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As college changes leadership, it shows continuing strength
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Professor who says little things count is honored for his years as caring mentor
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Tau Beta Pi session recognizes its late longtime adviser
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Encouragement pays off for student who plans to pass it on
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Iowa bridge-building contestants eschew the mundane, build 'majestic' span
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Yes, It Floats  Iowa women's team members Tracy Golden (left, in canoe) and Irene Schroeder (right) prepare for their run in the ASCE regional concrete canoe competition, held April 24 at the Coralville Reservoir. Golden (B.S. in CE, '93), a Milwaukee native, and Schroeder, a civil engineering sophomore from Iowa City, paddled Iowa's student-built canoe, "Eat My Wake," to a first-place finish in the women's race, winning out over teams from Iowa State, Minnesota, North Dakota, South Dakota State, and Wisconsin-Platteville. The women's finish helped Iowa win overall victory in the regional meet and earn a berth in the national competition at Sacramento, California. The races followed a morning session of paper presentations and poster displays, and early afternoon judging of the canoes. In order to qualify for the contest, the boats, which are fashioned from light-weight concrete, foam, and wire mesh, must be able to float when full of water.
Dean Remarks on College's Strengths, Outlines Some Areas for Development

As recent arrivals in Iowa City, my family and I have adjusted well to the change in climate and the well-publicized "unusual" weather of last winter. In fact, coming from California, we find something comforting about living in a place where the news headlines are consistently focused on the weather!

While we were beginning to feel at home in Iowa, the College of Engineering also was making a transition—one to new leadership. Since the last edition of Iowa Engineer, the college has made great strides in that direction.

Last December two half-time interim associate deans joined me in the work of administering the college. These gifted and dedicated deans are Professor A. Jacob Odgaard, of the Department of Civil and Environmental Engineering, and Professor John P. Robinson, of the Department of Electrical and Computer Engineering. Between them they represent more than 40 years of experience in the college, and they have made an enormous impact already. More information about their background is found elsewhere in this issue [see story on page 6].

The college has performed remarkably well through this transition period. Demand for engineering education at Iowa continues to be strong. Our students continue to be our principal concern, and their quality has never been higher.

Applications Buck National Trend

The number of applications for fall semester freshman admission has increased about 20 percent over the past two years, in spite of negative national demographic trends and declining applications at many other engineering colleges. Due to limited resources, our enrollment has remained essentially constant over the last decade, so the quality of incoming students has continued to rise—to an extent that may surprise you.

For example, each year University President Hunter Rawlings awards Presidential Scholarships to 20 of the most qualified students in the entering freshman class, which usually numbers about 3,500. Since engineering students make up only about 6 percent of this entering class, one would expect that, on average, only one of these prestigious scholarships would go to an engineering student. However, for last fall eight of the 20 scholarships—a full 40 percent and a record high—have been awarded to engineering students. In addition, the ACT scores of last fall's freshman engineering class ranked at the 93rd percentile nationally.

It is also noteworthy that slightly more than 20 percent of our entering freshman engineering students last fall were women. Our efforts to develop programs attractive to women and to recruit women appear to be bearing fruit, since our percentage is substantially higher than the national average.

Given the quality of our students and our strong commitment to teaching, it is not surprising that our graduates continue to win a disproportionate share of awards. For example, this spring Trina Buhr, a graduating senior in biomedical engineering, was our first student to win three separate University-wide awards: a Hancher-Finkbine Medallion, the Virgil Hancher Award, and the Susan Hancher-Finkbine Medallion, the Virgil Hancher Award, and the Susan Hancher Award. Buhr was chosen for each award by an independent faculty committee. In addition, Margo Melendez, who will be a senior this year in mechanical engineering,
won the University’s Philip G. Hubbard Human Rights Award.

Among our many outstanding graduate students, S. Keith Hargrove, who received a Ph.D. in industrial engineering this May, was presented with a University Student Leadership Award at the Third Annual Multicultural Graduation and Recognition Banquet. Keith has accepted a position as assistant professor of mechanical engineering at Tuskegee University.

**College Leads in Teaching**

In keeping with the college’s long-standing tradition, teaching continues to be regarded as our principal mission, and it has never had a higher priority. A recent University survey revealed that the College of Engineering leads the University in commitment to undergraduate teaching. In fact, 94 percent of all undergraduate instruction in engineering is done by regular tenure-track faculty, not by teaching assistants or part-time lecturers.

The college’s enduring resource and strength, not just in teaching but in all endeavors, is its faculty. On a per-person basis, our faculty productivity equals or exceeds that of many of the best known engineering colleges in the country. In the past year, faculty members have won national awards and honors that are too numerous to list. However, I want to share just one recent example with you. Professor Soura Dasgupta, of the Department of Electrical and Computer Engineering, recently was chosen to receive a prestigious National Science Foundation Presidential Faculty Fellow award. These awards are extremely selective—only about ten will be made nationally to engineers this year.

**Faculty Productivity Rises Again**

Faculty research productivity has increased substantially again this year. The faculty continues to attract federal and corporate research funding that exceeds state support by an increasing margin each year. Opportunities for undergraduate students to participate in research laboratories continue to increase, as well.

A word about teaching facilities at the college: They are our single greatest need. With the increasing demand for access to engineering education in our region, and the limitations of our current facilities, we are forced to seriously restrict our attempts to serve the needs of the state in several ways. We simply can’t ignore these needs much longer. This topic deserves a great deal of attention, and I will say more about it at a later date.

An example of the positive role our college already plays in the economic development of the state is Neural Applications Corporation’s recent decision to locate in Coralville, near the University campus, rather than in California’s Silicon Valley. According to company president Robert Staib, a major factor in that decision was the potential for interaction in teaching and research with The University of Iowa’s engineering faculty.

Neural Applications Corporation plans to hire about 100 engineers and scientists over the next few years, significantly contributing to growth of the high-technology industry in the region. In addition, the College of Engineering is engaged in dialogue with other technology-based local firms interested in economic growth in the region. I expect our college to become more involved in this type of industry partnership in the years ahead, as resources allow.

In summary, I am most enthusiastic about the College of Engineering and its future. The quality and achievements of our students and faculty already are outstanding by many measures. I look forward to working with them and with our alumni, our corporate neighbors, the University administration, and state government to help the college advance in the many ways necessary to fulfill its true potential.

Richard K. Miller, Dean
Teacher’s Dedication to His Students and Their Concerns Earns High Praise

“An expert in his field” . . . “The first person I go to about coursework problems or career planning” . . . “Someone who obviously enjoys working with students and who significantly enhances our education” . . . “A teacher who encourages students to think like engineers.”

With opinions like these from his students, it is easy to see why Wayne Paulson, professor of civil and environmental engineering, recently was awarded a University of Iowa Collegiate Teaching Award. The award, which was presented by President Hunter Rawlings, recognizes Paulson’s exemplary performance as a classroom teacher.

“I’ve always liked teaching,” says Paulson, who began teaching engineering courses at The University of Iowa in 1960. “I try to impress upon students that while they have to learn the material, they can also have fun in the process.”

Paulson teaches at all levels, from first-year to graduate students, virtually all of whom he knows by name. He also is known as the faculty member students can turn to when they need help with curriculum or career dilemmas.

To encourage students who worry about making a career commitment, Paulson often recounts his own path to the profession and his ongoing struggle to determine where that path ultimately would lead.

“I guess I began to get interested in engineering as a kid,” he says. “My father was a construction supervisor of bridges and highways and was the only licensed dynamiter in La Crosse County. I got to tag along with him on weekends, helping him as he removed hillsides or made duck landing ponds.”

When he graduated from high school, Paulson was leaning toward a career teaching math and science and coaching high school sports. While serving in the Navy, he became interested in chemical engineering. When he left the service, Paulson studied a different area of engineering, earning a B.S. in Civil Engineering at the University of Wisconsin—Madison. By the end of his undergraduate studies, he was finding the study of hydraulics to his liking. But the work he saw going on in environmental engineering enticed him even more, so he earned an M.S. in that subject, also at Madison.

Environmental engineering must have hit the mark with Paulson, because he stuck with it for his next graduate degree, a Ph.D. (with, of course, an emphasis in chemistry) from The University of Iowa.

Paulson’s active interest in student affairs is reflected in extra efforts, such as the freshman questionnaire he distributes several weeks after the beginning of the fall semester.

“When I hand out the questionnaire,” he says, “I tell the first-year students that they can ask me about anything that’s of concern or interest to them, whether it’s careers, courses, how to study, whatever. I think it helps them just to know that someone cares. Little things can make a big difference.”

Paulson also compiles and publishes Who Is Who, a resource listing students and faculty members in the environmental engineering and science program, their educational backgrounds, areas of research, hometowns, hobbies, and their spouses’ names and professions.

“Even though students, staff, and faculty in our environmental program are scattered among five buildings, members are pretty good about keeping in touch, socializing, and maintaining something of a sense of family,” Paulson says.

Paulson’s emphasis on teaching is apparent in his workload: He teaches four courses each academic year plus one course during most summers, and he frequently substitutes for faculty members on sabbatical.

In addition to regular University courses, Paulson coordinates and presents short courses on water and waste water management, which draw some 200 operators, managers, and engineers twice each year. Participants come from municipalities, consulting engineering firms, private industry, and state regulatory agencies in Iowa and surrounding states.

Paulson also has been active in...
research over the past 30 years. His recent work on oxygen transfer in waste water treatment systems has resulted in the development of an oxygen transfer measurement standard for ASCE as well as the development of energy-efficient fine pore aeration systems.

### Job Search Lasts Longer for This Year’s Graduates

Students in the College of Engineering looking for employment last fall had their work—if not their jobs—cut out for them, says Sharon Kurtt, career services director at the College of Engineering. Despite positive trends in the economic indicators that affect hiring, engineering graduates faced the weakest job market in years.

American employers have been cautious about hiring over the past 18 months, Kurtt says. Across the country, on-campus interviews for all new college graduates declined as much as 20 to 40 percent during fall 1992 and into spring 1993. Some large companies undergoing massive lay-offs declined to interview. Engineering students at The University of Iowa found that many of the companies that did interview on campus were unable to commit to hiring decisions.

Kurtt says job seekers should plan for a longer-than-usual search and approach a wide range of potential employers.

### Alumnus Remembers Time at Iowa Fondly, Sets Trust for College

Although Donald Tweed (B.S.M.E., '55) doesn’t miss midwestern winters a bit, he has no regrets about the four years he spent at Iowa earning a degree. In appreciation, Tweed recently established the Donald and Jeanne Tweed Trust Fund for the College of Engineering, through The University of Iowa Foundation.

“I thoroughly enjoyed my years at Iowa,” Tweed says. “In fact, I remember it more as fun than work. I liked the small-town atmosphere and the personal attention the engineering college faculty gave to the students. The longer I worked and was away from school, the more I realized what an excellent education I received at Iowa.”

The college, he adds, can hold its own with the country’s top engineering schools.

As an undergraduate, Tweed was active in Pi Tau Sigma and Tau Beta Pi and played baritone horn and French horn in the marching and concert bands. After graduation, he worked for nine years at Bell Telephone Laboratories, where he developed the touchtone phone. Tweed holds 18 patents on the device.

“The touchtone phone is a nice thing to have patents on,” he says. “Everyone uses it, and no one complains about it.”

After leaving Bell Labs, Tweed ventured west to California, where he worked for Bourn’s, a manufacturer of electronic components. He garnered several other patents before joining General Telephone in the San Francisco Bay area.

During the last 16 years, Tweed worked for Raychem, where he was a manager of applications equipment before his retirement.

The newly established trust fund will provide income to the Tweeds during their lifetimes, with the principal bestowed upon The University of Iowa Foundation at the termination of the trust.

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### Chemical and Biochemical Engineering

**Faculty Activities**

- **Gregory R. Carmichael**, professor and chair, traveled throughout Poland for two weeks in May to help establish joint research on air pollution by the United States and Poland. The trip was funded by the National Academy of Sciences.

- In October, Carmichael spoke at the International Global Atmospheric Chemistry Workshop on Characterization of Acid Precipitation in Asia, held in Bombay, India. He was a member of the organizing committee for the Symposium on Atmospheric Chemistry, held in conjunction with the American Meteorology Society annual meeting in Anaheim, California, in January.

- Later that month, Carmichael spoke at the International Symposium on Sustainable Development and organized a workshop on atmospheric modeling and monitoring of acid deposition in Asia, work funded by the World Bank. He then traveled to Nepal to design an SO2 monitoring network for future research.

- Carmichael, a member of the scientific advisory board for the Air Pollution ’93 conference, presented the keynote address for the conference, in Monterrey, Mexico.

- **Jonathan S. Dordick**, associate professor, has been appointed chair of the biochemical technology division, American Chemical Society. He also recently became an associate editor for Bioanalysis, Journal.

- **Victor G.J. Rodgers** and **David W. Murhammer**, assistant professors, are principal investigators for a two-year National Science Foundation Research Experiences for Undergraduates site grant. During the summer, they and four other department faculty members will supervise the research of eight undergraduates, who will come to Iowa from around the country to participate.

- Rodgers received the 1992 James N. Murray Faculty Award for untended faculty. The award recognizes his contributions toward fostering better relationships between students and faculty, and inspiring students to go beyond minimum requirements.

- **David B. Rethwisch**, associate professor, recently completed a sabbatical at the University of Delaware, where he worked with Professor Cecil R. Dybczak and DuPont Corporation chemist John VanAlston. During the sabbatical, Rethwisch worked on the application of solid-state nuclear magnetic resonance (NMR) to polymer samples. As a result of this work, DuPont has donated a solid-state, $250,000 NMR spectrometer to Rethwisch’s lab at The University of Iowa.

- Rethwisch presented invited seminars at the University of Delaware, Amoco Chemical Company, and DuPont. He is coauthor of...

**Student Activities**

- Julie L. Muenchow, a senior from Iowa City, was awarded one of ten national AIChE Scholarships for the 1992-93 academic year. The $1,000 award recognizes academic excellence, involvement in AIChE activities, and thoughtful career planning.
- Renee M. Welter, a junior from Cedar Rapids, is the 1993 winner of the American Institute of Chemical Engineering Annual Chapter Award for Scholastic Achievement. Welter received a copy of Perry's *Chemical Engineers' Handbook* and a certificate.
- The Iowa Space Grant Consortium has awarded a $1,270 NASA Graduate Fellowship to Trina A. Buhr (B.S. B.M.E., '93) accepted the award for Iowa at the society's annual convention, held last October in East Lansing, Michigan.

**Civil and Environmental Engineering**

**Faculty Activities**

- Forrest Holly, professor, and John Parrish, of Utah State University, have completed the CanalCAD PC-based Irrigation Canal simulator for California's Imperial Irrigation District. Through a tripartite agreement among the Iowa Institute of Hydraulic Research, Imperial Irrigation District, and Laboratoire Hydraulique de France, CanalCAD is being licensed to many users in the irrigation district.
- Holly and visiting scholars Misha Spasojevic and Ljuba Savic are developing one-, two-, and three-dimensional water sediment modeling codes for use by the Army Corps of Engineers in assessment of reservoir storage loss caused by sediment accumulation and sediment management in complex navigation passages.
- With help from visiting scholar Inbo Park, Holly is providing one-dimensional hydrodynamic and contaminant transport modeling capability to Battelle Pacific Northwest Laboratories and Oak Ridge National Laboratory for their use in studying radioisotope transport and fate.
- Holly and his students are developing a numerical thermo-hydrodynamic model for the Chicago Sanitary and Ship Canal. The model, which will provide information on the control of sediment and protection of river banks, and hydraulic design of fish bypass systems for hydroelectric power plants.

**Late Associate Dean Called ‘Hard Act To Follow,’ Honored with Renaming of Technology Symposium**

The 25th annual symposium on technology and society, sponsored by The University of Iowa chapter of Tau Beta Pi, recently was named in honor of the late Paul D. Scholz. Scholz, associate dean of engineering from 1979 until his death last October, was longtime adviser to the local chapter of the national engineering honorary society.

"Paul Scholz always provided tremendous help and was a great inspiration for the students," says Gerald Schnoor, professor of civil and environmental engineering and Scholz’s successor as Tau Beta Pi faculty adviser. "He was a hard act to follow, and it’s fitting that the symposium was named for him."

This year's Paul D. Scholz Symposium, on March 11, addressed the question of whether lawsuits are hampering the ability of U.S. companies to compete with their European and Japanese counterparts.

"The invited speakers presented both sides," Schnoor says, "the ‘engineer’s view’ that unlimited product liability awards hinder innovation and business, and the ‘lawyer’s view’ that the system works well and damage awards are generally fair. It was a terrific symposium that exceeded all my expectations."

Speakers included Kenneth W. Jost, adjunct professor of law at Georgetown University; James F. Thorpe, professor emeritus of engineering at the University of Cincinnati; and Robert J. Blink, a Des Moines attorney. James M. Kaster, engineering supervisor and manager for 3M Company and director of Tau Beta Pi District II, served as moderator.

University of Iowa faculty and student participants included Ralph Stephens, professor of mechanical engineering; Michael Saks, professor of law; and Vivek Goyal, a senior in electrical and computer engineering and mathematics.

The executive council of Tau Beta Pi awarded the symposium a $750 Greater Interest in Government Grant, which recognizes original and innovative engineering service projects that help promote a better appreciation for the role of engineering in society. Chapter president Trina A. Buhr (B.S. B.M.E., '93) accepted the award for Iowa at the society's annual convention, held last October in East Lansing, Michigan.

**Long-time Civil, Electrical Engineering Professors Bring Extensive Experience to Interim Roles**

A. Jacob Odgaard, professor of civil and environmental engineering, and John P. Robinson, professor of electrical and computer engineering, have been serving as interim associate deans in the College of Engineering since December 1992.

Odgaard, a specialist in hydraulic engineering, received his M.S. (1966) and Ph.D. (1970) degrees in civil engineering from the Technical University of Denmark. Since coming to The University of Iowa in 1977, he has served as a research scientist at the Institute of Hydraulic Research and has taught a range of courses in hydraulics and fluid mechanics. Odgaard's current research focuses on flow and sedimentary processes in river meanders, structures for the control of sediment and protection of river banks, and hydraulic design of fish bypass systems for hydroelectric power plants.

Robinson is a specialist in communication and information theory, digital electronics, logic design, and digital systems. He received his B.S. (1960) degree from Iowa State University and his M.S. (1962) and Ph.D. (1965) degrees from Princeton University. He has taught at Iowa for 28 years and has been an active college committee member. Robinson's research examines coding and communication, reliable computers and systems, and combinatorial search.
Hers Is a Non-Stop Dance with Success

After only a few minutes talking with LaShawn Freeman, it’s clear that The University of Iowa College of Engineering has made a big impact on her life. The feeling is mutual.

In addition to carrying 17 semester hours each of the last four semesters, the chemical engineering major is president of the Associated Students of Engineering (ASE), a member and past vice president of Zeta Phi Beta sorority, and a member of the Multi-Ethnic Engineering Students Association (MESA). She also is on Theta Tau’s chapter development committee.

And to let off steam? Freeman tap dances, something she’s done since age 2, models, and spends time with friends.

By the time Freeman graduated from Chicago Vocational High School, she knew she wanted to be an engineer.

“My job is to speak for students,” she says, “and to incorporate their desires into the educational experience at Iowa.”

Freeman also attends most meetings and events sponsored by MESA, which, she says, “lets minority students know that there is support here and job offers out there.” Through MESA, Freeman was able to meet Lilia Abon, keynote speaker at last year’s National Engineers Week—a celebration that Freeman organized.

“Abron really gave me some good advice,” Freeman says, “including suggesting some possible graduate schools and encouraging me to take the Engineer in Training exams. And it was great to talk with such a successful woman engineer who is also an Iowa graduate.”

Freeman, who will graduate in December, says she will decide soon whether to enter graduate school or go to work in industry. This summer she will work as a summer intern at Abbott Laboratories, in north Chicago.

Freeman also has a special long-term goal: to return to Chicago high schools as an advocate for minorities and women in engineering.

“I was lucky,” she says. ‘I had counselors who helped me and a mother who kept me out of trouble and made me stick with it. I want to show high school students that they can make it, too.”
New Building Offers Ideal Environment for Collaboration Among Researchers

It has that “new carpet smell,” and its vast empty spaces echo with every word or footstep. But the Frank Gehry-designed Iowa Advanced Technology Laboratories building soon will come alive with the sounds of faculty members and graduate students conducting, demonstrating, and discussing their scientific research.

The Tech Labs building will be a physical embodiment of the University’s philosophy of fostering research that bridges disciplines and enables researchers to study common problems. Scientists in the Center for Global and Regional Environmental Research (CGRER) and the Center for Computer-Aided Design (CCAD) are among the many specialists finding new homes for their research in the recently completed building.

“The philosophy behind this building is that researchers from many different, traditionally separate disciplines should get together and talk,” says Jane Frank, CGRER administrative assistant. “It will allow the center’s 46 faculty members and 100 graduate students—from engineering, law, anthropology, economics, geography, geology, and physics and astronomy—to work together on their research.”

The environmental research center occupies project cubicles, administrative offices, and a computer lab on the second floor of the building, which is located along the Iowa River north of the Iowa Memorial Union. Space in the building is assigned to projects rather than to individuals, who will continue to be based in their home departments on campus.

Frank says the center’s computers are already hooked up and scientists in different buildings will be able to communicate with each other via electronic mail.

Researchers in the Center for Computer-Aided Design also are scheduled to move to Tech Labs. CCAD’s relocation will be its third move in a decade.

“Three years ago, the move from the Engineering Building to our facility on Madison Street went well,” says CCAD administrative assistant Rozanne Huff. “We expected the administrative offices to be down for three days while everything got organized and hooked up. In fact, we were down less than a day.”

While CCAD awaits completion of its space on the third and fourth floors of Tech Labs, Huff and others assign rooms and change phone numbers.

Huff notes that no one in CCAD will move to the new facility.

“Between 70 and 80 people in the computer-aided engineering group, headed by CCAD deputy director Kyung K. Choi, will have Tech Labs research space,” Huff says. “But the Iowa Driving Simulator and the National Advanced Driving Simulator working groups will not be moving into the new building.”
Bow to Pressure? Not This Bridge

The mission? Build a steel bridge 20 feet long and three-and-a-half feet wide that can support 2,500 pounds without deflecting more than two inches.

The team? Fifteen University of Iowa undergraduate engineering students and one faculty member willing to give their time, energy, creativity, and even their money to meet the challenge.

That bridge-building challenge was met by student chapters of the American Society of Civil Engineers (ASCE) at a February contest in Fargo, North Dakota. Host school North Dakota State welcomed teams from U.S. and Canadian universities.

Wilfrid Nixon, the lone faculty member on Iowa's team, gives his student teammates credit for a bridge well-built.

"Our entry is very much a student-directed effort," says Nixon, ASCE chapter adviser and assistant professor of civil and environmental engineering. "The students decide on the design, make the parts, and build the structure at the competition. I just stand by and applaud."

Entries must meet strict standards for materials, size, strength, cost, and completion time. Bridges are built over a mock-up of roads and a river. If the student "construction workers" drop a tool into the "river" while building their bridge, their team is penalized. If a worker steps into the river, the team is cited for one worker death, and its costs increase accordingly.

"The students learn a lot about how to build a real steel bridge," Nixon says. "They learn that although sketching the idea might be relatively easy, when it comes to actually building the thing, you have to confront all those little details: how do you weld, how should the joints be made, how many bolts should you use?"

And, Nixon says, until the bridge is actually built, no one really knows whether it will take the load.

Shortly before leaving, the Iowa team made some last-minute design revisions and, with paint barely dry, sent bridge pieces and building crew off to Fargo.

Nixon says he didn't exactly cover his eyes when it came time to place the one-and-a-quarter-ton weight on the completed bridge, but the moment of truth was a little nerve-racking.

And how did Iowa's entry hold up under pressure?

"It took the load!" Nixon says. "I was extremely proud of the students—it was a tremendous effort by all of them. Working with students who volunteer, work hard, and do well is one of the delights and rewards of teaching."

The Iowa bridge captured second place in the weight category, but Nixon feels it could justly have won an award for looks, too.

"Our bridge was the most beautiful, by far," Nixon says. "The other entries were mundane. Ours carried the load majestically."

Sponsors for this year's University of Iowa entry included the College of Engineering and local merchants. The annual contest is sponsored and funded in part by the American Institute of Steel Construction and ASCE. Next year's contest will be held in Iowa City.

Simulation Techniques Specialist Joins Faculty

Dingus

A specialist in advanced simulation techniques and human factors recently joined the industrial engineering department as an associate professor, Thomas Dingus comes to Iowa from a joint faculty position in the departments of mechanical engineering and psychology at the University of Idaho.

Dingus received his B.S. (1979) from Wright State University and his M.A. (1985) and Ph.D. (1987) in industrial engineering and operations research from Virginia Polytechnic Institute. He has been a consultant on human factors, advanced automotive systems, and computer product design for General Motors Research Laboratories, Hughes Aircraft, and the U.S. Army.
Electrical and Computer Engineering

Faculty Activities

- David R. Andersen, associate professor, spent spring semester as visiting fellow at the Laser Physics Centre of the Research School of Physical Sciences and Engineering, The Australian National University.
- Thomas L. Casavant, associate professor, presented a tutorial, "Software tools for visualization of parallel programs and systems," at the International Conference on Parallel Processing, last August in Chicago.
- Steve Collins, professor, has received the College of Engineering’s 1993 Exceptional Service Award. Theaward cites Collins' "extraordinary contributions to the college and the University."
- Soura Dasgupta, associate professor, was one of 15 engineers and scientists nation­wide to win a National Science Foundation Young Investigator Award. Dasgupta was recognized for his work in systems engineering.
- Karl E. Lonngren, professor, was awarded the Distinguished Service Citation from the University of Wisconsin College of Engineering last October. He is consulting editor for the McGraw Hill Encyclopedia of Science and Technology, which includes the yearbook and 8th edition.
- Theophano Mitsa, assistant professor, has received an equipment grant from Hewlett Packard to develop a color halm­toning technique. She also has received an NSF research initiation award to develop visual-model-based halftoning algorithms.
- Helen Na, assistant professor, has received a NSF research planning grant to study specialized algorithms for tomographic reconstruction of electron density distributions in the ionosphere.
- Irth Pomeranz, assistant professor, has been chosen to receive a National Science Foundation Young Investigator Award. Pomeranz also won the best paper award for "SPADES: A simulation for path delay faults in sequential circuits," which she presented in September at the Euro-DAC ‘92 conference in Hamburg, Germany.

Student Activities

- Satish Gadkonda, a graduate student, was one of ten finalists in the International Student Paper Contest held in conjunction with the 14th International Conference of the IEEE Engineering in Medicine and Biology Society. In October Gadkonda attended the society’s Paris meeting, where he presented a paper, "Efficient coronary border detection using heuristic graph searching," prepared in collaboration with Steve Collins, professor, and Milan Sonka, visiting assistant professor.

Industrial Engineering

Faculty Activities

- Dennis L. Bricker, associate professor, and his graduate students have been investigating algorithms for geometric pro­gramming and various scheduling prob­lems, production planning, and evaluation of productivity. Bricker, an advocate of the APL language for teaching and research, recently received a software grant of an APL *PLUS system for the college’s new HP Unix workstations.
- James R. Buck, professor, James W. Stoner, professor of civil and environmen­tal engineering, and several graduate stu­dents are working on a three-year research project on the ergonomics of automated highway systems. The project is funded by a grant from the Federal Highway Administration. Buck also is writing a textbook on ergonomic design, which he is using in a course on that subject.
- Gary W. Fischer, associate professor, and his graduate students are conducting research in machining process control, high perfor­mance arc welding, and concurrent engineering methodologies. The machining studies focus on tool wear, process model­ling, and productivity improvement. The weld­ing studies focus on process simulation and a novel quality sensor concept. The concur­rent engineering studies focus on process selection, process planning, and application of object-oriented database structures.
- Andrew Kusiak, professor and chair, has been invited to make plenary presenta­tions at conferences in Australia, Belgium, France, Italy, Japan, and Taiwan. Kusiak’s books, Intelligent Design and Manufacturing and Concurrent Engineering, have been published by John Wiley.
- Research by Kusiak’s undergraduate and graduate students is supported by a grant from the National Science Foundation and a number of contracts with Rockwell Interna­tional and Dres & Company.
- John W. Littschwager, professor, has served as chair of the Engineering Faculty Council this year. Among the council’s activ­ities is preparation of a report on under­graduate instructional improvement.
- Edward M. Mielenk, associate profes­sor emeritus, has written a paper, "Design of a drilling experiment: A discrete two­variable problem," which has been accepted for publication by Quality Engineering. Mielenk is writing another paper, "Hot ma­chining retrospet and review," and has pro­posed a design for a new addition to the Engineering Building.

J. Richard Simon, professor of indus­trial engineering and psychology, is on de­velopmental leave in the United Kingdom. Simon intends to complete a monograph and write research papers.
- Huo-Pin (Ben) Wang, associate professor, has received two awards, the Institute of Industrial Engineers Rock-of-the-Year Award and the Society of Manufacturing Engineers M. Eugene Merchant Manufac­turing Textbook Award, for Computer­Aided Manufacturing, which he coauthored. He continues to conduct research on inte­grated predictive maintenance and mechan­i­cal tolerancing design, with support from Caterpillar and the National Science Foun­dation. He also served as a proposal review panelist for the NSF Strategic Manufac­turing Initiative.

Student Activities

- Lara Thorius, a senior from Woodbridge, Virginia, has been awarded one of seven Outstanding Graduating Se­nior Awards from the college. Thorius also was a regional winner in the Society of Women Engineers technical writing compe­tition, for which she was awarded $200 from Hewlett-Packard and a trip to the national convention in Orlando, in June 1992.
- While at the national convention, Thorius presented her paper "The production of hu­man monoclonal antibodies," for which she won second place nationally and was awarded $1,000 by Hughes Aircraft.
- Matthew G. Lane, a graduate student, has been awarded a University of Iowa Graduate Fellowship.

Mechanical Engineering

Faculty Activities

- Christoph Beckermann, associate professor, presented talks on modeling of transport phenomena in solidification at the Foundry-Institute and The Laser Center of the University of Aachen, Germany, last fall. Beckermann served as the organizer and session chair for the symposium on micro/ macro scale phenomena in solidification at the 1992 Winter Annual Meeting of the American Society of Mechanical Engineers, last November.
- Beckermann has received a NASA three­year grant to study flow and heat transfer phenomena during solidification of metal alloys.
- Lea-Der Chen, professor, became in­terim chair of the department last July. Chen co-organized a session on marine propul­sion and high-energy density fuels at the 1992 AIAA/ASME/SAE/ASEE Joint Propul­sion Conference, and is a session organizer for the 1993 conference meeting.

Cen presented a paper, "Time evolution of a buoyant jet diffusion flame," at the 24th International Symposium on Combustion, held last July in Sydney, Australia. He also has received a grant from the Air Force Office of Scientific Research to study heat transfer, fouling, and combustion of supercritical fluids.
- Kyung Kook Choi and Edward J. Haug, professors, led a team of six researchers from the Center for Computer-Aided Design who demonstrated research results of their DARPA initiative for Concurrent Engineering (DICE) project at the DICE Phase V kick-off meeting, at Washington, D.C., in February.
- Choi and Haug have received DICE Phase IV funding for a three-year project to develop a successful simulation-based concurrent engineering environment for tracked vehicles. They also have received continued funding for their DICE Phase V project to further enhance the concurrent engineering envi­ronment. They will work to develop collabora­tion technologies for large-scale me­chanical systems concurrent engineering.
- Jeffrey S. Freeman, assistant profes­sor, is chair of the ASME Design Engineering Division vehicle design committee, session chair, and conference organizer for the fourth ASME Symposium on Advanced Automotive Technologies, to be held in conjunction with the 1993 ASME Winter Annual Meeting in November.
- Freeman has received the first installment of an anticipated three-year grant from the National Highway Traffic Safety Adminis­tration to develop dynamic vehicle models and software for the National Advanced Driving Simulator. He also has been awarded a three-year Department of Defense AASERT award to fund a graduate research assistant to work on the Iowa Driving Simulator.
- Freeman will present his paper "Mixed planar and spatial modeling for multibody dynamics" at the 1993 ASME design auto­mation conference, at Albuquerque this September.
- This year Freeman served as faculty advisor for the Society of Automotive Engi­neers, the largest student organization in the college. He is on the editorial board for Heavy Vehicle Systems, a new journal published by the International Association for Vehicle Design.
- Edward J. Haug, professor, received the American Society of Mechanical Engi­neers Machine Design Award during the society’s design automation conference last September. The award recognizes Haug’s fundamental research and development con­tributions to structural design optimization, computational dynamics methods, and soft­ware for machine design, and his work on the design of real-time driving simulators.
- Robert G. Hering, professor and former dean, has been appointed University of Iowa Foundation Distinguished Professor of En­gineering Education. Hering will return to the department this summer to resume his role as a full-time faculty member.
V.C. Patel, professor, served as United Nations consultant to the Central Water and Power Research Station at Pune, India, in July 1992, working to develop computational models for hydraulics applications.

Last August Patel gave a talk on three-dimensional flow separation at the plenary session of the fifth Asian Congress of Fluid Mechanics, in Taegun, Korea. He also presented papers and chaired a session at the 19th Office of Naval Research Symposium on Naval Hydrodynamics, in Seoul.

Patel and Fred Stern, associate professor, are local organizers of the Sixth International Conference on Numerical Ship Hydrodynamics, to be held this August in Iowa City.

Theodore F. Smith, professor, has been named an associate editor of the Journal of Thermophysics and Heat Transfer, which is published by the American Institute of Aeronautics and Astronautics.


Stephens also presented a seminar, "Fatigue: fundamentals and recent fatigue research," at the University of Puerto Rico in November. At the March SAE Congress in Detroit, he presented two papers, "Corrosion fatigue and stress corrosion cracking of AZ91E-T6 cast magnesium alloy in 3.5 percent NaCl solution" and "Low-cycle fatigue behavior and variable amplitude fatigue-life calculations for an SRIM polymer matrix composite."

In May Stephens presented "Constant amplitude fatigue of a particle-reinforced cast aluminum alloy MMC at room temperature and 150°C" at the Fatigue '93 Conference in Montreal, Canada.

Stephens organized and chaired the ASTM International Symposium on Case Studies for Fatigue Education, held during May in Atlanta. At the symposium he presented the case study "Equalizing a damped vibration to constant amplitude fatigue loading for a thick-walled pressure vessel."

This spring Stephens presented a series of lectures and seminars on fatigue, fracture mechanics, and engineering education at Russia's Samara State Aerospace University. He also presented a paper, "Fatigue behavior and life predictions for AZ91E-T6 cast magnesium alloy," at the International Conference on Fracture, in Kiev, Ukraine, in June.

Student Activities

Alan Kalimeyer, a graduate student, received the H. O. Fuchs Travel Award, which enabled him to present his M.S. thesis to the SAE fatigue design and evaluation committee at Virginia Polytechnic Institute in Blacksburg, Virginia, last October.

Alumni Awards

Hugh D. Guthrie (B.S. in CE, '43; M.S., '78), director of extraction projects for the U.S. Department of Energy's Morgantown Technology Center, won the 1992 Robert L. Jacks Memorial Award from the management division of the AIChE Foundation. The award recognizes individuals who have made substantial contributions to the management of engineers involved in the chemical processing industry.

Tae Hee Lee (Ph.D., '91) has been awarded a Postdoctoral Fellowship for Foreign Researchers by the Japan Society for the Promotion of Science. The prestigious one-year fellowship will take Lee to Japan, where he will work with Professor T. Salomi, of Tokyo Denki University, on applying optimization theory to develop transducers for measurement of contact stresses at joints.

Lee completed his doctoral work under Professors Jasbir Arora and Kwan Rim. He is a postdoctoral fellow working in Rim's lab.

William B. Morgan (M.S. in MHE, '51), associate director of the David Taylor Research Center, has been inducted into the National Academy of Engineering. Election by one's peers into NAE, a sister organization to the National Academy of Sciences, is one of the highest recognitions an engineer can receive.

Joseph E. Musil (M.S. in ME, '63) has won a second Raytheon Corporation Excellence in Technology Award. The 1992 honor was given for Musil's work to develop a cost-effective process that removes gasoline, diesel fuel, and other petroleum products from contaminated soil. Musil, who also won the award in 1990, is the first person to have been chosen twice for the honor.

Rebecca Lance Svatos (B.S. in CE, '82), department manager at CH2M Hill in Gainesville, Florida, received the Distinguished New Engineer Award at the 1992 Society of Women Engineers national convention. Svatos was honored for her success in significantly improving groundwater quality in the Pensacola Bay area and for her professional and community leadership.

Faculty Honors and Awards

John F. Kennedy, late professor of civil and environmental engineering and director emeritus of the Institute of Hydraulics Research, posthumously was presented the 1992 Hans Albert Einstein Award by the American Society of Civil Engineers. Hydraulics Division, last August. Kennedy's widow, Nancy Kennedy, accepted the award during the society's Water Forum '92.

Kennedy, who died in December 1991, was an internationally recognized authority on applied fluid mechanics and engineering hydraulics. The award recognized Kennedy's contributions to the engineering profession in the areas of fluid mechanics, river mechanics, sediment transport, and erosion control. The citation said, "Dr. Kennedy was an inspirational educator, hydraulic engineering visionary, problem conceptualizer, and international emissary."

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Water Mover  Subhash C. Jain, professor of civil and environmental engineering and a researcher at the Iowa Institute of Hydraulic Research, poses with the model of a unique water dropshaft he designed for the Tokyo Metropolitan Government and the Japanese Institute of Construction Engineering. Jain’s dropshafts will be constructed in Tokyo’s dense population areas to handle floodwaters caused by the city’s heavy rainfall. The spiral, or helicoidal, design of the dropshafts will slow the water’s descent, preventing erosion. It also will limit the amount of air entrained by the descending water, making unnecessary the construction of costly air removal chambers and venting systems at the bottoms of the shafts.