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First Don Grant Faculty Award for Excellence in Undergraduate Education awarded to Peters

Frank Peters, associate professor, recently received a new departmental award named in honor of Don Grant—the Don Grant Faculty Award for Excellence in Undergraduate Education. The award is given to a faculty member in the department who is recognized by students as having a high impact on undergraduate education in our department. The undergraduate industrial engineering honor society, Alpha Pi Mu, selects the winner of this award.

Grant served as an adviser and instructor in the department from 1968 to 1988, and it has been estimated that he worked with more than 3,000 students during his career at Iowa State.

“Don’s influence on the students in the program was particularly significant,” says **Gary Mirka**, department chair. “As I speak with alumni from around the country and our conversations turn to memories of faculty and staff in the department, one name keeps coming up as someone that was particularly influential in many students’ lives—Don Grant.”

After hearing about the profound impact Grant had on so many in the department, Mirka contributed the funds to start an award in his honor. He hopes to generate similar gifts from alumni and industry to pay homage to Grant.

“We’d like to make this award more significant over time,” says Mirka. “It’s a great way to recognize faculty and honor the many, many contributions Don has made to the department.”

If you are interested in contributing to this award or others like it, please contact our development officer, Ben Barnhart, at 515 294-0934 or barnhart@iastate.edu.



Rosie Grant congratulates Associate Professor Frank Peters on receiving the Don Grant excellence award.



Letter from the Chair

Welcome to the 2009 newsletter of the Department of Industrial and Manufacturing Systems Engineering at Iowa State University. I am excited at the opportunity to share with you many of the activities and accomplishments of the department’s students, faculty, staff, and alumni.

As you will see as you read through the newsletter, the department is making great strides in our efforts to fulfill our unique and vital contribution to the College of Engineering’s 2050 Challenge. Faculty research in the areas of wind energy (cover story), environmental sustainability, and plug-in hybrid electric vehicles is just part of an expanding research portfolio.

Educational advancements such as our new minor in sales engineering are providing new and exciting opportunities for our students to become leaders and innovators. And our ever-expanding outreach activity through our distance education initiatives provides an opportunity to have an impact well beyond the boundaries of this great campus.

As always, I welcome your ideas for new initiatives and ways the department can be improved, and I look forward to the opportunity to meet with you on your next visit to Ames.

All the best,

A handwritten signature in blue ink, appearing to read "Gary Mirka". The signature is stylized and fluid.

Gary Mirka

On the cover:

Iowa State University researchers, left to right, Vinay Dayal, Matt Frank, Frank Peters, and John Jackman are working to establish a Wind Energy Manufacturing Laboratory on campus. They’re pictured with turbine blades at TPI Composites’ Newton, Iowa, factory.

Fall 2009 | Issue No. 2

Published by the Department of Industrial and Manufacturing Systems Engineering, College of Engineering, 3004 Black Engineering, Iowa State University, Ames, IA 50011-2164; www.imse.iastate.edu; imse@iastate.edu

Prepared by Engineering Communications, College of Engineering ECM 09099

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Iowa Power Fund helps Iowa State establish Wind Energy Manufacturing Laboratory

It's not easy to make the machines that convert wind to electricity.

Just consider the turbine blades that spin in the wind: A single blade can be 40 to 50 meters long and weigh 10,000 to 15,000 pounds. It has to be built within millimeters of specifications. It has to be built to withstand 20 years of harsh conditions in the field. And it has to be built to handle speeds up to 200 miles per hour at the tip.

Iowa State University researchers are working with others from TPI Composites, a Scottsdale, Arizona-based company that operates a turbine blade factory in Newton, Iowa, and the U.S. Department of Energy's Sandia National Laboratories in Albuquerque, New Mexico, to improve the process currently used to manufacture turbine blades.

The researchers' work is supported by a three-year, \$6.3 million project called the "Advanced Manufacturing Innovation Initiative." One third of the project's funding is from the Iowa Power Fund, a state program to advance energy innovation and independence. TPI Composites and the U.S. Department of Energy are also providing equal shares of funding.

The grant will allow Iowa State to establish a Wind Energy Manufacturing Laboratory on campus. The lab will feature the work of four faculty researchers: **Matt Frank**, **Frank Peters**, and **John Jackman**, all associate professors of industrial and manufacturing systems engineering, and **Vinay Dayal**, an associate professor of aerospace engineering. The grant will also support the research of five graduate students and several undergraduates.

The researchers' goal is to develop new, low-cost manufacturing systems that could improve the productivity of turbine blade factories by as much as 35 percent.

"The current manufacturing methods are very labor intensive," Jackman says. "We need to improve throughput—we need to get

more blades produced every week in order for it to be economical to continue to produce wind energy components in the United States."

Peters says possible manufacturing improvements include developments in automation and quality control.

Iowa State's new lab, according to Peters, will initially work with smaller versions of the molds used to manufacture fiberglass turbine blades. The lab will allow the researchers to study blade manufacturing in a controlled setting while they look for ways to boost efficiency. Eventually, the lab could also study the manufacturing of wind towers, the nacelles that sit atop the towers, gearboxes, and other wind energy components.

Dayal, who is also a faculty member associated with Iowa State's Center for Nondestructive Evaluation, says the lab will also look at developing new ways for manufacturers to inspect blades without taking them apart. Faster, better inspections are another way to improve factory efficiency and blade reliability.

The researchers say Iowa State is uniquely positioned to study wind energy manufacturing. Iowa, which has an installed wind energy capacity of 3,043 megawatts, is second in the country in wind power production. And Iowa is one of only two states that are home to manufacturing facilities for wind energy turbines, blades, and towers.

"With this project," the researchers wrote in a project summary, "Iowa State University's College of Engineering will become one of the leading academic institutions working on wind energy manufacturing."

But there's more at stake here.

"This project is all about making wind energy a reality," says Frank. "How do we make an impact on the U.S. energy profile? To do that, we have to develop manufacturing technologies that can economically make a lot of these components."





Rick Stone and several students research how to advance robotic systems to complete complex tasks.

New professor improves human performance with technology

If you come to visit the IMSE department, do not be surprised if you see a robot roaming the hall. The robot, while entertaining to look at, serves an important purpose in the research of **Rick Stone**, the newest addition to the IMSE department.

Stone earned his PhD in industrial and systems engineering from the University of Buffalo in 2008 and joined the IMSE department last fall to explore the cognitive components of ergonomics and human factors. "Overall, I am looking to find ways to help improve human performance with consideration to safety and health," he says.

Robotics is one way he can explore his research interest. He studies telerobotics, or robots that cannot function independent of human control. Evaluating techniques that allow a single person to effectively manage multiple robots, an approach called swarm control, Stone's research can help humans complete successful missions with robotic assistance. "These robots can be used for finding land mines, completing search-and-rescue missions, and even farming land," says Stone.

The humans who control the robots add extra complexity to completing any task at hand. "From working with something as intricate as a computer interface to something as basic as a simple

tool, humans all do things differently," Stone says. "For swarm control to be successful, we need to develop robotic controls that others aside from the engineers who design the controls can effectively operate."

Stone is developing design methods and heuristics to help humans correctly interpret a robot's environment so they can appropriately intervene. "Telerobotics and swarm control are becoming more reliable and intelligent," he says. "If we can integrate the technologies into certain situations, we can help improve performance and remove humans from some potentially threatening or hazardous situations."

Joining Iowa State's IMSE department was a natural fit for Stone. "The department is well ranked, and the faculty here are motivated and have been very helpful as I begin my professional career," he says.

While he plans to continue his research in robotics, Stone also hopes to branch out to other technologies that can enhance human performance. "If we continue to focus on developing ergonomically sound solutions, we can make the most out of all that technology offers to augment tasks," says Stone.

Faculty updates

The following faculty recently received promotions:

- **Matt Frank**, associate professor
- **Leslie Potter**, senior lecturer
- **Sarah Ryan**, professor

The IMSE department added a new lecturer this year. Guiping Hu came to Iowa State from the University of Pittsburgh, and her research interests include sustainable supply chain, operations research, sustainable agriculture, and biorenewable energy.

Practicing engineers can advance education with professional master's degrees

Moving from Cedar Rapids, Iowa, to Nashville, Tennessee, did not prevent **Ken Harms** from earning his master's degree in systems engineering in December 2008. Harms, director of engineering-engineering process improvement for Schneider Electric United States, completed work for his degree online through IMSE's professional master's degree program.

The program allowed Harms to achieve significant career goals while also advancing his education. "I have gained professional and personal growth throughout the program, and each has contributed to successes within my career."

IMSE also offers a professional degree in industrial engineering. The programs are offered through Iowa State's Distance Education program, where everything from watching lectures to completing assignments is done online through WebCT.

"When I found out I was moving, I took a small break from classes but knew I would be able to pick up with the program once I got settled," Harms says. "It was nice to not have to worry about transferring credits to a different program, and having the classes online contributed to my finishing the degree."

The graduate programs are offered with either a coursework-only or a creative component project option. Class sessions are offered via streaming media or students can request a CD with the course material. These options allow for a program that working professionals can fit in their schedules.

"Working with a major university gave me the flexibility and variety of classes that I needed," says Harms. "Continuing education is important for all professionals, and this option is a logical, accommodating way to help achieve career goals."

Don't miss an opportunity to reach your career goals!

Earning an advanced engineering degree gives you knowledge and skills that will help you excel in your career. And through the IMSE department's Distance Education programs, you can work toward a master's of engineering degree from your home while working in the industry.

The department offers two coursework-only master's programs that are convenient and flexible. Depending on your interests, you can pursue a master's of engineering degree in systems or industrial engineering—each offering you unique learning experiences that can change your career.



"The best thing about getting a master's of engineering through Distance Education is the opportunity it provides. Between the busy schedules of fatherhood and full-time employment, going to classes the traditional way just wasn't an option for me.

My career goals include departmental management and leadership roles, and I've found that to initially be considered and eventually succeed in these positions, postgraduate education is a must. I would not have the same opportunities for advancement without the Distance Education avenue."

*—Caleb Spangler,
supervising equipment engineer
with Kemin Industries*

Systems Engineering

- Develop analytical and management skills needed to design, evaluate, and build complex systems
- Work across disciplinary boundaries
- Take systems engineering core courses, as well as advanced engineering and nonengineering electives

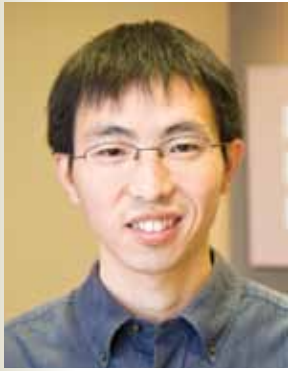
CONTACT: Doug Gemmill
515 294-8731
n2ddg@iastate.edu

Industrial Engineering

- Raise engineering knowledge and practice to the next level
- Gain both a broad and deep understanding of industrial engineering
- Take courses in operations research, manufacturing, and human factors, along with industrial engineering nonmajor electives

CONTACT: Lori Bushore
515 294-0129
bushore@iastate.edu

Wang's research leads to sustainability



IMSE Assistant Professor **Lizhi Wang**'s research aims to get people thinking critically about their green efforts.

Balancing the trade-offs between national energy and transportation infrastructures

The national energy and transportation infrastructures are becoming more interdependent through technologies such

as electric vehicles. Operated by multiple decision makers including consumers, suppliers, system operators, and service entities, these infrastructures may not be functioning with the best trade-offs between costs, sustainability, and resiliency. Wang will identify how to balance these trade-offs through network models and then use inverse optimization to design efficient incentive mechanisms to encourage change within these infrastructures.

Encouraging consumers to evaluate products

Wang also wants consumers to start thinking about green products, and specifically the costs and benefits associated with each technology. With mathematical modeling and optimization techniques, he assesses the actual impact of plug-in hybrid cars, demonstrating the potential increase in electricity costs that would occur if more people use plug-in vehicles. Thinking critically about these technologies, he says, is an important step in ensuring they will stick around.

Incorporating public policy

In conjunction with his research, Wang is reviewing public policy for a way to combine three separate guidelines established to reduce greenhouse emissions. If he is successful, Wang's work can help organizations get subsidies or some other incentive to begin implementing less traditional, greener technologies.

Ergonomics Laboratory up and running

In the recently established Ergonomics Laboratory, **Gary Mirka**, IMSE professor and department chair, is conducting applied ergonomic intervention effectiveness research. "We are looking for new tools and work methods that can reduce physical stress and injuries on high-risk jobs," Mirka says. One industry he and his research team are currently investigating is the commercial fishing industry.

To conduct this research, Mirka's laboratory has both a replica of a crab fishing boat and technical equipment used to quantify the stresses and strains on the fishermen. The crab boat allows Mirka and researchers to simulate the same physical motions and exertions as those working on a boat. "Workers are exposed to heavy lifting, slippery surfaces, and awkward body postures during their routine work activities," says Mirka. "We are testing several improvements in the laboratory, and then we will test them in the field."

Mirka and his team use an electromyography processing system to quantify the activity of muscles used to perform these strenuous exertions. They also use a device called the lumbar motion monitor, which allows the researcher team to capture three-dimensional motion of the spine of the fisherman while he performs the fishing activity. "In addition, the laboratory's force platform evaluates the ground reaction forces so we can evaluate the slip potential of a situation," Mirka says.

With his laboratory up and running, Mirka is looking forward to continuing his research to make people's jobs less physically demanding. "We want to make jobs easier for people, and this laboratory will help us design systems to do just that."



Heising's research takes her across the globe



Carolyn Heising with Dean Hassan Essa Al-Fadala of the Qatar University Engineering College.

Building a meaningful relationship

In a little over a decade, Qatar's economy has evolved from barely making ends meet in the pearling industry to thriving in the oil and natural gas markets.

Such rapid economic growth and development poses potential risks if safety is not on the forefront of everyone's mind. Aware of these risks, the country's leaders requested Heising share her expertise in safety engineering with engineers, managers, and government officials from around the country.

During a two-day workshop held in January 2008, Heising presented information about safety measures in the gas industry, with much of the material coming from her safety engineering course at Iowa

State. She was also invited to become an associate of the Gas Processing Centre of Qatar University and given the opportunity to meet with several corporate executives.

Heising's unique relationship with Qatar began in March 2007, when she became part of the Industrial and Systems Engineering International Advisory Committee. As a committee member, she and three other professors reviewed Qatar University's industrial and systems engineering program to identify ways in which the program can advance to meet industry and society needs.

The university's program enrolls only female students, and many of Heising's recommendations involved helping prepare

Optimizing U.S. energy structure takes Ryan and IMSE student to New Zealand

With funding from two multidisciplinary grants from the National Science Foundation awarded in 2005–06, **Sarah Ryan** began looking for the most effective and cost-efficient approaches to managing the U.S. energy infrastructure.

With support from the grants continuing through 2009, Ryan's efforts have been building momentum. Her research gained an international dimension in 2007–08 with assistance from two IMSE undergraduate students, **Bobbi Wendorff** and **Sarah Gidlewski**. The students updated data about the cost of fuels and capacities of transportation routes, providing Ryan with current information for her study.

With up-to-date data in hand, Ryan headed to the University of Auckland in New Zealand for a five-month visit to further her project at the Electric Power Optimization Centre. "New Zealand was a great place to study because the country's electricity market is much like several of the U.S. electricity markets," Ryan says, "but smaller." The centre's internationally recognized research also provided Ryan with access to experts working on projects seeking similar results.

Her research looked at two components of the energy structure: the fuel transportation network, which is used to move energy, and the electricity system, which is increasingly a competitive market. "My goal was to combine the fuel network with a model that represents an electricity market to determine how strategic behavior affects the most efficient and cost-effective way to get energy from point A, where it was extracted as fuel, to point B, where it would be used as electricity," Ryan says.



Sarah Ryan and Bobbi Wendorff recently studied New Zealand's electric market for insights on how to resolve energy shortages across the globe.

Wendorff traveled to New Zealand for the semester as well. She spent a majority of her time converting the bulk energy transportation model to a code readable in the General Algebraic Modeling System, which is a high-level modeling system used for mathematical programming and optimization. "My work allowed Dr. Ryan to use the code to compare data with other models and projects she was working on in the same software," Wendorff says.

She also took classes at the university. "It was fun to take engineering classes with international students to get a different perspective on how they go about work and life in general," Wendorff says. "This experience helped me broaden my perceptions and improve my communication skills."

Ryan is currently considering ways to add renewable energy to the mix and optimize network expansions. Two more IMSE undergraduates, Chelsea Tomek and Ju Xiong, participated in the research during summer 2009.

From making safety recommendations to working with advanced gas reactor technology, IMSE Professor Carolyn Heising has been sharing her knowledge in the Middle East and the West Coast.

these women to enter the male-saturated workforce. As a long-standing member of the Society of Women Engineers, Heising also emphasized the importance of keeping connected with other women in the industry. She offered a perspective that many of the leaders at the university had not considered, and her comments were well received.

Heising plans to continue to work with Qatar University well into the future, as she sees potential for a student and research exchange.

A new interest

During the 2008–09 academic year, Heising took a sabbatical leave that led her to a newfound research interest.

Heising collaborated with researchers at the General Atomics Company in San Diego, California, and while she worked with the organization's fission group, she helped develop advanced gas reactor technology for the Department of Energy. She was also involved with the Global Nuclear Energy Partnership, the Next Generation Nuclear Plant, and the National Nuclear Security Agency Russian program.

As she worked on various projects, Heising learned a great deal about the thorium-based fuel cycle. With a heightened interest in the topic, she began conducting research and documenting her findings. Her work resulted in several papers and reports that detailed the advantages of thorium fuel cycles as compared to uranium fuel cycles.

She found the advantages of thorium fuel cycles were especially apparent when dealing with advanced gas reactor technology.

Heising presented her findings during several invited seminars at the nuclear engineering departments of the University of California, Berkeley and the University of Michigan, Ann Arbor, as well as at the World Nuclear Association World Nuclear Fuel Cycle Conference held in Sydney, Australia.

Heising also is presenting a paper on the safeguard aspects of thorium fuel cycle utilization at the American Nuclear Society winter meeting in November 2009 in Washington, D.C.

New graduate scholars program begins this fall

Graduate students in the IMSE department have a new funding opportunity available to them starting this fall semester. Through the generosity of **Harold Reihman**, an engineering alum from the class of 1950, and his wife, Shirley, the department will now be able to supplement graduate students' current earnings, increasing the department's options for attracting high-quality students from around the world.

The new program, called the Harold and Shirley Reihman Graduate Scholars, will be available to students with the background and training needed to bring excellence to one or more of the research focus areas within the department.



Harold Reihman and his family were invited to Iowa State for a tour and luncheon in his honor.

estate plan to carry out his and his wife's commitment to helping others succeed. After the passing of his wife, Reihman and his family decided that seeing the impact of his donations and having input on how the funds were used would be an unparalleled honor.

In November 2008, he and his family visited Iowa State, touring the college and attending a luncheon hosted by the IMSE department. Reihman enjoyed showing off the campus that meant so much to him to his children, grandchildren, and other friends and relatives. "Visiting campus meant a great deal to my father and our family," says Reihman's son Dana. "Everything was more than we anticipated, and it was wonderful to experience it with him."

In addition to helping the department offer more opportunities to students, the Harold and Shirley Reihman Graduate Scholars program contributes to the College of Engineering's 2050 Challenge, which is the college's mission to address critical challenges of the future. Scholars programs advance the college's lead in cutting-edge research and educating tomorrow's innovators and leaders.

"With this scholars program, we are focusing on providing our students with research opportunities that will enhance their educational experience and the productivity of our research programs overall," says **Gary Mirka**, chair for the Department of Industrial and Manufacturing Systems Engineering.

Reihman has also made a commitment to IMSE in undergraduate scholarships in the past. "I look back on my years at Iowa State, and I remember all the good times I had," Reihman says. "I am proud to be able to help someone else during their college experience."

With a degree in general engineering, Reihman's career included a variety of positions and opportunities. In 1991, he retired as vice president of Ford Motor Company where he oversaw Visteon Corporation, a former division of the company.

Grateful for his accomplishments, he included Iowa State in his

Berger remains active in community and quality industry

While Professor Emeritus **Roger Berger** claims he is slowing down since retiring from Iowa State's IMSE department in 2001, the reality is he has been quite busy.

Berger taught at Iowa State from 1972 to 2001, with research interests in total quality management and using statistical methods for quality improvement. He worked closely with several Iowa companies to implement powerful



new quality management techniques.

In 2001, Berger, along with Donald Benhow, published *The Certified Quality Engineer Handbook*. The second edition of the book was

published in 2006. And while he has not recently published his own work, Berger reviewed manuscripts for *Quality Progress* magazine until last year.

Remaining active in the local Ames community, Berger spent two years as president of the local opera guild. He recently served as section chair for Central Iowa Section 1308 of the American Society for Quality (ASQ) and now serves as the membership chair for the organization. ASQ promotes and stimulates interest in the field of quality, and Berger is helping the section regain some stability in the area.

Berger and his wife, Kay, recently celebrated their 51st wedding anniversary, and the two have taken countless trips to New York City and Houston, Texas, to see their grandchildren. Berger also enjoys meeting up with other retirees in the area for weekly coffee sessions.

Amid traveling and staying active in the industry, Berger says listening to classical music and reading *The New Yorker* are favorite pastimes, along with his newest hobby—amateur astronomy.



Brandon Brinkman, a peer mentor for transfer students, offers advice from his own experience about transitioning to Iowa State from a community college.

Smoothing the transition to a bachelor's degree

Transitioning from a community college to Iowa State's IMSE department is getting easier by the year. The department recently began working with the Engineering Admissions Partnership Program (E-APP) to help students transfer from community colleges to Iowa State.

Through what is called the 2+2 program (two years at a community college plus two years at Iowa State equals a bachelor's degree in four years), students take most of their prerequisites at a community college. Then when they transfer to Iowa State, they focus on their major program courses.

While this is the first year working with E-APP, **Devna Popejoy-Sheriff**, the department's academic adviser, has been working with transfer students for several years. She has developed graduation plans for different community colleges that outline which credits will transfer to the IE program.

"Students come to Iowa State with credits that will count toward their degree, and that's important for transfer students," explains Popejoy-Sheriff. "They know exactly which courses they need to take to finish their bachelor's degree."

Even with such detailed planning, there still is some flexibility in the program that allows students to take upper-level courses according to their interests.

And the program is about more than just credits—it's about making the entire transfer process seamless. From peer mentors to virtual advising, the department is implementing several activities that will increase communication with transfer students before they get to Iowa State.

Brandon Brinkman is a senior in IE who transferred from Kirkwood Community College in fall 2008. He has been providing valuable feedback on his experience that has helped the department build the 2+2 program.

One example of some changes IMSE has made is with the department's Engineering 101 class. With a section just for transfer students, the class is more accelerated and has a slightly different focus.

"Transfer students already understand college life because they have been living it," Brinkman explains. "They need to learn more about the things that are unique to Iowa State like the career fair, internships, co-ops, and other opportunities."

Transferring from a community college brings many benefits for students that Brinkman experienced firsthand. The option is more affordable for many, and it helps transition students from high school to college. "Community college helped me ramp up my study skills and increased my confidence as a student," Brinkman says.

Both Brinkman and Popejoy-Sheriff agree that building a community and network helps transfer students transition to Iowa State. The department is working on a grant to develop a learning community and plans to hold an event for transfer students to visit campus to get a preview of Iowa State by attending class, going to a seminar with faculty, and participating in other activities that would get them acquainted with the university and other transfer students.

"Anything that can help break the ice and facilitate interactions with people will improve the transfer process," says Brinkman. "Once you get here, having students to work with on assignments and socialize with makes a huge difference."



Mirka named John Ryder Professor in Engineering

This fall, **Gary Mirka**, department chair in industrial and manufacturing systems engineering, was appointed to the John Ryder Professorship in Engineering at Iowa State University.

A recent \$1.8 million estate gift from Kirby Gray, a 1945 electrical engineering bachelor's degree graduate from Iowa State, established an endowed chair, professorship, and scholarship in the College of Engineering.

The professorship Mirka received honors John D. "Jack" Ryder (PhDEE'44), a former electrical engineering faculty member who was influential in Gray's life. Ryder, along with former electrical engineering department chair Warren B. Boast, constructed the AC network analyzer in 1949 that power utilities used to simulate entire transmission and generating systems. Ryder also was instrumental in helping to design the Electrical Engineering Building (now called Coover Hall) in 1942.

Alum donation helps IMSE offer undergraduates research experience

A generous gift from **Janet and Tim Jury** allowed the IMSE department to begin offering fellowships to high-performing undergraduate students, providing them with an engaging, hands-on research experience. In addition, these fellowships are intended to raise awareness of the opportunities available in graduate school. Since the fellowships started in 2005, the department has seen more of its undergraduates enroll in the graduate program than in the past decade.

Tim Jury, IE'80, finished his second term on the Engineering College Industrial Advisory Council in 2008, and he formerly served on an IMSE task force that assessed the department and provided recommendations for its future direction.

"The department was receptive to charting a new course and direction for its programs," he

says. "As faculty and staff began implementing some of the task force recommendations, I knew they were committed to improving the department."

As he reconnected with the college and department, Jury sought additional ways to help the department advance. "I talked with Pat Patterson, the IMSE department chair at the time, and we decided these fellowships would really benefit the department and align with its future goals," he says.

Students who have received the fellowships complete a variety of projects, all of which help introduce advancements into the undergraduate classroom. Some past projects included developing tutorials for a newly acquired laser scanner and coordinate-measuring machine arm, which allowed more undergraduates to learn how to use the equipment. Additionally, students created informational materials that allowed the department to incorporate new technologies into courses.

Paul Wilhelm, who recently completed his master's degree, received a fellowship as an undergraduate in 2006. He studied how designing for manufacturability could be incorporated into the curriculum.

"The fellowships provided insight into how classes are taught," says Wilhelm. "I built close working relationships with professors and realized the potential that new concepts can bring to the classroom."

The department plans to continue offering these fellowships as funding is available, providing students with a rich learning opportunity and experience that enhances their undergraduate education and prepares them for their future careers.



Janet and Tim Jury's contributions have helped students get research experience early in their academic careers.

Jessen receives Walkup Prominence award

Keith Jessen (IE'71) received the 2009 Joseph K. Walkup Prominence in Industrial Engineering award. Beginning his career in 1971 as a production engineer for what is now Rockwell Collins, Jessen advanced to director of facilities services for Rockwell Collins, where he provided planning and engineering support for the company's national and international facilities. During his career, Jessen was an invaluable resource and advocate for the department through serving on the department's Industrial Engineering Advisory Council from 1978 to 1999 and chairing the council from 1990 to 1997. He now lives with his wife, Linda, in Livermore, California.

The Joseph K. Walkup Prominence in Industrial Engineering award is named after Joseph K. Walkup, who served as department chair from 1942 to 1973. It recognizes outstanding achievement in the industrial engineering profession.

Keith and Linda Jessen at the department's honors ceremony.





Sarah Gidlewski, an IE undergraduate, trains puppies for Leader Dogs for the Blind

Scholar turns to raising leader dogs

Sarah Gidlewski is a typical Iowa State student, except for one small, furry fact—she brings a puppy to class with her every day. Don't worry; she's not breaking any rules. Gidlewski, a fourth-year industrial engineering major, is a puppy raiser with Leader Dogs for the Blind, an organization located in Rochester, Michigan.

Gidlewski is also a National Merit Scholar and Presidential Scholar. The prestigious scholarships allow Gidlewski to focus on things other than money, which frees up her time to study and serve the community through puppy raising. In fact, she chose industrial engineering because it allows her to explore her varied abilities and interests.

"Industrial engineering has a business aspect that worked for me," Gidlewski recalls. "I like that it combines math, science, business, and people." While embracing the mix her educational program offered, Gidlewski decided she needed something to do other than homework.

As a puppy raiser, she volunteers to raise a puppy from an organization specializing in breeding and training leader dogs—trained assistants for the blind, visually impaired, or deaf. The puppies are approximately seven weeks old when they go to live with their foster families and return to the organization when they are one year old. The primary responsibilities of a puppy raiser are to teach obedience

and socialization, while still allowing the animal to be a puppy.

Gidlewski teaches socialization to her charges by bringing them to campus with her. According to Leader Dogs for the Blind, puppies in training do not have access rights, so businesses must grant permission for the puppies to be on the premises. For this reason, Gidlewski had to obtain the university's permission to bring any of her dogs to her classes.

"The professors and students are very understanding and supportive," Gidlewski says.

She now has a 10-month-old black Labrador retriever named Jasper.

This unique experience is something Gidlewski learned about in elementary school.

"I read two books about people who had leader dogs," Gidlewski says. "Since then, the idea had been rolling around in the back of my mind." After applying to become a raiser and receiving a manual of rules and regulations, she received her first puppy in high school. She then took a small break from raising puppies to finish high school and begin her college career at Iowa State.

As Gidlewski continues her studies in industrial engineering, she also values the unique lessons she learns from puppy raising. "These dogs do more for me than I could ever do for them," she says.

Industrial engineering alum earns prestigious Alumni Association award

Staying connected with their alma mater has been a long-standing commitment for **Roy** and **Sandra Uelner**, and their generosity and dedication to Iowa State University has made a lasting impression.

During the 2008 Homecoming celebration, Roy, BSIE'57, and Sandra, BS home economics journalism '58, were presented

with the Iowa State University Alumni Association Alumni Medal, the association's premier award that recognizes alumni for long, loyal service to the university through alumni-related activities.



The Uelners have been involved with the Alumni Association since the early 1970s, helping lead activities and events for the association in Milwaukee, Wisconsin, and making a gift that qualified for Order of the Knoll membership. Since then, Roy has been on the Alumni Association Board of Directors, where he served as president from 1984 to 1985, and is an Iowa State University Foundation governor. The Uelners are currently cochairs of the Circle, which is a society that recognizes former presidents, chairs, and executive directors of the Alumni Association, and members of the Order of the Knoll W. M. Beardshear Society.

The couple's personal accomplishments launched their involvement with the association. "We have both experienced success beyond our wildest dreams," Roy says. "And we relate our achievements to the education we received at Iowa State."

Roy and Sandra also enjoy bringing alumni together. "The more involved you become with Iowa State, the more friends you make and your connection to the university grows stronger," Sandra says.

The Alumni Center, a building created to strengthen the ties of alumni, was dedicated on the same weekend the Uelners received their award. "The center is like a dream come true," Roy says.

"When you bring wonderful people together in a place like the Alumni Center, great things will happen for the university," Sandra adds.

Roy and Sandra continue to follow their education programs. "I am impressed with how much the industrial engineering program has grown," Roy says. "A lot has changed since I attended class, and the department continues to adapt to the needs of industry."



Looking back: Lynn Franco reflects on her years with the department

When **Lynn Franco** joined the industrial engineering department as a receptionist in 1981, she did not know she would eventually fill every role in the department's office throughout the next 28 years of her career.

In the fall of 2008, after working as a receptionist and graduate program secretary, as well as assisting the department chair with everything from coordinating conferences and special events to hiring faculty and staff, editing the IMSE newsletter, and managing whatever else happens to come up, she began phased retirement. As 30 years of employment draws near, Franco took a moment to reflect on her experiences, opportunities, and memories of Iowa State.

"I've seen a lot of changes throughout the years," Franco says. "The department has moved three times in two different buildings, providing us with more space for labs and offices. In our most recent move, all the faculty and staff in the IMSE department are finally together on the same floor, which is a very good thing."



Lynn Franco then (above) and now (left).

But she has seen more than physical changes in the department. "The curriculum has shifted

from being specifically focused on industrial engineering to incorporating manufacturing, human factors, systems, and management. Students like the broad-based engineering education that they receive."

Among these many transformations, Franco's appreciation for and enjoyment of working with others remains unaltered. "My coworkers (faculty and staff) are like family to me, and each day goes quickly because we enjoy being together," she says. "I also look forward to seeing alumni that come to visit. When they come back to campus it seems that the main office is their first stop. They like to see what's new in industrial engineering and reminisce about their days on campus."

Additionally, she has appreciated the opportunities to work with students, especially through her involvement with the student chapter of the Institute of Industrial Engineers (IIE). "I've served as an adviser with a faculty member to IIE and over the years have gone on several bus trips with students to conferences from Texas to South Dakota," she says. One of the largest jobs she took on was helping students host the IIE regional conference held at Iowa State several years ago. She feels that working with students who have a lot of energy helps keep her young.

Franco will fully retire in August 2011. She plans to enjoy time with her family and friends. "I will stay in Ames and drop by the office to see what everyone is up to. I love it here!"

New office—same great staff

Facilitating collaboration and a cohesive work environment, the recent relocation of all IMSE faculty and staff to the third floor of the Black Engineering Building has been a great change for the department. The move was part of a renovation that allows the IMSE and mechanical engineering departments to more effectively use the building's space.

Among the renovations was a beautiful new main office for the department, which is now located in 3004 Black. And while much has changed within the office, the staff has been the same for years. **Lori Bushore**, **Donna Cerka**, and **Lynn Franco** have been together in IMSE since 1989. Industrial engineering has been Donna's employer since 1978, Lynn's since 1981, and Lori's since 1989. A close group, they say the new space is great, and the prominent location of the office helps students and visitors find their way around the floor.

They all agree that among the visitors they help, they would like to see more IE alumni. "It's always great to have our alumni stop by when they are in Ames," they each say. "We can show off our new location, reminisce, and see what they are up to—the invitation is always open!"



The IE office is in a new location, but the same great staff are there to help students and visitors. From left to right: Lori Bushore, Lynn Franco, and Donna Cerka.

Sales engineering courses offered online and in the classroom



Dave Sly introduces students to an important part of being an engineer through new sales engineering courses.

Whether discussing an idea internally to a manager or promoting technical products externally to a customer, sales concepts are an integral part of engineering. Through two new IMSE courses, students will now be able to learn the ins and outs of sales practices specifically related to business-to-business sales.

A generous donation from Trane, Inc., provided the necessary resources to step out in this exciting new direction. Last fall, the department offered Technical Sales for Engineers, which was the first course of its kind for the College of Engineering and Iowa State. The course reviews the entire technical sales process, from market segmentation and client value analysis to international sales issues. A course building on these concepts was offered in the spring semester.

Dave Sly, PE, MBA, and lecturer with IMSE, teaches the courses. "We approach sales as a systematic process, not an innate ability," he says. "Students will have the opportunity to experiment with the process through simulations, applying and practicing the lessons they learn."

Engineers who are prepared with sales skills will bring a unique level of expertise to their position. "Not only will they have technical knowledge and problem-solving skills learned through their engineering education," Sly says, "they will also be able to communicate with key stakeholders and clients, presenting ideas or products in a way that quickly moves these individuals through the decision-making process."

Following persistent comments and support of the idea from engineering alums, the college established an industry advisory steering group. "The group helped provide insight for the curriculum," says **Frank Peters**, IMSE associate professor who kicked off an initiative to develop sales engineering courses at Iowa State. "With their input, we were able to structure the courses to give students knowledge and skills that will help them achieve success in their careers."

With nearly 15 percent of the college's graduates entering a technical sales- or marketing-related career, these courses are a welcome addition to the curriculum. They are available collegewide, with hopes from Peters and Sly that they will someday become part of a minor.

Fall 2009 marks the third semester for the IE 450X technical sales course and also the first semester this course is available online through Engineering Distance Education. "We have had quite a bit of interest from technical companies to have their engineers obtain a formal education on the sales process," says Sly. "Of the programs we have seen, this program provides the most focused educational program on technical sales available via the Web."

At the end of each semester, Sly gets feedback from students on the course. "We have made improvements to the course after each of those semesters based on the comments we receive," he says. "This feedback has provided us with the confidence that this program was ready for delivery to industry, and offering online was a great way to do it."

Industrial engineering student one of two award winners from Iowa State

Beth Takemoto, a recent industrial engineering graduate, was one of two Iowa State University students—and four seniors overall at Regent universities in Iowa—to have been awarded the second annual Alliant Energy Erroll B. Davis Jr. Award recognizing engineering or business students from underrepresented groups.

Takemoto, who graduated from Iowa State in May 2008, works in Ottumwa, Iowa, for John Deere Ottumwa Works as a manufacturing engineer. While an undergraduate, she had interned for three sessions at John Deere and studied in Newcastle, Australia. "Iowa State has allowed me to really enjoy my time as a student by giving me many opportunities to grow not only as a student but also as an individual," Takemoto says.

The award was created by Alliant to honor Davis, who served as chairman of the board of Alliant Energy Corporation from 2000 to 2006. Davis retired from his dual roles as president and CEO of Alliant to become chancellor of the University System of Georgia, where he oversees the state's 35 public colleges and universities. The award, made possible through a gift of \$400,000 from the Alliant Energy Foundation, recognizes its recipients' academic achievement, leadership in campus and community organizations, and potential for future career success. As part of an agreement between the Alliant Energy Foundation and the Regent institutions, the gift will ensure that the award is presented annually in perpetuity and will honor up to four students each year.



The IMSE department awarded 100 scholarships to its students during the 2008–2009 academic year. Several of the recipients made it to the department's Honors Luncheon in May to be recognized.

Ceara Kirchner, a fifth-year IMSE student, had this to say about the benefits of having received a scholarship: "I was able to work less hours per week, which allowed me to concentrate on my classes and become more involved at Iowa State."

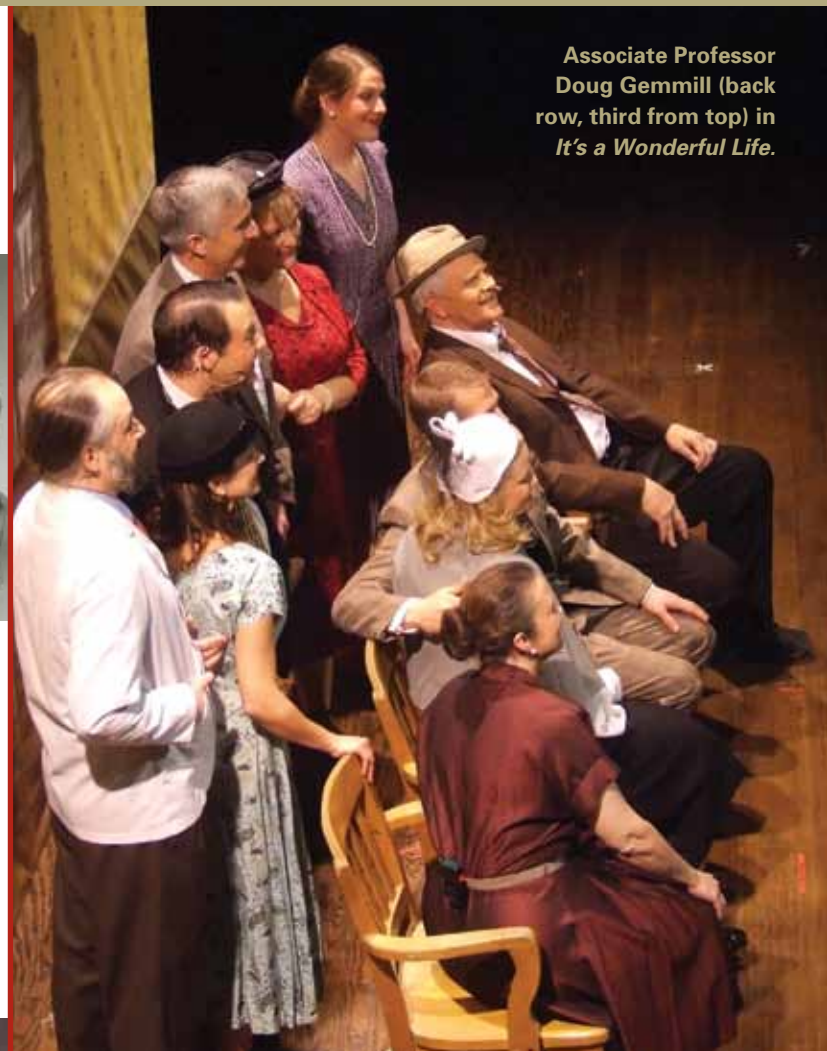
In memoriam

IMSE recognizes two emeritus professors who passed away since the last newsletter was published.

Jean Charles Hempstead, 104, passed away on April 25, 2008. He earned his BS in civil engineering from Iowa State in 1926 and returned to the university after his military retirement, where he taught for nine years and retired in 1973. As an undergraduate, he was a member of Scabbard and Blade and Tau Beta Pi; as a graduate student, Pi Mu Epsilon and Phi Kappa Phi; and as a faculty member, Cardinal Key. He received the Faculty Citation in 1971. Hempstead was also a member of Theta Xi social fraternity, registered professional engineer, life member of the Iowa Engineering Society and the American Association for Engineering Education, and past member of the National Society of Professional Engineers. Hempstead was preceded in death by his wife, parents, two sisters, and two brothers; he is survived by several nieces, nephews, and many friends.



Samuel "Keith" Adams passed away on June 5, 2008, at the age of 70. Adams earned his BS from Rensselaer Polytechnic Institute and an MS and PhD in industrial engineering from Arizona State University. He was a dedicated educator in human factors and ergonomics, working for eight years with Oklahoma State University prior to joining Iowa State's IMSE department as an industrial engineering professor. After 32 years at Iowa State, Adams retired in 2006. He published broadly in the human factors and ergonomics field on topics such as auditory warnings, inspection, heat stress, manual materials handling, and work measurement. More recently his work focused on conservation and the environment. He was a member of the Human Factors and Ergonomics Society, Sigma Xi Scientific Research Society, and Izaak Walton League. Adams is survived by his wife, Eileen; son, Dr. Douglas Scott Adams, his wife, Dr. Lynn S. Adams, and their daughter, Taylor Elyse; and daughter, Carey Margaret Adams Knouff, and her husband, Dr. Christopher W. Knouff.



Associate Professor **Doug Gemmill** (back row, third from top) in *It's a Wonderful Life*.

Gemmill takes the stage in local theater production

Associate Professor **Doug Gemmill's** experience includes nearly 25 years of teaching students about design optimization and systems engineering—and singing and acting for a good cause.

During the 2007 holiday season, Gemmill traded his professor hat for the hat of Mr. Martini, the local barkeep in *It's a Wonderful Life*. The Ames Community of Churches, a coalition of seven area churches, held the production to benefit Habitat for Humanity of Central Iowa.

Gemmill has previously acted in plays, but the musical was a whole new experience. "I had to pretend I was Italian and nail a challenging solo," Gemmill says. "It was a tremendous amount of work and put me a little outside of my comfort zone, but it was worth it."

Proceeds from ticket sales of the production were \$25,000, and with a matching grant from Habitat for Humanity of Central Iowa, the total amount raised for a family building a home in Colo, Iowa, was \$50,000.

"We had a lot of fun, and it benefited a great cause," Gemmill says. "I would definitely do it again if I were given the opportunity."

IE alum awarded Professional Progress in Engineering Award



Craig Mahoney, chairman of the Department of Orthopaedics at Mercy Medical Center in Des Moines, Iowa, accepted the Professional Progress in Engineering Award

(PPEA) during last spring's Marston Club and Patent Dinner.

The College of Engineering awards the PPEA, which was established in 1989, for outstanding professional progress, personal development, and distinguished community service by engineering alumni under the age of 46.

Mahoney received his bachelor's degree in industrial engineering from Iowa State in 1991, then decided to pursue medicine. He attended medical school at the University of Iowa, completed his residency at Creighton University in Omaha, Nebraska, and was selected for a prestigious fellowship at the Hospital for Special Surgery in New York City.

Despite changing career paths, Mahoney uses his engineering knowledge and research in areas such as infection, joint replacement, and prosthesis performance to enhance the care that his patients receive and advance the practice of orthopedic surgery. Additionally, he has published 14 journal articles and authored five chapters of orthopedic textbooks that are used in training programs throughout the country.

In 2008, Mahoney became the third person in central Iowa to receive the Arthritis Foundation of Iowa Tribute to Excellence Award. He also holds prestigious positions as a fellow of the American Academy of Orthopaedic Surgeons and as president of the Polk County Medical Society.



Paul Adams

Alumni updates

Paul Adams, BSIE'80, is currently employed as a senior consultant with Applied Safety and Ergonomics in Ann Arbor, Michigan. After earning his bachelor's degree, Adams continued his education and holds a PhD and an MSE in industrial and operations engineering from the University of Michigan, Ann Arbor, and an MS in industrial safety from Central Missouri State University. Adams provides consulting services that include litigation support, occupational safety, and ergonomics/human factors, and he is also an adjunct professor at the University of Michigan. He served as the president for the Board of Certified Safety Professionals in 2008.



Roy King

Roy King, BSIE'76, is a board member of CompuPay, a private payroll outsourcing and HR services company owned by Willis Stein & Partners. He also served Rockefeller & Company as managing director and was president and CEO of Rokit Solutions, a subsidiary of Rockefeller & Company. Prior to joining Rokit, King was president and chief operating officer of Gevity, a publicly traded provider of HR outsourcing services. He has also led other technology and services companies including Mercator Software, Inc., where he served as chairman and CEO, and IBM Global Services where he was a general manager based in Europe charged with growing the services business. Prior to IBM, King was in the consulting industry for twelve years as a partner with Booz Allen, KPMG, and TB&A. King received his MBA from the Harvard Business School in 1982.



John K. Peterson

John K. Peterson is president and CEO of Amana Society, Inc. In that role, he leads both the Amana Society and its subsidiaries, Amana Society Service Company and Amana Farms Inc. His former positions include president of Alliant Energy International and vice president of Pacific Enterprises International. Peterson received three degrees from Iowa State: an AAS in mechanical technology in 1972, a BS in industrial engineering in 1974, and an MS in industrial engineering in 1975.



Steve Sukup

Steve Sukup, BSIE'79, has been a co-owner of Sukup Manufacturing Company since 1978 and is currently the company's chief financial officer. Sukup Manufacturing Company is a 45-year-old, family-owned agricultural business that manufactures grain bins and drying equipment. Sukup received the Professional Progress in Engineering Award from Iowa State in 1997 and currently serves as president of the Iowa State University Research Foundation. He also served eight years in the Iowa legislature.

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