A simulator for testing anything a person can operate

The University of Iowa College of Engineering Volume 1999, Number 1
FROM THE DEAN

High achieving students

Most rewarding this year has been the college's huge success in attracting and graduating topflight students. The average ACT score for fall 1998 incoming engineering freshmen was 28.6—nearly one full point higher than last year, placing our entering class in the 94th percentile nationally. As a class, our freshmen rank higher than any other entering class among the University's colleges. They also rank among the highest of engineering colleges in the Big Ten Conference. Although our freshmen constitute 6 percent of all University of Iowa freshmen, they won 36 percent of the Merit Scholarships awarded University-wide to entering students, the most of any college at the University and the highest percentage ever recorded for the College of Engineering. We also are proud that 26 percent of our undergraduate students are women, compared to the national average of 19 percent.

Graduate education at the college also remains strong, as measured by U.S. News & World Report rankings. For four out of the past five years, the college's graduate program has been ranked among the top 50 in America. There is no smaller public engineering college that is ranked higher.

Once our students graduate, their career opportunities are golden. For example, the average starting salary for May 1998 graduates was $45,000, with many receiving signing bonuses and stock options.

Challenges beyond today

Our achievements are gaining attention not only at The University of Iowa but among institutions throughout the nation and around the world. Dozens of colleges and universities have visited us, wanting to know more about the seeds of our success. As our reputation grows, we must continue to lead, developing new ways to advance engineering education. To that end, we are engaged in a long-term exercise to "think beyond the building and the curriculum," to seek out opportunities for higher achievement among faculty, students, and programs of national distinction.

Our efforts will help ensure the University's position as a world-class institution.

Richard K. Miller
Dean, College of Engineering

I wish all alumni and friends of the College of Engineering could experience firsthand the high energy here in the college's newly renamed building—the Seamans Center for the Engineering Arts and Sciences. For recent visitors to the former Engineering Building, which is now undergoing construction and renovation, the enthusiasm for long-awaited new facilities and the determination for even higher academic quality are evident everywhere. As always, I am proud to give you a brief report on the college's progress.

A goal met, and surpassed

In October, through the enormous generosity of a family of engineering alumni and friends, we exceeded our private fund-raising goal of $11 million for the building project—a goal we already had raised twice. Our capital campaign has become one of the most successful in University history. At the same time, we announced that the engineering complex would be renamed the Seamans Center for the Engineering Arts and Sciences. The building's new name embodies the college's unique strengths and defines its mission to teach students to become engineers, and more.

Construction is well on its way, with concrete floors going in quickly for the new entrance, lecture hall, laboratory wing, and student learning center. You can watch the construction along with us on a special World Wide Web site, which offers a wealth of information about the project and features a live video camera peek at the work. Just browse <http://www.engineering.uiowa.edu/seamans.html>.

A new vision for curriculum

Last March our faculty voted overwhelmingly (51-4) to approve a new vision of curriculum advancement, the first major renovation of the undergraduate core in more than three decades. Our goal is to dedicate our new facility in the year 2001 with a new curriculum in place, one well attuned to the needs of business and industry. Once the basic undergraduate core has been revised, each department's specific curriculum will be examined. We are challenging ourselves to address not just what we teach, but how.
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Breadth, commitment make

As far as Iowa City native Richard Emmert is concerned, the old maxim "It's not what you know, it's who you know" is overplayed. He has his own guiding philosophy for success.

"Doing a good job at whatever you're currently doing is the most important thing," he says.

Did Emmert, in his youth, ever imagine that he would have a hugely successful career culminating in the vice presidency of the DuPont company in Wilmington, Del., now his home, or the executive directorship of the American Institute of Chemical Engineers? Not in a million years. But he did have his sights set toward the sky. In high school, when he attended Iowa City's City High, Emmert would have chosen to be an aeronautical engineer.

"Airplanes fascinated me," he admits.

But so did chemistry. Thanks to the guidance and inspiration of his high school chemistry teacher, John Walker, the perfect combination for college study emerged: chemical engineering.

Although neither of his parents had a college degree, they expected Emmert to earn one.

"By the time I reached age 10," Emmert says, "they had instilled in me, in a matter-of-fact way, that I would go to college and that I would have to earn and save money to make that possible. So I did."

Although he would one day conduct multibillion-dollar operations for DuPont and oversee thousands of employees, Emmert started out modestly. He worked at a number of part-time jobs while attending The University of Iowa, including one that lasted throughout his last three years of high school and all of college: making orthopedic braces at the UI Children's Hospital. He worked just as hard at his studies and in 1951 earned a bachelor of science in chemical engineering with highest distinction.

"I have always felt a strong sense of gratitude to the Iowa City public schools and to The University of Iowa for the foundation they provided," Emmert says, adding that he found the breadth of his UI education particularly helpful. "It wasn't only technical; there also was considerable emphasis on communication skills. One ingredient for success in the business situation surrounding technology is to be able to communicate. Many good universities in the country have failed to [teach] that."

Under the advice of mentor Karl Kammermeyer, then chair of Iowa's chemical engineering department, Emmert began graduate school at The University of Delaware. Surrounded by top-notch classmates from prestigious schools, Emmert was nervous about how well he would perform. But his Iowa education soon had him well.

"It was no problem at all," he says. "I was at least as well prepared as those from other schools."

Emmert went on to graduate at the top of his class.

In 1954 he was granted a Ph.D. in chemical engineering and immediately went to work at DuPont's engineering research lab. Fresh out of graduate school, Emmert already had charted his course: He would spend about five years doing research for industry and then become a university professor. But life in the laboratory so challenged his intellect and drew on his talents that his thoughts of becoming a professor began to fade.

"At the time, I thought I would be very content to spend my whole life doing engineering research," he says. "But that was not to be."

In 1963 DuPont asked him to supervise an area at a nylon plant in southern Delaware. Suddenly, Emmert found himself in charge of 500 people and responsible for safety, productivity, product quality, and human relations. He was apprehensive at first about such a move; when compared to the rigorous and rewards of the research lab, he thought, manufacturing management seemed mundane.

"That turned out to be wrong," Emmert says with a chuckle. "Working with people and handling the logistics of a very large, complex manufacturing operation is very sophisticated. I learned a great deal."

Over the years, DuPont offered Emmert a number of managerial roles, and he did them all, from manufacturing to marketing, strategic planning, finance, and finally, running complete businesses.

A significant number of Emmert's business operations were outside the United States, providing experiences that broadened his global vision. His responsibilities included ensuring the safety of U.S. and foreign plant workers in political hot spots such as Iran and Northern Ireland.

Although his management role continued to evolve during his 33-year career with DuPont, Emmert never actively sought out such positions.

"Rather than setting a goal that said, 'I want to get to that job in a certain time,' my approach was to try to do whatever I was doing as well as I could do it," Emmert says, crediting that philosophy with being the key to his success and advancement.
x in grad’s formula for success

While heading DuPont’s corporate planning in 1982, Emmert teamed up with four other corporate officers to steer what was then the largest acquisition in history: DuPont’s purchase of Conoco.

One of his many other accomplishments was his contribution to the technology that eventually was used in the manufacture of major products. He holds patents in the polymerization of polyethylene terephthalate, from which Dacron® and Mylar® are made. He also made significant technical contributions to the production of Lycra®, nylon, Kevlar®, and other materials.

Research resulting in successful products and processes hasn’t been Emmert’s only reward.

“I’ve had great satisfaction seeing individuals who reported to me develop and do well at the time, and advance later to positions of greater responsibility,” he says. “I like to think I was an effective coach and good delegator, that I gave people the opportunity to grow.

“That human aspect of the career has been as significant, as important to me as anything else.”

That doesn’t surprise Greg Carmichael, UI professor of chemical and biochemical engineering, who has known Emmert for 20-some years. Carmichael says Emmert exemplifies the traditional midwestern values of hard work, good judgment, friendship, and family, and is an excellent role model.

“He had a good technical career, but he also gives back to society,” Carmichael says. “Service plays an important role in his life.”

Emmert does give back, quietly and persistently. He has received the highest professional honor conferred by the engineering profession—election to the National Academy of Engineering—and was elected by that organization as chair of its chemical engineering section. In 1997 he was honored by the American Association of Engineering Societies for fostering unity among engineering disciplines.

He has served engineering education at several universities, including both of his alma maters. He is president of The University of Delaware Research Foundation and remains dedicated to The University of Iowa. He has sat on the UI Alumni Association board of directors, has served two terms on the College of Engineering Advisory Board, has been a member of the Engineering Campaign Steering Committee, has contributed to discussion of curriculum reform currently under way at the college, and now sits on the Engineering Development Council. His armful of awards and honors includes Distinguished Alumni Awards from both The University of Iowa and The University of Delaware, and an honorary doctor of science degree from Manhattan College.

After retiring from DuPont in 1987, Emmert served for nine years as executive director of the American Institute of Chemical Engineers. Working 65-hour weeks to lead a 56,000-member professional society isn’t every retiree’s sunset sail, but Emmert saw it as his way to return to his profession some of what he had gained. Although he retired from AIChe in 1996, he still finds time to volunteer extensively for the institute and for other engineering organizations.

Emmert commends a degree in engineering to anyone interested in a technical career or as excellent preparation for a diversity of fields, including medicine, law, and business. Not surprisingly, he especially endorses chemical engineering, owing to its study of all four of the major fields of science and its emphasis on processes and problem solving.

What advice would he give to future engineering students? Emmert has given many a speech on this very topic, and he chooses his words carefully.

“It’s important that students learn to work in interdisciplinary team situations and learn to communicate effectively. Get a modicum of business education to understand how our business system operates,” he advises. “Prepare to function in a global environment. Try to get as broad an exposure in engineering as possible, not just to the technical aspects, which are critical, but to the other facets as well.”

Finally, he stresses, get professional registration, even if first employers don’t require it. Down the road it will be valuable.

Dreams of airplanes and professoriates aside, Emmert seems pleased with his well-earned career.

“At many points along the way, I almost marvelled that I’d gotten to where I had,” he says. “I didn’t expect it when I started. I take the approach of doing the job as well as you can. Opportunities come along if you’re doing well at what you’re doing.”

—Barb Olson
Scientists prove: Iowa simulator does far more than just drive
Neurologist probes aging, disease, and vehicle operation

Over the last three years Matt Rizzo has witnessed dozens of car crashes, but so far, everyone has walked away without a scratch.

The Iowa neurology professor has been applying some very sophisticated hardware at the College of Engineering to determine whether certain characteristics of older individuals may be linked to an increased likelihood of automobile accidents. More than 70 participants have settled in behind the wheel of the Iowa Driving Simulator, where they drive into a virtual reality fraught with simulated risk. The results of the study, which is funded by the Centers for Disease Control, have enabled Rizzo to formulate a list of factors that can predict unsafe driving.

Even under the best circumstances, driving a car can be risky. But when a driver's judgment, memory, and perception are impaired, the person behind the wheel is courting disaster. In two studies, Rizzo has examined the effects of strokes and early Alzheimer's disease on the driving ability of older drivers. At the time of the studies, most of the participants had been patients at The University of Iowa Hospitals and Clinics' neurology clinic and had valid Iowa driver's licenses.

"The idea was to see whether weaknesses in any neuropsychological or visual ability would predict unsafe driving behavior," Rizzo says. "And by 'unsafe behavior,' we meant rear-end collisions, crashes at intersections, and loss of control of the car. Obviously, we can't put drivers behind the wheel of a real car, cause a real accident, and then measure driver reaction time. The driving simulator provides the perfect alternative—a sophisticated research tool that doesn't put anyone at risk."

In the early stages of their disease, Alzheimer's victims suffer attention deficit and memory impairment, which eventually progress to loss of function in other cognitive domains. Rizzo wants to determine how these cognitive deficits map onto driving tasks. By testing volunteers in the Iowa Driving Simulator, he is able to assess participants' attentiveness to the task, perception of motion, and visual awareness.

The latter is measured according to a standard known as "useful field of view."

"Many older individuals may have normal vision as measured by standard ophthalmologic techniques," Rizzo says, "but in real-world situations, they cannot visually process multiple objects simultaneously. Effectively, they suffer from tunnel vision."

That deficit by itself is dangerous enough in normal scenarios, where drivers must constantly see cars, pedestrians, and objects in a 180-degree field of view. But when combined with the slower cognitive processing that is normally found in Alzheimer's patients, the risks are compounded. By introducing oncoming cars on the periphery of vision in the simulator scenario, Rizzo measures his patients' declining abilities to see and process information.

"Time and again we witnessed simulator drivers miss things at the periphery of their vision," he says. "Not surprisingly, we know from real-world documentation that accidents involving older drivers frequently occur at intersections."

Rizzo says the data gathered at IDS point to certain predictive correlations between diminished physiological and cognitive abilities and reduced driving abilities. He also notes that the results of the simulator studies strongly parallel the results of other studies based on actual accidents. For example, University of Alabama researchers combed state accident records to determine whether a correlation exists between loss of field of view and actual accidents.

"Unlike our research," Rizzo says, "the Alabama study was retrospective: It reviewed real accidents that actually had occurred. What the researchers found was that age-related loss of field of view was more than 40 percent predictive of multifold crashes. That strongly supports our findings based on simulator data."

Rizzo hopes to conduct a future study of how stroke affects driving ability. In contrast to Alzheimer's patients, stroke victims usually suffer more localized brain dysfunction that leads to certain specific impairments.

For instance, people who experience damage to the occipital lobe at the lower back of the brain usually lose certain (continued on page 8)

A LED display (top left) provides information for the test pilot in an Iowa Driving Simulator experiment testing innovative flight controls. Below, the simulator's operators have several views of what happens, as it happens, during an IDS vehicle test drive. The computer keyboard on the right controls the projected visual environment (what the driver sees), and the one on the right governs the simulator's operation.

The last thing we should do is restrict drivers unfairly because they’ve reached a certain age.
visual abilities. On the other hand, those with frontal lobe damage might lose the ability to make decisions or plan ahead.

Rizzo notes that despite the fact that some older individuals might feel they had somehow "failed" if they crashed the simulator car, finding willing volunteers has not been difficult.

"Iowans are extremely cooperative," he says, "and people realize that this research will help inform both patients and family about an individual's ability to function safely in the real world. In addition, participants understand that their cooperation will help ensure the safety of others in the future."

He adds that older drivers shouldn't be worried that this research will be used to unfairly restrict their driving privileges. In fact, Rizzo hopes that his data will ensure that older Americans are treated more fairly and consistently.

"The last thing in the world we should want to do is unfairly restrict the privileges of older drivers simply because they have reached a certain age," he says. "Today there are relatively fit drivers who are unfairly being restricted because of age or for certain medical reasons. Our research should help provide a better standard by which to predict driving safety."

To underscore his point, Rizzo cites one of his findings.

"A substantial number of our participants in the early stages of Alzheimer's or dementia did not crash in the simulator," he says. "They maintained reasonable control of the car even in potentially dangerous situations."

Rizzo adds that Alzheimer's and stroke patients are not the only demo-
Human operator is the key to research

Although he has been chief operating officer at the Center for Computer-Aided Design for almost two years, Bob Schwing is still amazed by the diversity of projects that find their way to the University-owned facility.

"We encourage researchers from all fields—computer science, medicine, dentistry, liberal arts, you name it—to talk with us about how we can help them," Schwing says. "It may take engineers to refine and operate Iowa Driving Simulator technology, but it takes human factors specialists to extract the information from it."

The combination of topflight hardware and brainpower offered by IDS attracts researchers from both inside and outside the University. Schwing says that one private company recently used the IDS facility to test a design for a new intraocular lens implant.

"The company is working toward FDA approval," Schwing says. "They looked around the country and decided that we had a unique tool here that could provide the best environment for them to evaluate their product."

Schwing emphasizes that although visitors often think of automobiles when they see the simulator, the facility is used for testing a wide variety of mechanical systems.

"Our real research focus isn't on a particular vehicle," he says, "but on anything that involves the human operator-in-the-loop. We've tested airplane controls in a simulated environment, and we could well take on the operation of ships or trains.

"If a human being operates it, we can probably test it."

The Iowa Driving Simulator's unique contribution lies in its ability to examine the human element in the control of mechanical devices.

"You can model all the mechanics of a car and the physical properties of a road," Schwing says. "but there are no good models of human behavior. So we put the human in the loop and watch what happens."

In a recent experiment, several humans "flew" an airplane in one of CCAD's four simulator rooms. Earlier, a group of researchers from the Cedar Rapids, Iowa, headquarters of Rockwell Collins asked Schwing whether the simulator could accommodate the cockpit of an airplane. In relatively short order, a cockpit mock-up with Boeing 767 displays had been slipped onto the simulator platform, and Rockwell researchers were subjecting pilots to a week-and-a-half of stomach-lurching tests. The simulator's platform motion and fine-tuned graphics created a full range of motion, from gentle rocking to severe turbulence. Whether the pilots had to reach for one of the small blue bags conveniently placed on either side of the cockpit has not been reported.

In a very real sense, this kind of research has returned IDS to the roots of human factors research, a specialty launched decades ago by aerospace engineers. And the main IDS platform sits on a simulator that was built to train B-52 bomber crews—a fact not lost on visitors from aerospace industries.

Schwing notes that the role of CCAD staff is to offer outside researchers not only knowledge but also experience. A case in point is the recent collaboration between CCAD and the South Korean company Samsung, which consulted with experts at the simulator in an effort to decide whether to add automobiles to Samsung's product line.

"As with all researchers who come here," Schwing says, "we walk them through the technological hurdles of simulator research. There are some things you can't just write a book about—you have to let someone see how it's done, then be there to answer questions as they do it themselves."

—Jean C. Florman

The Iowa Driving Simulator provides environments for all kinds of research, with real people at the controls.
The first women to earn their engineering degrees from The University of Iowa played a unique role in the college's history. Since mid-century, the proportion of women studying engineering at the top of the hill has risen to 26 percent, exceeding the national engineering college average of 19 percent.

As more and more women over the years have walked through the doors of the Engineering Building—now the Seamans Center for the Engineering Arts and Sciences, the nature of their college experiences has changed. Indeed, the college itself has grown stronger as it has welcomed more students from diverse backgrounds, including women. Here is how three women from different generations tackled engineering as members of a minority.
Margaret Petersen

Margaret Petersen thinks she got into engineering at just the right moment.

"During World War II, I was a draftsman for the Corps of Engineers," says Petersen, who received her master's degree in mechanics and hydraulics from Iowa in 1953. "I enjoyed it, but I thought engineering would be more interesting, so I decided that was what I wanted to do."

While working for the corps at the Panama Canal, Petersen met another draftsman, Irene Miller. They became good friends and decided to apply to the College of Engineering at The University of Iowa.

"I believe we were the second and third women to receive civil engineering degrees from Iowa," she says. "That was in 1947."

The two women continued their friendship, working and living together until Miller died in 1979. Petersen says she doubts either of them would have continued in the profession if they hadn't forged such a mutually supportive bond. She notes, however, that she encountered relatively few obstacles or discrimination due to gender during her career as an engineer.

"Well, for one thing, I graduated from Iowa, so my credentials were excellent," she says. "And hydraulics engineers were in tremendous demand."

"I was fortunate—I think that women who wanted to study engineering during the fifties and sixties probably had a more difficult time."

As an engineer with the corps for more than 30 years, Petersen worked her way into increasingly responsible posts. She served as a hydraulics engineer on some of the nation's largest water projects, including the Mississippi River flood control and navigation project, the large multipurpose dams on the upper Missouri River, and the Arkansas River navigation project. Her research and design efforts focused on hydraulic structures, channel hydraulics, and water resource planning. She was involved in early corps studies implementing requirements of the National Environmental Policy Act of 1969. In 1977, she retired from the corps.

But the energetic Petersen was ready for a new challenge when, in 1981, another Iowa alumna called to offer her a new career. Emmet Laursen (Ph.D. '58), a faculty member at the University of Arizona, had been a graduate student at Iowa when Petersen was an undergraduate. They had kept in touch through professional involvement in the American Society of Civil Engineers. When a faculty position opened at Arizona, Laursen called Petersen.

"He asked if I'd consider a temporary position," Petersen says. "I said I wasn't interested in teaching, but he was persistent. I finally told him I'd take the job—temporarily, of course."

Petersen's second career was as remarkable as her first. As a professor of civil engineering at Arizona, she developed and taught grad courses in hydraulics and water resources and conducted research. She lectured in Third World and emerging countries, including South Africa, Morocco, and China. She wrote two books that are widely used internationally, one on river engineering and one on water resources planning.

Although officially Petersen is retired, she has coauthored another book on water resources development, has prepared a monograph on inland navigation, and continues to direct dissertation committees and guide graduate students. She remains active in the World Federation of Scientists/World Laboratory, a nonprofit organization that has implemented 55 projects in 50 developing countries.

Petersen says she has been fortunate that most challenges she faced in her career were intellectual, not gender-related.

"It all worked out fine, and I thought the corps was a great place to work," she says. "But teaching was the most rewarding thing I've ever done."

Petersen adds that her first career as a practicing engineer helped open the door to academic engineering.

"I think it might have been a much different story if I had tried to enter academics as a young woman engineer in the forties," she says. "It's been only during the last few years that many women have begun teaching civil engineering."

Margaret Petersen

M.S. in Mechanics and Hydraulics, 1953

Army Corps of Engineers

Professor emeritus, University of Arizona

She encountered relatively few obstacles and little discrimination due to gender during her career as an engineer.

"I was fortunate—I think that women who wanted to study engineering during the fifties and sixties probably had a more difficult time."

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Maggie Hickel

B.S. in Industrial Engineering, 1975

Corporate Site Services Manager, 3M Company

Until she attended College Night at her high school, Hickel thought she wanted to teach kindergarten. “But one of the college reps kept telling the boys that they could be engineers, and I started to realize that most of them hadn’t taken the level of math and science I had. So I said, ‘Shoot, I could be an engineer, too.’”

Leisure suits aside, the 1970s may be remembered best as the decade in which women began making lasting inroads into professions and work settings that had been fairly dominated by men. Although they probably didn’t realize it then, the three women who graduated from The University of Iowa College of Engineering in 1975 were part of that vanguard.

One of them, industrial engineer Maggie Hickel, remembers a sea change during the four years she attended Iowa.

“When I started in 1971, there were ten women students in the college,” says Hickel, who is corporate site services manager for 3M Company in St. Paul, Minn. “Four years later, only three of us graduated. But—and this is important—by the time I was a senior, the number of women in the college had risen to 40.”

Hickel says that some of her male peers thought her an oddity. Others were “overly competitive.” But over time, she says, “we discovered we all loved Star Trek and we were all in this [engineering school] together.”

A native of Gary, Ind., Hickel attended junior and senior high school in Burlington, Iowa, where her father worked as a mechanical engineer. Until she attended College Night at her high school, Hickel thought she wanted to teach kindergarten.

“But one of the college reps kept telling the boys that they could be engineers,” she recalls, “and I started to realize that most of them hadn’t taken the level of math and science I had. So I said, ‘Shoot, I could be an engineer, too.’”

Hickel says that in general, her engineering professors treated students equally regardless of gender. She adds, however, that women students were more inclined to take advantage of leadership opportunities.

“We were the ones who volunteered to be on the committees, host visiting students, organize career days, and write the student publications,” she says. “We managed to gain advantages by working on engineering issues outside the classroom.”

Hickel herself was a founding member of Iowa’s Society of Women Engineers student section, and she has continued to be actively involved in SWE for more than two decades. In 1985 the national organization named her Distinguished New Engineer, and in 1990 she was elected national president.

Hickel notes that although her years at Iowa were relatively unremarkable in terms of gender equity, her first years in the workforce were a real challenge.

“When I began, I felt I was constantly having to prove myself, especially because I was working in manufacturing,” she says. “I had to prove that I was just as capable of getting grease on my clothes as the next guy. Then when I got married, I had to prove that I was not going to quit work. And again when I got pregnant, I had to prove that I was going to come back.”

Through the years, many of those issues have disappeared as more women have secured jobs in professions that traditionally were considered “men’s work.” And at first blush, it seems Hickel has bucked a defining workforce trend of the last 15 years. Instead of moving from one company to another, she has remained firmly committed to the same company where she landed her first job 23 years ago, moving upward to supervisory and management positions in various departments. She currently manages an impressive array of services critical to corporate function, including mail services, food services, employee sales, central supply, research supplies and services, and shipping and receiving.

She notes that her Iowa education has proven invaluable.

“I may not use electromagnetic theory,” she says, “but I use statistics almost every day and often depend on my knowledge of ergonomics, organizational psychology, and management. I’ve always enjoyed juggling a lot of different things.”

Looking back, Hickel laughs about an exchange she once had with her husband, Tom, also an industrial engineer at 3M.

“The eighties were the years of the power suit and dressing for success,” she recalls. “Women who wanted to succeed in the corporate world never wore anything but suits, and I was in navy blue, gray, or black. One day, I was shopping with Tom and found a beautiful red suit. He asked, ‘Why don’t you buy it?’ and I replied, ‘Would you wear a red suit?’”

Today Hickel encourages her own daughter to continue her engineering studies, and says that although the number of women entering the profession remains low relative to law and medicine, she sees the ’70s as a turning point.

“The few women who were able to hang in there were the ones who made a difference,” she says. “We are the ones who have made our mark.”
“My professors always stressed that industrial engineering is a problem-solving process,” Wyatt says. “I also learned how to work effectively and efficiently on more than one thing at a time—something that has really paid off now that I work with many different clients who have various needs.”

Wyatt notes that the atmosphere of Iowa’s relatively small engineering college and the college’s relationships with the UI colleges of liberal arts, medicine, and business nurture valuable characteristics in engineering students.

“The school’s smaller size really helps students take on leadership roles,” she says. “You want to know the movers and shakers, and that opportunity is there and accessible for any student. I even corresponded with [University president] Mary Sue Coleman during my senior thesis. I experienced a process of growing up in the college even beyond my intellectual growth, and I learned that I could hold my own with men who were in positions of leadership.”

Wyatt says that armed with that self-confidence, she now is able to work alongside the leaders of major international corporations. When she was offered the position of assistant to the CEO only two weeks after starting at Cerner, she declared, “I can keep up with you. I can handle it.”

But, Wyatt adds, while the positive “family” atmosphere is particularly important for welcoming women students, certain aspects of the engineering culture still need to change.

“There are not enough women teaching engineering,” she says, “and some of the faculty members still either ignore women students or question their ability on the basis of gender. And even though the male students are mostly young, some of them struggle with the concept of women in the practical sciences. We need to talk about these issues in an open, honest way. Although the college is making progress, I think it might take another generation before the presence of women engineering students is an unremarkable phenomenon.”

Wyatt adds that engineering dean Richard K. Miller and former associate dean John R. Robinson have particularly helped ease the transition to a new and more gender-balanced generation of Iowa engineers.

“Even though it’s still not ‘normal’ to be a woman in engineering,” Wyatt says, “things have improved a lot. I can’t even imagine what life was like for earlier women students, and we owe a debt of gratitude to them for being pioneers.”

—Stories by Jean C. Florman
Hard hats required

Normally, people working on computers don't wear hard hats. But members of the engineering college community are finding it sometimes hard to know what the norm is these days.

When renovation of the electrical and computer engineering department was accelerated last spring, Doug Eltoft was told he had to move 600 square feet of computer equipment—in three days.

"Well, when things happen around here, they happen very quickly," Eltoft says. "We hired a bunch of students to help move things and then we hauled everything into another section of the building. We ended up in another temporary location that also just happens to be a construction zone. So we're supposed to wear hard hats while working there."

The Engineering Building renovation is not all bad news for Eltoft's office, however. The ICAEN director says that his staff has taken advantage of the demolition and construction to recommend badly needed upgrades in the building's electrical system. He notes that the most recent rewiring occurred a decade ago, and although the electrical system has served the college's basic needs, it is not well-organized or high-powered enough to accommodate the information demands of the 21st century.

"The renovation and construction enabled us to plan a new data and telephone system," he says. "The new plans call for the building to be wired very densely."

Each office will have four data and two telephone hookups, allowing users to keep computers and printers on separate communication lines. The computers will be hooked into the Internet, Eltoft says, and faculty members, staff, and students will be able to synchronize data through a single network via UNIX workstations, PCs, and portable computers. In addition, printers themselves can be directly hooked into a network.

"Users will be able to fire up the computers in their own offices and print their files in someone else's office," he says. "It should be a great way to quickly communicate even the most complex information."

From grand plan to gravy:
electronic posse rounds up

In any good Western, a quiet hero rides into town and saves the day. Although the College of Engineering is in the Midwest, it can claim its own unassuming hero—along with his computer posse of six—also saves the day. And sometimes saving the day means working at night.

For the last 14 years, Doug Eltoft and his staff at the Iowa Computer-Aided Engineering Network (ICAEN) have served the College of Engineering's computing needs. Their efforts are guided by a directive sometimes called the "Grand Plan," which developed from a 1985 paper written by Jon Kuhl, professor of electrical and computer engineering. Eltoft says the paper explored the issue of which resources could provide the optimum environment to help the college best accomplish its teaching mission.

"It concluded," Eltoft says, "that full computational ability and access at all levels—from the first-year student through the tenured faculty researcher, and for all six departments and all administrative offices—would set Iowa apart and ahead.

"To this day, there are few educational institutions in the world with computer systems whose breadth and flexibility compare with that of Iowa's College of Engineering."

Three features distinguish Iowa's engineering computer system: sophisticated commercial-grade software, state-of-the-art hardware, and a computing environment customized to individual needs. The ICAEN staff devotes countless hours to researching, acquiring, implementing, and maintaining the college's computer system. It's not unusual for a staff member to come in at 3 a.m. to upgrade software at a time when users are least likely to be interrupted by downtime.

Improving the college's computational power is a never-ending process, Eltoft says.

"Four years. For engineering computers, that's the length of life until obsolescence," he says. "In part, that's because the computer industry constantly provides new and better ways to do things. But engineers also have voracious appetites for information and knowledge. With increased data and better analysis, you need more computational and graphics power."

Eltoft and his staff select and maintain two different types of computers for the college community. The first consists of UNIX graphics workstations, which operate engineering software. These megadata crunchers are used for engineering design and analysis. The second tier of computers consists of Windows NT PCs stocked with what Eltoft refers to as "productivity software."

"Users can tap these personal computers to send e-mail, do word processing, and create résumés or design presentations," he says.

But the real beauty of the system is that all college computers, regardless of hardware or operating system type, are linked by a single network. By placing all information into a huge set of powerful servers, Eltoft notes, "wherever you sit down at a college workstation or PC, the computing environment is brought to you."

This approach has allowed students, staff, and faculty to use any software or hardware on the college system, much as they could use any library or drive any car.

Eltoft notes that the success of this arrangement is due in no small part to the perpetual funding provided by engineering student fees. Unlike virtually all other engineering colleges, Iowa applies these fees directly to support student computing.
“We don’t use these funds to hire or train staff or for overhead,” Eltoft says, “but to provide the hardware and software that supports engineering education.”

Although ICAEN has sought for almost two decades to weave computer literacy into engineering education, Dean Richard K. Miller recently underscored that goal in his call to examine the engineering curriculum.

“Computers have become ubiquitous in both engineering practice and education,” Miller said, “sparking an accelerating pace of technological change. Industry demands that engineering graduates possess not only the necessary technical abilities but also a different set of skills.”

Eltoft notes that while college faculty will drive the curriculum changes, his own office must maintain a “knowledgeable presence” so that faculty members will understand which computer resources can be tied into their revised curricula. As an example, Eltoft says that with the right equipment and software, students, faculty, and off-campus advisors can conference over the Internet. With the redesigned wiring of the Seamsen Center for the Engineering Arts and Sciences, members of the college’s community will even be able to plug their printers into the net and print hard copy directly from other computers, rather than just through electronic mail.

Eltoft says that while most students, staff, and faculty members appreciate the defining role that computers will play in the 21st century, a few remain skeptical.

“There’s always a certain amount of inertia,” he says, “and we try to get those who are reluctant kick-started by involving them in the planning process.”

Part of the problem may be that the better ICAEN does its job, the farther it is out of sight and out of mind. But when a glitch occurs, or a user’s needs outstrip the ability of the system to perform, or—as recently happened during building construction—someone pulls the plug, then Eltoft’s profile is raised considerably.

“When we first started, we could be ‘off the air’ for a day and almost nobody noticed,” Eltoft says, laughing. “Now the computers can be down for a couple of minutes and everybody gets testy. The level of expectation has risen so high that any downtime is now unacceptable. But I guess that means we’ve succeeded wildly in our goal of making computers an intimate part of engineering education.”

—Jean C. Florman

Bug to meet destiny at Iowa

When the millennium bug hits, Doug Eltoft says, the College of Engineering should be fine. The bug is a programming glitch that threatens the integrity of databases around the world. When automatic clocks were designed into software, the turn of the century was some 30 years away. Programmers used only the last two digits to indicate years, including “00” for the year 2000. So when computer clocks strike the new year, experts fear, computers worldwide will “think” it’s 1900 instead. Databases may be damaged on personal computers in homes, offices, the Pentagon—and plenty of systems in between.

“The University has formed a committee known as the Y2K—that stands for the year 2000—to tackle the problem,” Eltoft says. “Susan Beckett from our staff represents the college on the committee. Each department has been alerted to the problem. On the first of each month, department representatives file a report indicating where year 2000 problems are likely to crop up. On the 15th of each month, representatives from each college summarize where problems have been identified and how they were solved. In this way, colleges can draw on the expertise and experience of other members of the University community.”

Eltoft says his staff is helping the engineering department to anticipate possible problems. “The problem is insidious,” Eltoft adds, “but we think we’re ahead of the game. I’m not really worried.”
World class experience

When it came time to set up
shop at The University of Iowa,
Geb Thomas decided to endow
his lab with a memorable
moniker. In a reversal of the
normal order of things, Thomas
first chose the acronym "GROK," a
common computer hacker
term, then chose words to fit.
"So many labs have boring,
meaningless names," Thomas
says. "I wanted the word GROK,
which comes from the book
Stranger in a Strange Land.
The New Hacker's Dictionary
defines it as 'understanding in
a global sense, intimate and
exhaustive knowledge.'
We went with it, then decided
'Graphical Representation of
Knowledge' fits perfectly."

It may not be as cute as R2D2,
but it plays a considerably more
important role. "It" is Pioneer, a
half-ton robot designed to ven-
ture where no man has gone
since 1986—inside the damaged
nuclear reactor at the Chernobyl
Power Plant. And controlling
the robot's movements will be soft-
ware developed by University of
Iowa students in the College of
Engineering's GROK lab.

GROK—short for Graphical
Representation of Knowledge—
won the assignment because it
is one of the few laboratories in
the country that design robot
interface software.

"A computer interface is the
software that allows you to
communicate with a computer
through a mouse, screen text,
or set of buttons," says Geb
Thomas, the GROK lab's director.
"Our mission is to design the in-
terface that controls the move-
ment and virtual reality mapping
system of the Pioneer robot."

The groundbreaking task
called for team members with
experience in robotics. Thomas,
assistant professor of industrial
engineering, knew it would be a
perfect assignment for several
College of Engineering students.

Thomas notes that the stu-
dents on his Pioneer team are
well acquainted with such ad-
vanced technology because in
the summer of 1986, most of
them participated in another
robotics experiment in one of
the world's most hostile natural
environments, Chile's Atacama
Desert. The students helped de-
sign the computer interface that
instructed the robot Nomad to
trek 120 miles across this, one
of Earth's driest deserts. The
interface enabled Nomad's
controllers to guide the robot's
movements via satellite from the
Carnegie Science Center in Pitts-
burgh and NASA's Ames Labora-
tory near Mountain View, Calif.
Sponsored by NASA, the Ataca-
ma Desert Trek was designed to
test Nomad's ability to find and
analyze rock specimens in ter-
rain as diverse as Antarctica,
Mars, and the moon.

During the mission, Emily
Wiese, then a freshman, tended
the interface from Pittsburgh,
while then-sophomores April
Rathe and Steven Dow traveled
to Chile to help tend the robot.

"During my sophomore year
I heard that Professor Thomas
was looking for student help in
developing the display systems
for the robots," says Iowa native
Rathe. "It was very exciting—
most undergraduate engineering
students never have the oppor-
tunity to participate in some-
thing like this."

As some 20,000 visitors to the
Carnegie Mellon Robotic Insti-
tute drove the 825-pound, four-
wheel drive robot during its 45-
day trek, Dow and Rathe helped
make sure it didn't crash into
rocks or fall down arroyos beyond
the field of view of its drivers'
television screen. They "talked"
with researchers and the public
at Carnegie Mellon via e-mail,
"open talk" computer windows,
and satellite phones. They also
helped refuel the robot, which
Thomas describes as "about the
size of a VW Bug." As part of the
Nomad team, Dow, Rathe, and
Wiese helped test and refine the
software that ran the robot and
improved the rate of transmis-
sion of mission photos.

"The whole experience was
terrific," Dow says. "It opened
my eyes not only to the culture of
another country but also to the
realities of solving engineering
problems in the field. I got a
chance to talk seriously with the
experts who developed Nomad's
hardware and software, and I
returned to Iowa even more moti-
vated to continue my education."

One of the unique features
of Nomad is its panospheric
camera, which collects images
from a full 360 degrees. Thomas
describes the view through tradi-
tional robotic cameras as "look-
ing down a paper towel tube."
But Nomad's "full vision" pho-
ography enables researchers to
capture an image of the whole
world—at least the world to an
entire horizon.

Although the transmitted
image is distorted, the Iowa
researchers have developed
compensatory software that
resolves the transmitted data
into realistic images.

"We took the image and basi-
cally pulled it up onto a bowl," Thomas says. "It's a remarkable
thing to be able to see 360 de-
grees in three dimensions."

That evolving technological
capability has helped Thomas
and his students tackle an even
larger project. On April 26, 1986,
a horrified world watched as the

(continued on page 18)
Jerry Steele (bottom right), a graduate student in industrial engineering, uses Iowa-designed computer interface software to look at different areas of terrain from a robot's point of view. Enjoying front-row seats are (counterclockwise) April Rathe, junior in industrial engineering, Geb Thomas, assistant professor of industrial engineering and director of the GROK Lab, and Steven Dow, also a junior in industrial engineering.
No. 4 nuclear reactor at Chernobyl, in the Ukraine, suffered a meltdown. The heat caused an explosion, which lifted the 2,000-ton reactor cap into the air. The cap then crashed down into the damaged core oozing with radioactive lava.

During the following months, thousands of Ukrainians died from radiation exposure. In a frantic effort to contain the radioactive materials, 10,000 workers labored round-the-clock for six months to cover nuclear material with dirt and construct a 300,000-ton, 20-story concrete sarcophagus around the plant.

Now the sarcophagus, which was supposed to last 30 years, has deteriorated. Rainwater leaks in, threatening the groundwater. Officials fear the crumbling walls may collapse and release clouds of radiation into the atmosphere.

Faced with this toxic time bomb, the Group of Seven (G7) economically powerful nations has launched a $350-million effort to stabilize the structure. As part of that effort, the U.S. Department of Energy and NASA are funding the Pioneer project, and the Iowa Space Grant Consortium is helping support the GROK Lab's efforts on the work.

The Pioneer robot is designed to travel where humans cannot: into the most contaminated part of the Chernobyl reactor room, where it will create a 3-D map of the interior. It also will collect samples from the walls so that scientists can determine the degree of structural deterioration and radiation levels. Operators will direct the robot's movements via remote control.

If all goes well with the robot production schedule, Jerry Steele may spend a spring or summer break in Chernobyl, where he will help set up the mapping system and train Pioneer operators. Steele, who describes himself as "a naturalized Hawkeye," earned his undergraduate degree in electrical engineering at Iowa and is now a graduate student here. As Pioneer's project manager, Steele says working in the GROK lab has been a unique learning opportunity.

"Of course, my technical knowledge has grown," he says. "The people at Carnegie Mellon and NASA who are working on this project are truly experts in their respective fields, and interacting with them has been extremely beneficial. More importantly, I've gained valuable experience working on a large-scale international project."

Armed with a bulldozer bucket, a core borer, a manipulator arm that can pick up a 35-pound object, and cameras that can zero-in on a cockroach from 15 feet away, Pioneer will putter around the piles of radioactive lava and photograph the destruction resulting from the explosion.

"The camera system is mounted on the top," Thomas says, "and has a 45-degree field of view. Each time it stops, the cameras and stereo processing software will transmit about 20,000 measurements, which we will put together into a 3-D mesh that displays the contours of the room."

The 3-D mesh model, developed with computer-aided design software, will help show where the robot is in the room—an extremely difficult feat of visual perspective known as "projected texture."

That will be a key task for Thomas and his student team, whose unique perspectives, Thomas says, have been key to the Pioneer project's successful development.

"The students are great," he says. "They're enthusiastic and willing to suffer through the difficulties of development. Jerry [Steele] understands UNIX—the computer operating system we use—better than I do. And the undergraduates often force me to look at an aspect of the project in a new way and to reconsider my assumptions."

Thomas recounts one evening last March when the GROK lab hosted a workshop for seven members of the national robotics mapping team.

"It got to be really late," he says, "and I gave up and went home for some sleep. The next morning, I learned that at 3 a.m. the visitors and students had a pretty intense discussion about some complex problems. At first I didn't agree with the solutions that were suggested, but the students convinced me to see things from a new point of view."

Thomas says working on the robot that will challenge Chernobyl is a remarkable experience—the kind of hands-on opportunity that all engineering students should experience.

"Classes can't begin to teach engineers the practical things they need to know as professionals," he says. "There's a certain engineering culture that you can't understand or appreciate from books and blackboards."

April Rathke agrees.

"Working for Professor Thomas has helped me decide what I want to do," says Rathie, who hopes to continue studying the human/computer interface as a graduate student at Iowa.

"Classroom work in engineering can be tough, even discouraging at times. But working in the GROK lab has let me see the fun at the end of the road."

Thomas adds, "Students who work on real-world projects like Pioneer come to understand the importance of testing something before being asked, listening to other team members, creating a schedule, getting a project done in time and under budget, and distinguishing the practical, doable ideas from the impractical. The engineers who understand these principles and act accordingly are the ones who get to be in charge of large projects."

Thomas adds, "They're the ones who set the course of technology."

—Jean C. Florman
College welcomes four to faculty

Keri Hornbuckle
Assistant professor, civil and environmental engineering
B.A. ('87) in chemistry, Grinnell College
Ph.D. ('96) in civil engineering, University of Minnesota—Minneapolis
Professional experience
Assistant professor of civil, structural, and environmental engineering, State University of New York—Buffalo
Research interests
Transport of organic pollutants
There is a tremendous spirit of collaboration and interdisciplinary activity here. That is critical for the research area I am pursuing—regional and global transport of organic pollutants. My students and I spend our time in three general activities: fieldwork, laboratory analysis, and modeling. The fieldwork routinely includes sampling on large research vessels on the Great Lakes. We analyze these samples for trace level toxins that are known to bioaccumulate to hazardous levels. Then we use these data to support a predictive model for chemical fate and transport.

John Lee
Associate professor, industrial engineering
B.A. ('87) in psychology, B.S. ('88) in mechanical engineering, Lehigh University
M.S. ('89) in industrial engineering, Ph.D. ('92) in mechanical engineering, University of Illinois, Urbana-Champaign
Professional experience
Deputy director, principal research scientist, and director of the human performance lab at Battelle Human Factors Transportation Center; research engineer at IBM; research assistant, University of Illinois, Urbana-Champaign; assistant engineer at Lehigh University’s computer-integrated manufacturing lab
Research interests
Cognitive work analysis, human error analysis, human interaction with automation, interface design
Unique resources, such as University Hospitals and Clinics and the Iowa Driving Simulator, and the exciting research of my colleagues in industrial engineering attracted me to The University of Iowa.
I am interested in tailoring technology to people’s capabilities and limitations, so that it serves their needs. This requires an interdisciplinary approach drawing upon psychology, sociology, anthropology, engineering, and computer science. Given my interest in the interaction between people and technology, I found the University’s strong liberal arts focus particularly appealing.

Michelle Scherer
Assistant professor, civil and environmental engineering
B.S. ('89) in systems engineering, University of Virginia
M.S. ('94) in environmental engineering, University of Connecticut
Ph.D. ('98) in environmental science and engineering, Oregon Graduate Institute of Science and Technology
Professional experience
Instructor at the Oregon Graduate Institute of Science and Technology, instructor/mentor at the Saturday Academy, Portland; environmental systems engineer at American Management Systems, Inc.
Research interests
Remediation technologies, surface chemistry, redox reactions
I’m thrilled to be here at The University of Iowa. The resources available here for environmental research are some of the best in the country, and my colleagues are not only outstanding scientists but fun people to work with.
Our research focuses on contaminant transformations at the mineral/water interface. We use techniques from a variety of disciplines, including electrochemistry, surface chemistry, and corrosion science to develop a better understanding of the interfacial processes controlling the fate of contaminants in the environment.

Tom Schnell
Assistant professor, industrial engineering
Diploma ('92) in electrical engineering, Institute of Technology, Bern, Switzerland
M.S. ('94) in industrial and systems engineering, Ph.D. ('98) in integrated engineering, Ohio University—Athens
Professional experience
Research engineer in industrial and manufacturing systems engineering, Ohio University—Athens
Research interests
Human factors, ergonomics
I am honored to be a part of the industrial engineering faculty. I came to The University of Iowa because of its long-standing devotion to both teaching and research, because of the outstanding student body and faculty, and because of the potential for collaborative research.
My research is in the area of human factors and ergonomics, with a focus in human visual performance, driver eye scanning, and driver safety. My goal is to motivate students through active engagement, both in the classroom and in the laboratory.
UI experiment enjoys success on shuttle trip

A flame stability experiment conducted by a University of Iowa engineering professor on the November 1997 Space Shuttle mission was such a burning success that NASA has agreed to fund four more years of similar research.

L.D. Chen, professor and chair of mechanical engineering, was the principal investigator for ELF (Enclosed Laminar Flames), a four-year, $415,000 project funded by NASA's Microgravity Science Division to study stability and characteristics of jet engine flames. Chen will continue researching flame stability, using gaseous fuels other than the methane used in the 1997 experiment. Propane and ethane gases are being considered, he says.

The experiment, conducted in the Middex Glovebox (MGBX) facility of the Columbia Space Shuttle, compared normal-gravity and microgravity flames in order to determine the effects of buoyancy on flame stability. Chen hopes the data will support theoretical predictions and help determine ways to make jet engines cleaner and more reliable.

"Knowledge of flame stability is essential to the safe operation of combustion engines such as jet engine combustors, furnaces, and fireplaces," he says.

Chen's coinvestigators are Dennis R. Stocker and John E. Brooker, both research scientists at NASA-Lewis Research Center, of Cleveland, Ohio. ELF is supported by engineering expertise and experimental hardware developed by NASA.

More details on Chen's shuttle experiment can be found on the Internet at <http://zeta.lerc.nasa.gov/expr/elf.html>.

—Sara Epstein

Faculty winners

The College of Engineering last spring honored four of its professors with Collegiate Faculty Awards. Jerald L. Schnoor (left), professor of civil and environmental engineering, won the award for research; and Wilfrid M. Nixon (second from right), associate professor of civil and environmental engineering, was recognized for service. Pedro J. Alvarez (right), associate professor of civil and environmental engineering, and Victor J.J. Rodgers (second from left), associate professor of chemical and biochemical engineering, both won the awards for teaching. The two also were recognized by the University's Council on Teaching with 1998 UI Collegiate Teaching Awards.

A new era

October 9, 1998, marked a turning point for the College of Engineering. On that day the college officially renamed its building the Seamans Center for the Engineering Arts and Sciences. Above, engineering dean Richard K. Miller (left) and UI president Mary Sue Coleman (right) joined other University officials, faculty, staff, and students at a ceremony to unveil the building's name sign. The new name reflects the college's mission, and its adoption marked the end of the college's campaign for the building's addition and renovation. The college's Campaign Steering Committee also held its final meeting on October 9. And a few days later, the Seamans Center lost an old landmark when the UI Broadcasting Services radio tower was removed from its roof, making way for the building's continuing construction. The tower, which had sat atop the building for more than 70 years, was lifted off the roof in three sections and lowered to Capitol Street, where the sections were dismantled. The entire operation took about four-and-a-half hours.
On-line service helps employers, job seekers find perfect match

Quick: What's the most famous line in the movie The Graduate?

As the character played by Dustin Hoffman wanders among the adults at his college graduation party, the question “What are you going to do now?” hangs heavy in the air. In a scene emblematic of the 1960s culture clash, a guest takes the bemused young man aside and intones, “Plastics.”

According to job placement experts, looking for the right postgraduate job is the most stressful thing in a student’s time as an undergraduate. And with established workers joining the quest for different jobs and even careers, UI alumni often experience the same worries.

A new service offered by Engineering Career Services, in conjunction with the University of Iowa Placement Center and the Alumni Association, should considerably ease the agony of job searching for Iowa engineering students and alumni. Engineering Career Services director Cathy Colony Bunnell says that since last July, her office has joined up with JOBTRACK Corporation—one of the nation’s largest on-line job listing services—to help Iowa students and alumni search for jobs at any time and anywhere in the world via the Internet.

“It’s a terrific tool,” Bunnell says. “As a national service, JOBTRACK has more than 600 colleges and universities on board. Since 1987 it’s been used by more than 300,000 employers to target their full- and part-time job openings to college students.”

The service offers information about full-time, part-time, permanent, temporary, and internship positions. Every day, the site processes more than 3,000 new job openings and more than 35,000 students and alumni tap into the on-line resource.

Of course, not all of those “hits” focus on engineering opportunities. But the ability to explore an astonishingly wide variety of job openings with the touch of a keyboard may just revolutionize the way engineering students and alumni go about finding work. It’s also changing the way employers search for just the right person for the job.

“Employers can target the kind of expertise they need,” Bunnell says, “and then reach out to thousands of potential applicants. We’ve had a number of employers call Engineering Career Services to tell us they’re excited we’re using this service.”

For their part, students and alumni can use JOBTRACK to narrow their job search, using criteria such as specialty, job title, and geographic location.

Bunnell notes that in addition to being much more economical for companies than tradition-

Iowa’s great jobs

In an effort to keep graduating students in the state and to bring back former Iowans, the Iowa Department of Economic Development has introduced a new World Wide Web site. SmartCareerMove features more than a thousand job opportunities statewide, including important professional and technical positions for highly skilled workers.

The easy-to-navigate site provides links to many of the state’s employers, job-hunting services, and communities. One of the sites, “Corridor Careers,” lists opportunities in the Iowa City/Cedar Rapids area.

Registered users can receive e-mail notification of new job postings and can post their résumés.

A recent keyword search for engineering positions brought up 68 listings from employers such as John Deere Dubuque Works and Fisher Controls International Inc., in Marshalltown. The positions demand fields of expertise ranging from electronics to aerospace to hydraulics.

Oliva Smith, a market analyst in the UI Office of Research Marketing and Corporate Relations, says the job market in Iowa is very good for engineering students and for those with computer-related skills. Smith cites a recent study of 60 Iowa employers, which found that there is a need for more than 900 high-tech employees.

“I know that there is seldom any difficulty in placing engineering students from top universities such as The University of Iowa,” she says, “but the SmartCareerMove site gives students a picture of the number and types of well-paying opportunities for graduates that are available right now, here in Iowa.”

Besides its value for job hunters, the site tempts visitors with information on educational opportunities, recreation, and various diversions throughout the state. It also offers guidelines and advice for those interested in opening small businesses.


—Sara Epstein

For more information, contact Engineering Career Services: 319-335-5763; FAX 319-384-0529. Or call the University of Iowa Alumni Association, 319-335-3294.
Readers who would like to correspond with alumni mentioned in Class Notes can get address information from the University's alumni office.

Contact Alumni Records, The University of Iowa, 400 LeVit Center for University Advancement, Iowa City, IA 52242-1797; phone 319-335-3297. E-mail: alumni-records@uiowa.edu

### 1930s

Earl H. Sorg (BSCE '33) writes that at age 88, he looks back on a career that was varied, interesting, and rewarding. Now he lives in beautiful Lakes Manor health care retirement home in Willow Strat, Pa., where he does a variety of volunteer work. He also enjoys playing the violin: "It's great therapy," he says.

Richard B. Miller (BS '34, MS '35) retired in 1978 as vice president for operations for Iowa-Illinois Gas and Electric Company, of Davenport, Iowa—now named MidAmerican Energy Co. Miller reports that he and his wife, Dorothy, who died in 1981, had three children, Miller lives in Davenport.

### 1940s

Fred C. Vernon (BSEE '41) retired in 1981 as district superintendent of ComEd, of Chicago, after 39 years of service. Vernon lives in Lockport, Ill., and says that since retirement he has traveled extensively, both in Europe and in the States. He also has a cottage on the Kankakee River, where he spends time boating, fishing, and swimming.

Irving Brown (BSEE '47) reports that although he "officially" retired in 1985, he has remained busy as a consultant to government and industry and presenting seminars on communication satellites. Brown lives in Mt. Laurel, N.J.

David G. Dall (BSME '47) retired from DuPont Textiles in 1982, after more than 30 years with the company. After enrolling in engineering school at Iowa in 1939, he interrupted his education to serve five years in the U.S. Navy during World War II, then returned to Iowa to finish his degree. Dall lives in Signal Mountain, Tenn.

### 1950s

Peter J. Neuspil (BSEE '51, MS '52) lives and works in Media, Pa., as president of Neutek Consultants, Inc. Neuspil reports that he currently is working on a high-efficiency aerator for aquaculture and wastewater treatment applications and is applying for new patents.

Francis Springer (BSME '51) writes that he is "completely retired" from Dow Chemical Co. and lives in Cadillac, Mich., where he does volunteer work with a local hospital and the city of Cadillac.

Robert E. Scholl (BSCE '60) has retired at age 55 as a manager, after 20 years with two companies, Monsanto and Solvita, where he held 26 different positions. Scholl, who lives in Pensacola, Fla., credits Iowa for giving him a solid technical foundation for his career.

### 1960s

Warren (Oakie) Overgaard (MS '53) died on June 24, 1998. His wife, Florence, writes that Overgaard retired in 1982 from Manitoba Hydro and Saskatchewan Power Corp. Mrs. Overgaard, who lives in Winnipeg, Canada, adds that she and her husband had wonderful memories of the years they spent in Iowa City.

Ralph G. Hill (BSME '57) is retired from Lockheed Martin Tactical Aircraft and is cruising on his 42-foot auxiliary-powered sailing vessel in Guatemala with his wife, Priscilla, "for one year or more." When their boat is docked, the Hills are at home in Fort Worth, Tex.

Garold L. Hohmann (BSEE '59) retired from Westinghouse Electric Co. in 1969. In 1989, after 15 years with the company, he now is president and CEO of Southeastern Technology Center, a non-profit technology transfer company in Augusta, Ga. Hohmann lives in Aiken, S.C.

Frank S. Pang (BSCE '59) has retired from General Electric after 38 years with the business, most of which he spent in plastic technology development and consulting worldwide. His most recent work for GE took him to China and other eastern countries to work on technology transfer and joint ventures. Pang and his wife, Joan Okubo Pang (BSN '61), live in Louisville, Ky., but plan to relocate to Camano Island, Wash., to be near the ocean and mountains.

### 1970s

Ronald R. Speedy (BSCE '66, MS '67) retired in August 1987 as a consultant with the U.S. Public Health Service. Speedy spent the last 27 years providing public health assistance to the National Park Service. He lives in Stone Mountain, Ga.

Tom Bliss (BSEE '68) is retired and lives in Dayton, Nev.

William J. Boyd (BSEE '70) recently was appointed assistant section manager for the Oregon State Construction Contractors Board. Boyd lives in Portland.

Edmund Y.S. Chao (PhD '71) was inducted into the National Academy of Engineering in October. Chao, a professor of Orthopedic Surgery at Johns Hopkins University, was recognized for his work in developing models for functional analysis of human limbs and limb-salvage procedures in cancer patients.

Gerald L. Stutz (BSEE '71) is vice president of the Stutz Company of Chicago. Stutz writes that he was president of the Chicago branch of the American Electroplaters and Surface Finishers Society for 1997-98. Stutz lives in Glenview, Ill.

Lila Akron (PhD '72) is president of PEER Consultants, Inc., a Rockville, Md., company involved in constructing low-cost, energy-efficient homes in South Africa. In August, a housing project proposed by the firm was chosen for the U.S. Initiative on Joint Implementation Program. Akron and the company's Eco-Homes were featured in the fall winter 1997 Iowa Engineer.

D. Michael Lewis (BSME '73) lives and works in Cedar Falls, Iowa, where he is a design engineer at Doerfer Engineering, a consulting firm. Previously he spent five years at FMC-Link Belt Crane and Excavator, of Cedar Rapids.

Aleskandar Nospel (BS '74) is a mechanical engineering professor at the University of Tirana. His research interests include flow measurements and instrumentation, and hydraulic machinery and equipment. Nospel earned a Ph.D. from the University of Belgrade in 1980.

(continued on page 24)
Continued from page 23

Gary Marchl (BSME '76) is a senior mechanical engineer at NovaBUS of America, where he is responsible for development of handicapped lifts, passenger doors, and air system components for RTS transit buses. He lives and works in Roswell, N.M.

Maureen A. McAllister (MS '77) lives in Wayne, Ind., where she is owner and president of MCAllister Consulting L.L.C., a firm specializing in conceptual work with operations and manufacturing projects, including registration to quality systems and environmental standards. McAllister writes that since leaving Iowa, she has earned an M.R.A. from the University of Chicago and has lived and worked in Southeast Asia. She is married and has four children.

Robert D. Fooe (BSE in ME '90) is a controller and materials manager at Allied Signal laminate Systems, Hoosick Falls, N.Y. Fooe lives in Bennington, Vt.

Douglas Deutsch (BSE in EE '87) is on the technical staff of Lucent Technologies, in Naperville, Ill., where he is product manager for call center and computer telephony integration. Since leaving Iowa, Deutsch has earned a master's degree and has been granted two U.S. patents. He and his wife, Anne, have two children and live in Aurora.

Patrick R. Hays (BSE in ChE '87) is senior process engineer at Shell Chemical Company, in Deer Park, Texas. Hays recently returned from Al-Jubail Industrial City, Saudi Arabia, where he spent four years on a project to revamp and expand the ethylene unit at the Saudi Petrochemical Company, which has one of the world's largest ethane-based crackers. Hays lives in Houston.

Ching-Huan Tseng (PhD '87) is a professor at National Chiao Tung University, in Taiwan, Republic of China.

John D. Albright (BSE in ME '89) is a propulsion systems engineer at the NASA/Johnson Space Center in Houston, Texas. During eight years with NASA, Albright has worked on projects involving propulsion valves, attitude control systems, and electronic actuators for the Space Shuttle and the Experimental Control Return Vehicle, and has received several awards. He and his wife, Alene (BA '88), live in Friendswood with their son, Andrew, who is almost 2 years old.

Douglas Stafford (BSE in ChE '89) has finished his general surgical residency at the University of North Dakota and is an M.D. in Custer, South Dakota. He lives in Hayden.

1990s

John Crowley (BSE in ChE '90) is a process engineer at American Ordinance, L.L.C., of Milan, Tenn. Crowley works in ordinance production for the U.S. Army industrial operations command, located at Rock Island, Ill. He writes that he and his wife, Marcia, just moved to New Johnsonville, Tenn., this summer and now live near the Tennessee River.

Robert P. Petersen (MS '84) is a civil engineer with the U.S. Army Corps of Engineers waterways experimental station in Vicksburg, Miss.

Mark A. Sorsin (BSE in ME '91) recently left Factory Mutual, in Minneapolis, to become a fire protection design engineer for Allied Faith, in Fargo, N.D. Sorsin is working toward PE licensing in North Dakota and Minnesota. He and his wife, Denise, married in September.

Sheilla S. Schmidt Stevens (BSE in BM '71) is a senior research engineer at Bausch & Lomb, in Rochester, N.Y. Stevens writes that she completed a Ph.D. in mechanical engineering at Stanford University last August, and her husband, Russell, also works at Bausch & Lomb, as a senior equipment engineer. They live in Webster, N.Y.

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Christopher Miller (BSE '90, MS '92, PhD '95) is an assistant professor of civil engineering at the University of Akron (Ohio). Miller, who recently became a professional engineer, lives with his wife, Janelle, in Wadsworth, Ohio.

Sarah Sievers (BSE in IE '95) works for Pulte Consulting, Inc., of Waltham, Mass. Sievers reports that the company currently is implementing the adoption of a German software package, SAP, into midsize and large corporations and that her role in the changeover involves technical work, mainly programming. Sievers lives in Swarthmore.

Troy D. Thornberry (MS '95) is a graduate research assistant in atmospheric, oceanic, and space sciences at the University of Michigan-Ann Arbor.

John White (BSE in IE '95) is a manufacturing engineer at Inntech, a Cedar Rapids, Iowa, manufacturer of high-end electronic communications and distribution equipment.

Joel G. Burken (BSE in CE '91, MS '93, PhD '96) is assistant professor of civil engineering at the University of Missouri-Rolla. Burken reports that he recently was awarded the 1996 ASCE Ralph J. Hering Medal for most valuable contribution to environmental engineering. The award was for a research paper written with Jerry Schmon, UI professor of civil and environmental engineering.

Brad Skoff (BSE in CE '96) is a structural engineer for Truss Joint MacMillan, "the world's leader of engineered lumber products," Skoff reports. Skoff specializes in structural design and repair of residential and commercial buildings at the Edina, Minn., company. He lives in St. Louis Park, a Minneapolis suburb.

Monica M. Smith (BSE in CE '96) lives and works in Waterloo, Iowa, where she is a civil engineer for Robinson Engineering.

Sanjay Bhayjar (MS '97) works at Lacent Technologies and lives in Woodridge, Ill.

Mark Brown (BSE in EE '95, MS '97) worked in the general aviation department at Rockwell Collins, in Cedar Rapids, Iowa, until May, when he took a position as software engineer for Diversified Software Industries, Inc., of Iowa City. Brown and his wife, Gretchen (PharmD '98), live in Iowa City.

Andrew T. Engler (BSE in CE '97) lives and works in Chicago, where he is a project manager for Glass Masters, Ltd.

Robert Fangmann (BSE in CE '97) works on road, bridge, and culvert design as assistant engineer for Jefferson County, Iowa. Fangmann lives in Fairfield.

Ronna M. Glasgow (MS '97) works at TRW Systems, and Owens Park, Kan., firm, where she provides air quality support to a variety of industries. Glasgow lives in Kansas City, Mo.

Elisabeth L. Gustavsen (BSE in ChE '97) is working toward a master's degree in environmental engineering at Imperial College of Science, Technology, and Medicine, in London, England. She plans to work as a graduate scientist/environmental engineer at a technology firm in Loughborough, England, after graduating.

Donald Hemphill (BSE in CE '97) writes that he enjoys working as a staff engineer in water and wastewater practice at QST Environmental, a Peoria, Ill., firm. Hemphill has been involved in the design of a drinking water treatment plant, wastewater upgrades for Caterpillar, a large storm sewer design, and other projects.

Bin Kallan (BSE in BMTE '97) went to work for Servicemaster Company after graduating from Iowa. He was assigned to Chicago's Methodist Hospital, where he now is in charge of maintaining the hospital's medical equipment—keeping it running and in compliance with the standards and codes of the medical/hospital industry.

Michele Puetz-Ratigan (BSE in IE '97) is a consultant with Anderson Consulting, in San Francisco. She lives in Martinez, Calif.

Bradley Wescott (BSE in ME '97) is a graduate research assistant in computational science and engineering through the Center for Simulation of Advanced Rockets, at the University of Illinois at Urbana-Champaign.

Earl E. Estate Reithman (BE '23), of Pompano Beach, Fla., August 20, 1997

James D. Fitzgerald (BSE '31), of Marion, Iowa, April 3, 1998

Ira F. Piercy (BSE '32), of Adel, Iowa, December 25, 1997

Roster E. Adams (BSME '33), of Sun City, Ariz., January 20, 1998

Charles E. Brokenicky (MS '33), of York, Neb., April 10, 1997

Robert A. Cornog (BSME '33), of Santa Monica, Calif., July 17, 1998

Norman A. Skow (BSAS '26, MS '27, CE '35), of Bonita Springs, Fla., April 23, 1998

Adolph C. Topinka (BSChE '36), of Cedar Rapids, Iowa, February 19, 1998

Te-Yun Liu (MS '36, PhD '37), of Beijing, China, March 15, 1998

John S. McNew (MS '37), of Lidingo, Sweden, February 17, 1998

Earle W. Williams (BSEE '37), of Lenexa, Kan., February 13, 1998

Robert A. Schick (BSCE '40), of Federal Way, Wash., December 13, 1998

Walter C. Brundson (BSChE '41), of Westfield, N.J., March 20, 1997

Curt F. Lindholm (BSCE '41), of Mount Horeb, Wis., December 3, 1997

Walter L. Wheaton (BSME '41), of Cedar Falls, Iowa, February 16, 1998

Nicholas T. Karafin (BSME '43), of Cleveland, Ohio, July 30, 1990

Leroy A. Thorssen (MS '46), of Calgary, Canada, July 1, 1996

Lyle F. Fuller (BSME '47), of Mobile, Ala., October 5, 1997

Leland C. Adams (BSCE '48), of Lake Forest, Ill., January 17, 1998

Harry R. Smith Jr. (BSME '50), of Crown Point, Ind., June 8, 1983

Leonard K. Carson (BSME '49), of Westminster, Calif., March 8, 1994

Douglas L. Coder (BSChE '49), of Amarillo, Tex., July 8, 1998

Richard J. Meierianos (BSME '49), of Cedar Rapids, Iowa, February 3, 1998

Peter J. Berntsen (BSME '49, MS '50), of Sunnyvale, Calif., July 28, 1998

Norman V. Holec Jr. (BSCE '50), of Florissant, Mo., November 13, 1997

Francis K. Arora Jr. (MS '51), of Honolulu, Hawaii, May 22, 1998

Hamed Kamal Eldin (PhD '51), of Cedar Falls, Iowa, December 24, 1997

Robert L. Parsons (BSEE '51), January 10, 1994

Jon S. Derderian (BSME '52), of Inverness, Iowa, March 17, 1996

Osman Attila Kurtmaz (MS '53), of Istanbul, Turkey, March 1995

Melvin R. Lincoln (BSME '53), of London, England

Edmund K. Overgaard (MS '53), of Winnipeg, Canada, June 24, 1998

Tien-Yo Shieh (BS '54, PhD '56)


Darrell A. Smith (BSCE '57), of Lomis, Calif., December 6, 1997

Lawrence Roth (BSME '58), of Wilmington, N.C., April 10, 1998

Verlin G. Torgerson (BSE '58), of Arvada, Colo., November 5, 1995

John W. Hennings (BSE '59), of Pleasant Plains, Ill., July 30, 1998

Donald J. Coletti (BSE '59), of Hudson, Mass., February 26, 1998

John M. Price (BSE '59), of Tiburon, Calif., March 4, 1998

Walter W. Schiffer (BSCE '60), of Dubuque, Iowa, December 11, 1997

Richard A. Drahm (BSCE '60), of Anchorage, Alaska, September 1976

Garth E. Ervin (BSME '60), of Marshalltown, Iowa, July 21, 1998

Kwang-Chun Peng (BS '61), of San Mateo, Calif., December 1985

Larry E. Butts (MS '63), of Sacramento, Calif., August 5, 1995

John W. Denkmann (BSME '61, MS '63), of Cicer, Ind., March 28, 1998

Glenn D. Shoemaker (BSCE '63), of Coralville, Iowa, April 6, 1998

Paul T. McClintom (BSME '65), of Maquoketa, Iowa, March 27, 1998

Denis E. Bowman (MS '66), of Waterloo, Iowa, June 24, 1998

Donald L. Normolle (BSCE '68), of Moline, Ill., February 17, 1998

Ti Chiang Lee (PhD '67), of Fountain Valley, Calif., January 18, 1998

Robert E. McIntosh Jr. (PhD '67), of Amherst, Mass., July 10, 1998

Daniel L. Price (BSME '68), of Midland, Tex., November 24, 1997

Roy L. Overstreet (BSE '74), of San Diego, Calif., April 1, 1998
Hydrodynamics expert was also a friend to all

The College of Engineering last year lost not only a revered teacher and world-renowned researcher, but also a good friend.

Louis Landweber, professor emeritus of mechanical engineering and one of the world’s leading experts in ship hydrodynamics, died on January 19, 1998, in Iowa City. He was 86.

Although he retired from teaching in 1982, Landweber remained active in fluid dynamics research, keeping his office on the fourth floor of the Hydraulics Laboratory and maintaining professional collaborations.

V.C. Patel, director of the Iowa Institute of Hydraulic Research and UI Foundation Distinguished Professor of Mechanical Engineering, says he will remember Landweber most for his good nature.

“It’s amazing how his human side came through in everything he was involved with, from committee meetings to working with students,” Patel says. “He gave his all to anybody who came into contact with him.”

Landweber, a New York City native, never took an engineering class in his life. But he did pursue his early interest in mathematics and physics, eventually receiving a bachelor’s degree in math from City College of New York. He went on to complete a master’s degree in physics from George Washington University while working as a junior physicist for the United States Experimental Model Basin, at the Washington Naval Yard (now the David Taylor Naval Ship Research and Development Center). Shortly after earning a doctorate in physics from the University of Maryland in 1951, he was named head of hydrodynamics at the David Taylor Model Basin, in Carderock, Md.

In 1954, the University of Iowa hired Landweber as a professor of mechanics and hydraulics and a research engineer in the Iowa Institute of Hydraulic Research.

“He was a giant in his field,” Patel says, noting that some of Landweber’s most important contributions to engineering were his solutions to problems relating to wave generation, “very basic mathematical theorems that led to a better understanding of and solutions to practical problems.”

Landweber’s honors include his 1978 appointment as David W. Taylor Lecturer at the Taylor Naval Ship Research and Development Center; winning the Davidson Medal, presented by the Society of Naval Architects and Marine Engineers, also in 1978; and his 1980 election to the National Academy of Engineering.

Patel adds that Landweber’s research was like a magnet, attracting students from around the world. Throughout his career, he supervised more than 50 master’s and doctoral students.

“It wasn’t just his scientific or engineering know-how,” Patel recalls. “He was a tremendous human being—he cared for his students, for their development and their performance. He became a father figure to them. He was also a colleague who could be trusted to help at critical junctures. He would sit down with you and give you advice, without demanding that it be followed.”

Landweber is survived by his wife, Mae, of Iowa City, two sons, and four grandchildren.

—Sara Epstein

Biomedical Engineering

Jeffrey Bishop, a graduate student, has received a $70,000 grant from the National Aeronautics and Space Administration to develop a camera that would keep automobile drivers awake. Bishop says his inspiration for the project was the plight of a friend who broke his neck in an accident after falling asleep at the wheel.

K.B. Chandran, professor, has received a $300,000 Special Opportunity Award from the Whitaker Foundation, which provides funding to enhance biomedical engineering research and teaching at the university. The grant will enable the College of Engineering and Medicine to conduct research in functional cardiovascular image analysis. The biomedical engineering and electrical and computer engineering departments will collaborate with the radiology department and the cardiology division of the internal medicine department in the effort.


Marianne Magnussen, postdoctoral associate, has won the LaRocca Award for collaborative studies from the International Society of the Lumbar Spine. She will use the award to conduct work on low-back-pain patients in Nottingham, England.

Malcolm H. Pope, professor, received the 1998 H.R. Lissner Medal in November at the American Society of Mechanical Engineers International Mechanical Engineering Congress in Anaheim, Calif. The award recognized Pope for significant research activity in knee and spine biomechanics and his publication of more than 260 technical papers. The medal was established in 1967 to honor the memory of H.R. Lissner, a Wayne State University professor who was a pioneer in biomechanical research.

Kwan Rim, professor, has been elected a member of the Korean Academy of Science and Technology, the most prestigious academy in the Republic of Korea. The academy includes areas of science, technology, medicine, and science and technology policy. Rim serves on the Science and Technology policy group of the academy. Rim also spoke in June at the U.S.-Korea Science Policy Forum in Washington, D.C. His topic was industrial R&D in Korea and its need for national cooperation.

David G. Wilder, associate professor, made presentations in February at the National Institute of Occupational Safety and Health Conference in Morgantown, W.Va.
Chemical and Biochemical Engineering

Gregory R. Carmichael, professor, copresented a seminar in June at the U.S. Capitol Building on Asian development and the environment. His copresenter, Sherry Rowlands, is a Nobel Prize winner and an authority on atmospheric chemistry and the ozone hole. Carmichael also won the 1998 State of Iowa Board of Regents Award for Faculty Excellence and has received a three-year, $473,000 research grant from the U.S. Department of Energy’s Atmospheric Chemistry Program. The grant will enable Carmichael and fellow researchers to study interactions between aerosols and ozone.

John M. Wenczek, associate professor, has been awarded a three-year, $200,000 grant from the Whitaker Foundation. The competitive grants are created to help promising new investigators establish a research career in biomedical engineering. Wenczek will use his grant to improve the X-ray diffraction method of determining protein structure.

Civil and Environmental Engineering

Wilfrid A. Nixon, professor, was featured in April on NBC’s Today Show, when reporter Mike Leonard showcased his research work on the properties of ice and cold regions.

Jacob Odgaard, professor, traveled last December to Ecole Polytechnique Federale de Lausanne, Switzerland, as a visiting professor of civil engineering. In March, Odgaard served as a special advisor for an earthquake study in Bangladesh, where he reviewed pilot schemes for bank protection in the Meghna Estuary. Also in March, Odgaard served on the Danish Agency for Trade and Industry’s international panel of experts to evaluate the Danish Hydraulic Institute in Horsholm, Denmark. He traveled to China in June to plan a study tour for graduate students, part of the International Perspectives in Water Resources Planning course for the year 2000. While in China Odgaard also visited Tsinghua University, the National Science Foundation of China, China Institute of Water Resources, Wuhan University of Hydraulic and Electric Engineering, Jiao Tong University, and the Three Gorges Project.

Electrical and Computer Engineering


Industrial Engineering

Dean Jensen, a former graduate student, has accepted a position as assistant professor of industrial engineering at Oregon State University, Corvallis, Ore.

Mechanical Engineering

Sharif Rahman, assistant professor, was awarded a 1998 National Science Foundation Early Career Development Grant. Rahman is using the grant to support his work on probabilistic fracture mechanics of nonlinear solids using elastic-plastic fracture theory, orthogonal expansion of random fields, and stochastic finite elements.

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