, 2002, at his home in Stillwater.

His students and OSU peers will remember the former professor and head of the School of Industrial Engineering and Management (IEM) for his sense of humor, his desire to help students both in and out of the classroom and his sense of community.

A native of Moore, Okla., Estes received his bachelor's degree from Oklahoma University in 1959, his master's degree from OSU in 1959 and his doctorate from OSU in 1969, all in industrial engineering.

He worked for Southwestern Bell for eight years before returning to OSU for doctoral studies in 1967. He served on the faculty at Auburn University from 1968 until 1969 when he joined the OSU industrial engineering faculty.

Estes became head of IEM in 1987, a position he held until his retirement in 1991. During his tenure he was known for his unique approaches to instruction in engineering economics and for his work with the Industrial Assessment Center.

After his retirement, Estes served as visiting professor at Virginia Tech for several years before returning to the OSU College of Engineering, Architecture and Technology, where he spearheaded the IEM accreditation preparation in the late 1990s and served as an emeritus professor. ▲

courtesy of IEM



CEAT Honors Two Outstanding Industry Leaders

In November 2001 the College of Engineering, Architecture and Technology honored B.N. Murali and Duane Wilson for fidelity to their nation, state and profession by inducting these two professional giants into the CEAT Hall of Fame.

Loyalty is an often-overlooked attribute in today's business world, but few words better describe **Duane Wilson's** employment with Conoco. For 39 years, following his graduation with a bachelor's degree in chemical engineering from the University of Tulsa, Duane was with the company inherently linked to the history and future of the petroleum industry in the state of Oklahoma. When he retired in December 2002, Wilson had made an indelible imprint on Conoco and had helped make the merger of Conoco with Phillips a smooth transition.

First in Ponca City, then in destinations ranging from a refinery site on the Humber River in England to Melaka, Malaysia, where the company initiated two groundbreaking and profitable ventures, Wilson made significant contributions to the growth of Conoco's downstream business.

Throughout his career, beginning as a refinery process design engineer and up through the ranks to his current position of vice president of refining, marketing supply and transportation-technology, Wilson's supreme business acumen, technical expertise and strong work ethic earned the respect and admiration of all fortunate enough to call him an associate.

And certainly, there are many who did. With responsibility for Conoco's Corporate Engineering Center during his last managerial assignment, he oversaw its staff of approximately 400 engineering and technical personnel. The company's research operations employed more than 800 scientific, engineering, technical and support people.

Travels and business relationships made Duane an international citizen, yet he was always proud to be a native of Oklahoma. Born in Pawnee County

near Blackburn between Pawnee and Cleveland, Wilson has long called Ponca City home, as do his identical twin brother and his younger brother, both of whom work at ConocoPhillips today.

Although his parents, Lester and Edna Wilson, did not directly influence Wilson's career path, they instilled in him the passion to set lofty goals and be the best at achieving them. He applied the philosophy at Conoco and in service to the community — particularly, in support of education at the University of Tulsa, OSU and the Oklahoma School of Science and Mathematics.

In service to Conoco, he made immeasurable contributions to one of the few, true bastions of Oklahoma business and to the state's overall economic outlook. He remains committed today, loyally giving more of himself to family, community and employer than he could ever expect in return. As an embodiment of the fully capable engineer thinking, moving and acting outside the box, Wilson has been a true leader, a humble giant in the field.

During the 26 years that **B.N. Murali** has been employed with Halliburton, he has seen it evolve into one of the world's leading providers of products and services to the petroleum and energy industries. His status today as vice president of technology is testament to his role in that growth, though humility precludes him from saying as much. He is a man whose actions speak for him, and they speak volumes.

Upon joining Halliburton Services in Duncan, Okla., one of nine companies that now comprise Halliburton Energy Services, Murali made an immediate impact with his involvement in the design and development of the HT 3000 intensifier pumps used in the stimulation of oil and gas wells that subsequently became the "bread and butter" of Halliburton Pumping Services.

Adaptability, which he attributes to his mechanical engineering education at

OSU, the Indian Institute of Science and the University of Mysore, enabled Murali to move adeptly from research into managerial positions in Halliburton's upstream business. He quietly contributed to the company's operations whenever the call arose — whether from the United Arab Emirates, Holland or Houston. He consolidated existing technology and services or originated them when necessary to suit the growing needs of Halliburton and its customers.

As vice president of technology, Murali now heads an arm of Halliburton Energy Services consisting of 1,700 people in 10 technology centers around the world dedicated to the development of new products and services.

A love of engineering and the desire to work with people who share his passion to improve the oil and gas industry drives Murali, yet this eminent engineer almost opted for a career in medicine. His mother, Anasuya Bai, encouraged him to follow the family trade. His father, B. Nagabhushana Rao, was an electrical engineer in their native country of India, and both Murali's older brothers were engineers, as were two brothers-in-law.

Murali cites his mother, who along with Swami Chinmayananda taught him religious values and discipline, as one of the greatest influences on his life. Professionally, he acknowledges the influence of Karl Reid, dean of OSU's College of Engineering, Architecture and Technology, and later, Vice President Dick Cheney, former head of Halliburton.

Murali, who received a Ph.D. in mechanical engineering from OSU in 1974, a master's degree from the India Institute of Science in 1969 and a bachelor's degree from the University of Mysore in 1967, recognizes the value of engineering education and actively supports the mission of a number of universities, including OSU, Texas A&M and the University of Texas. ▲



Duane Wilson



B.N. Murali

ADAM HUFFER

TRADITION ... TIME ... and now TOGETHER!



E.W. MARLAND

Never forgetting their heritage in the heartland, these two companies leave indelible marks wherever they choose to be, reflecting the philosophies of their founders: the Phillips Brothers and E.W. Marland.

For the College of Engineering, Architecture and Technology (CEAT), ConocoPhillips' generosity has extensively benefited students, faculty and research programs. And the relationship is reciprocal — OSU graduates are the largest segment of the company's employee population, some highly placed company leaders.



LAURA SUGG



Two industry giants — Conoco and Phillips — firmly rooted in Oklahoma *and* at OSU!



GENE BATCHELDER

- Phillips Educational Initiative: Phillips Scholars, Minorities in Engineering, Women in Engineering and REACH programs
- Phillips Lecture Series
- Conoco: Concrete Canoe Competition
- Phillips: The Advanced Technology Research Center
- Conoco: Conoco Dupont Chair for Technology Management
- Conoco & Phillips: Extensive Research & Development

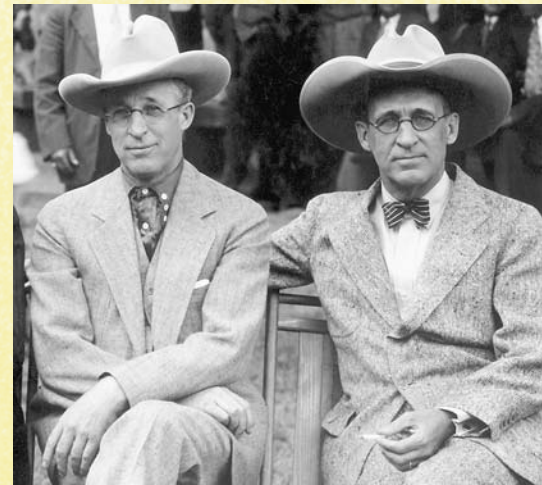


TED DAVIS

OSU — and CEAT — salute ConocoPhillips!

ConocoPhillips

WAITE and FRANK PHILLIPS



WAYNE ALLEN



For more information about how you can help the College of Engineering, Architecture and Technology, call Jason Caniglia, senior director of development, at (405) 744-3747.