Watson Review

New committee to mentor women engineers

Women comprise 14 percent of the students at the Watson School and 11 percent of the engineering workforce in the United States. To support and encourage women at the Watson School, a new committee has formed to create networking opportunities with women engineers in the Binghamton area and beyond.

Binghamton University's Society for Women Engineers (SWE) corporate network committee held its first event this spring, a “speed mentoring” program, modeled on the speed dating format, to set up mentoring partnerships between Watson School students and professional women engineers in Broome County. The idea came out of an SWE event at the University’s Alumni Weekend last October.

“There aren’t a lot of women engineers and we’re really trying hard to increase the numbers,” says Wendy Neuberger ’81, MBA ’84, a distinguished engineer at IBM Corp. and the corporate counselor for the Binghamton section of SWE. “One of the ways that we want to do that is to provide support to female students who might otherwise walk away because the environment is too difficult.”

A recent National Research Council study, “Women Scientists and Engineers Employed in Industry: Why So Few?” found that fewer women enter the profession because working conditions for women in the field are viewed as being less favorable. The report identified isolation as the major contributor to the hostile work environment many women engineers face and suggested that networks and other support systems developed in colleges, businesses and corporations can break this barrier.

At the Watson School, women have historically excelled academically, even though they are outnumbered by men in their classes, according to Sharon Fellows, assistant director of the Engineering Design Division, which coordinates the freshman program. 

Simulation Course at Binghamton Reaches 25th Anniversary

When Frank Cardullo MS ’72, a professor of mechanical engineering at the Watson School, launched a four-day course for professionals on flight and ground simulation devices in 1983, he expected it would last three or four years before the market for simulation training would be saturated.

The first program attracted 46 people from across the country to Binghamton, the birthplace of flight simulation in 1929 when the inventor Edwin Link created the first simulator to train U.S. Army Air Force pilots.

Now in its 25th year, Binghamton's simulation course has become the most comprehensive program of its type in the world, annually drawing researchers, military officials and industry professionals from around the globe. When the course was offered in January, about a third of the 87 participants came from overseas and another third represented U.S. and...
Advocating for new initiatives in research and sustainability

In March, I took part in my first-ever Binghamton University Advocacy Day, where dozens of representatives of the University traveled to Albany. This seven-year-old program to share information with our political representatives provides an exceptional opportunity to highlight the value and importance of Binghamton University to New York state.

Our theme, “Growing Opportunities: Think Binghamton University,” fed directly into the activities of the Watson School from ground-breaking research efforts such as Jessica Fridrich’s digital identification and forgery detection and SB Park’s reliability work for Samsung Electronics, which you will read about in this issue.

As we look at growing opportunities, we are also casting an eye to securing green energy resources. Global responsibility and sustainability issues are critical to our economic prosperity, national security and, indeed, our way of life. Binghamton was recently selected as one of the key partners in a new academic coalition with the Solar Energy Consortium that will enable research and development in sustainable energies. The Watson School has a proven track record of multidisciplinary partnership between engineering, business, physics, chemistry, biology and nursing. In addition, research centers like the CAMM and the Institute for Materials Research have demonstrated pre-commercial manufacturability of novel devices.

Research work of our faculty and students is focused on harnessing the green and sustainable technologies to improve the social well-being of the people of our region, state and planet. That is the purpose of the Watson School, to promote greater access to the highest quality education, cutting-edge research and potential contributions to society.

Advocacy Day is not a one-day exercise. Each member of the faculty and staff of our campus, every student and parent, every community member and every graduate has a stake in the success and strength of the Watson School. Our new advocacy organization — the Binghamton University Think Tank — encourages you to join us in shaping the policy debates and the public opinions that determine the future of our campus. I encourage you to go to our website, http://think.binghamton.edu, to learn how you can support this effort.

— Seshu Desu, Dean

Simulation course recognized

continued from page 1
Seungbae Park excels in reliability engineering and student mentoring

Seungbae “SB” Park jokes that the only difference between working in industry and working at a university is that the latter comes with no vacations — and very little sleep.

At 2 a.m., Park, an associate professor of mechanical engineering, is still at his computer answering e-mails to his graduate students. When he travels with his family on weekends, he constantly checks e-mail on his iPhone. And during the summers, when most people take vacations, his lab moves into prime-time research mode.

“Theoretically I can take my time off anytime in academia,” says Park, who was an engineer with IBM for seven years. “But I really can’t. I work 24/7. At midnight, I am on the phone talking to my students. They send e-mails at 2 o’clock in the morning. I respond in two minutes.”

That intense dedication has earned Park an international reputation as an expert in the reliability of electronics packaging technology. He has worked with companies throughout the United States, Europe and Asia, attracting $2.2 million in external research funding since he joined the Watson School faculty in 2002.

One company Park brought to the research fold of the Watson School is Samsung Electronics of South Korea. Now a member of the Integrated Electronics Engineering Center (IEEC), a research center on campus, Samsung contracted with Park to work on the reliability of its cell phone products five years ago.

“Samsung had not been involved with the University prior to SB’s effort to get them involved,” says James Pittaresi, chair of the mechanical engineering department. “Without SB, Samsung probably would not have joined the IEEC and become a partner with Binghamton University.”

In another research project with Boeing and the South Korean Air Force, Park is investigating how the service life of the F-16 fighter jet can be extended. Specifically, Park is researching how to quantify scientifically the damage that occurs to the aircraft as it ages.

“When they design the aircraft, they design it, for example, for 20 years of life,” Park explains. “Once that life is passed, they have to throw it away. But it is too good to throw away. The prime consideration is: How reliable is it going to be if we extend its service life?”

Growing up in Seoul, South Korea, Park was first attracted to aerospace engineering and majored in that field at Seoul National University. After earning his bachelor’s and master’s degrees there, he came to the United States to pursue a doctoral degree at Purdue University.

To his surprise, he was recruited by IBM’s Microelectronics Division in Endicott, N.Y., after he graduated in 1994, even though he didn’t know anything about IBM. “I thought it was a mistake,” he recalls. “How could they be interested in an aerospace engineer?”

But it didn’t take long for Park to make the transition from aerospace engineering to computer engineering. His doctoral research had focused on structural engineering and solid mechanics.

“Even IBM, in the end, has got to build some tangible product,” says Park, who was responsible for the reliability of the company’s flip chip technology. “If it is reliability for aerospace engineering, then how safe is that airplane while it is flying? The same logic will apply to a computer. If we use it under normal conditions, how long will that product last?”

Park joined the faculty of the Department of Mechanical Engineering primarily because he wanted to broaden the scope of his research in reliability engineering.

As a teacher, Park is respected by his students for his dedication in overseeing their research and in jump-starting their careers. He holds two formal meetings with his 11 graduate students each week.

“He gave me experiences which were totally hands-on from an industry point of view,” says Ganesh Iyer ’05, an assembly and interconnect technology engineer at Cisco Systems Inc. in San Jose, Calif.

For Ramji Dhakal ’08, who earned a PhD in mechanical engineering, Park is the reason he was hired at Microsoft Corp. Without Dhakal’s knowledge, Park had forwarded his student’s resume to Microsoft before he graduated.

“I owe my job to him,” Dhakal says, “but more than that, he’s very thoughtful and caring.”
Mini-symposium held to honor retiring professor George Klir

Nearly 150 scholars and students gathered at a mini-symposium at Binghamton University last September to honor George J. Klir, a distinguished professor of systems science who has retired after nearly 40 years at the Watson School.

Scholars from around the world gave presentations on the work to which Klir devoted his life: uncertainty and information in systems. The six speakers at the event included Lotfi A. Zadeh, a professor at the University of California at Berkeley who is considered the inventor of fuzzy logic; Janusz Kacprzyk, a professor at the Polish Academy of Sciences in Warsaw and president of the International Fuzzy Systems Association; and Dimitar Filev, a senior scientist at Ford Motor Co. and president of the North American Fuzzy Information Processing Society.

The author or co-author of 18 books, Klir spoke at the event about the main influences on his work, focusing on his association with Zadeh and two other scholars who were pioneers in the systems science movement. In turn, speakers at the mini-symposium gave a tribute to Klir by discussing how he had influenced their research.

“It was an excellent idea and it was very well organized,” said Klir, a distinguished Bartle professor of systems science who is now awaiting proofs of his 19th book, which he co-wrote with Zhenyuan Wang, a professor at the University of Nebraska. The book deals with generalized measure theory and will be published later this year.

Although the Department of Systems Science and Industrial Engineering held a retirement event for Klir last spring, faculty members wanted to organize a send-off that was more research-oriented and educational, said Hal Lewis III ‘77, MS ‘86, PhD ’95, an associate professor of systems science.

“George is a very, very special individual,” Lewis said. “He’s a scholar in a class in which there are only a few people who are as well known around the world or have done as much to delve into so many new branches of science.”

A native of Prague, Czech Republic, Klir joined the faculty at Binghamton University as an associate professor in 1969 and became a full professor three years later. Appointed a distinguished professor, the highest rank conferred by the State University of New York, in 1978, Klir served as chair of the former department of systems science for 14 years.

During his tenure, Klir received 16 research grants from the National Science Foundation, the National Aeronautics and Space Administration, the U.S. Air Force, the Office of Naval Research and North Atlantic Treaty Organization.

The presentations at the mini-symposium will be published in the International Journal of General Systems, a publication for which Klir has been editor-in-chief for 34 years. Klir also edits an international book series on systems science and engineering.

New space gives computer science department an advantage

In one of the Computer Science Department’s new conference rooms, graduate students have been holding a series of seminars on how to use research tools or defend a dissertation. Weekly colloquia featuring researchers and industry professionals are being offered and the department’s 23 faculty members can now fit into the same conference room for a meeting.

Since its new 9,800-square-foot area opened last fall, the department has been showcasing its space to visitors with lectures and new programs. Part of a $3.1 million renovation of the Engineering Building, the retrofitted area includes three conference rooms, nine laboratories and four faculty offices.

For students and faculty, one of the main benefits of the new space is the creation of a unified lab for research. In the past, the department’s research space was scattered throughout the Engineering Building, but now it is centralized in one location.

“There are faculty members who used to work in very close areas but they were in separate labs,” says Kanad Ghose, chair of the Computer Science Department. “Now these faculty members are sitting in the same lab and their students are talking to each other. We have a lot of cross-pollination going on. The synergy is incredible.”

Ghose said the department was reluctant to bring in industry professionals before the renovation because there was not enough space and what was available was not attractive. But now, Ghose says, “we can proudly show what we’re doing.”

Last fall, a group of graduate students organized a series of seminars to offer students a chance to give presentations on topics of their choice. The talks are now being given in a new conference room that can seat 40 people.

“Giving public presentations has always been one of my personal fears,” says Michael Head ‘99, a computer science graduate student from Binghamton who organized the series. “So for me and for a number of students, if you have a way to practice that on a regular basis, you sort of get the feel of how to give a presentation.”
New companies are launched by growing number of Watson faculty

“Engineering is not about doing science,” says Ken McLeod, chair of the bioengineering department at the Watson School. “It’s about creating new products and getting them out in the market.”

With that philosophy in mind, McLeod has created eight companies since 1980, including two that are spinoffs from research conducted at the University. Both companies involve inventions of medical devices, and one of his products, a device that monitors muscle force, is expected to reach the market next year. “About half a million companies are started every year in the United States,” McLeod says. “The future economy is about new ventures and new start-ups.”

In the last three years, the number of companies launched by faculty at the University has grown, and most of the start-ups involve new technology, according to Eugene Krentsel, assistant vice president for technology transfer and innovation projects. Many of the companies founded by faculty members are housed in the Start-up Suite in the Innovative Technologies Complex, which offers low-cost office space, a state-of-the-art conference room, access to business equipment and a receptionist.

McLeod founded his latest company, Sonostics Inc., in 2005. The company’s product can measure muscle force in people who have been injured or in those who want to prevent injury or improve performance. Designed for coaches, trainers or physical therapists, the product will be out on the market in a year.

In the meantime, Webscalers, another company formed by a Watson School faculty member, launched its first product last August. Weiyi Meng, a professor of computer science, started the company in 2002, after conducting the research for the venture at Binghamton.

Webscalers provides research and development in information integration, creating unified access to multiple Web sources. Its first product is a website called AllInOneNews (www.allinonenews.com), a news meta-search engine that connects 1,800 news sources from nearly 200 countries and is available at no cost. “This is just the first product to showcase our capability,” Meng says. “We are developing other products that would be more commercial and more viable to provide revenue.”

Watson students work to make a difference in the community

When one of her classmates slipped down a hill in a wooded area behind campus known as the Nature Preserve, Kelsey Pieper saw it as an opportunity to put some of her engineering skills to use.

So one Saturday last November, Pieper, a mechanical engineering major and now president of the Binghamton chapter of Engineers Without Borders, rounded up 100 Watson School students to build a staircase along the slope. Armed with a $250 grant from Watson School Dean Seshu Desu, the students constructed 20 stairs, trenches to divert rainwater away from the slope and boardwalks for hiking.

“The students loved going out and doing something,” says Pieper, a junior from Albany. “It helped our organization and it helped our school. Overall it was a great project.”

Founded in 2005, the Binghamton chapter of Engineers Without Borders last year sent a group of undergraduates to build a healthcare facility in Belen, Peru, a poor community on the Amazon. And locally, the chapter is building a storage structure for the Boys and Girls Club in Endicott.

Another Watson School student, Shashank Khandekar ’07, helped organize a food drive for the Community Hunger Outreach Warehouse (CHOW), the foodbank for Broome County. His efforts helped students and faculty in the Department of Systems Science and Industrial Engineering collect 1,046 food items, more than any other department on campus, for the Cans Across America competition last fall.

“I think it was a very good cause,” said Khandekar, a management engineer at Virtua Health in Marlton, N.J. “We owe it to the community, the department and the school.”

For Brianna Cleary, a junior mechanical engineering major from Smithtown, N.Y., her mother’s diagnosis with lung cancer was what prompted her to volunteer for the Relay for Life, a fundraiser for the American Cancer Society. For the past two years, Cleary has headed one of several subcommittees that plans the event, which raised $100,000 last year. This year’s relay was held on April 11.

“If I can do something to help my future, this is a great way to do it,” Cleary said.
Team trivia contests become a big hit for Watson students

How old is the oldest working light bulb? (Just over 106 years)
What was the name of the dog sent into space aboard Sputnik? (Laika)
What is the population density of New York state? (400 per square mile)

At least three times a semester, Watson School students have puzzled over these and other brain teasers at Team Trivia contests specifically designed for engineering students. Launched in 2006, the trivia events are now attracting up to 80 students to spend a weeknight competing in teams, all while munching on free pizza in the Watson Commons.

The trivia challenges are the brainchild of Scott Craver, an assistant professor of electrical and computer engineering who noticed the growing popularity of Team Trivia events in bars and restaurants in the Binghamton area. Craver saw the trivia contests as an opportunity for Watson students to test the knowledge they had gained in the classroom in an entertaining way.

“If you have a good education in engineering, then it helps you in the Team Trivia challenge,” Craver says. “But to win, you have to know a lot. You have to know a lot of the little things.”

At the Watson School trivia events, four rounds are played, each with five questions, followed by a final challenge in which the teams can wager all their points and double their score or lose everything. The team with the most points wins a gift certificate at a local pizzeria.

Along with Craver, who comes up with the trivia questions, the events are organized by the Binghamton University Chapter of the Institute of Electrical and Electronics Engineers (IEEE), which provides the food and gift certificates.

“It’s sort of a rest and relaxation from the engineering work,” says Houtan Fansalek, a senior computer engineering and computer science major and chairman of Binghamton’s IEEE chapter. “It’s fun and we’re always learning at the same time.”

Computer science students win awards at national contests

Caleb Loverro ’07 slept three hours a night during a two-day period last fall while competing on his own in a cyber security team contest sponsored by the Polytechnic University in Brooklyn, N.Y.

A 24-year-old computer science graduate from Owego, N.Y., Loverro did so well in the competition that a new category was created for him — Best Individual Competitor. Out of the 14 college teams that participated, Loverro won fifth place as well as winning a second and third place in two other computer challenges that were part of the competition.

“It was interesting to put all this stuff I’ve learned to use,” said Loverro, who won $700 in the contest and will attend graduate school in the fall to earn his master’s degree.

Loverro was one of two Watson School computer science students who scored in the top five places in national computer contests last fall. Zach Savishinsky, a 21-year-old senior from New Hyde Park, N.Y., won fifth place in the most difficult part of the IBM Master the Mainframe Contest, which attracted 1,750 competitors from 325 high schools and colleges in the United States and Canada.

“What makes the contest interesting is it’s done on a mainframe,” said Savishinsky, who won a Nintendo Wii system and a two-day expenses-paid trip to the IBM mainframe lab in Poughkeepsie, N.Y. “It’s a very new environment to most people, including myself.”

Savishinsky, who has participated in the contest for three years, credits his success with his internship last summer working on a mainframe at Citigroup in Weehawken, N.J. He plans to work at Citigroup as a systems analyst after he graduates in May.

Eileen Head, the undergraduate program director for the computer science department, said participating in a national computer science contest helps students with their job search. “What I’ve heard from employers is that they like to see students competing in contests,” she said.

Head announces the contests via e-mail to the computer science students, who enter the competitions on their own. “When they compete, it’s all of their own initiative,” she said.

Another perk from competing in the contests is attracting graduate school scholarships. At the awards ceremony for the Polytechnic University competition, Loverro said a graduate student from the Naval Postgraduate School in Monterey, Calif., convinced him to apply to the school. An independent contractor for a New York City computing firm, Loverro was accepted and offered a $34,000 annual scholarship plus free tuition.
Computer science professor recognized for work with students

William Ziegler ‘76 knows what it’s like to live with a disability. With only 25 percent of the hearing ability of a person with “normal” hearing, the associate professor of computer science wears hearing aids but still must struggle when listening to others because the devices cannot completely correct his disability.

His hearing impairment has led Ziegler, a Watson School faculty member since 1982, to seek out students with disabilities and offer his help and guidance. Last October, Ziegler volunteered to mentor a 21-year-old high school senior with autism from the Broome Tioga Board of Cooperative Educational Services.

As part of Disability Awareness Day, a program now in its second year, 30 high school and college students with disabilities were matched with professionals in their fields of interest in Broome and Tioga counties. Ten high school students spent the day with professors and administrators on the Binghamton campus.

“This is an opportunity to reach out to the community and to allow high school students to broaden their perspectives on careers,” said Jean Fairbairn, director of Services for Students with Disabilities at Binghamton.

Ziegler chose to take his student to his office at Newing College, where he is the faculty master, and showed him the type of work involved in overseeing a residential community of 1,000 students. The student also met employees at the dining hall and the Events Center.

“What we’re trying to do is raise the consciousness that there are people out there with disabilities who can do these great things, and we want people to know about it,” Ziegler said.

In 2002, Ziegler received a faculty-staff recognition award for his work in helping a computer science student with a severe hearing disability.

Fairbairn said Ziegler stands out as someone who is always willing to help. “Bill consistently goes above and beyond what’s required of a faculty member in order to encourage and guide students, specifically those with disabilities,” she said.

Research institute changes name to reflect new focus and mission

After broadening its focus beyond electronics manufacturing, the research group led by Distinguished Professor Krishnaswami “Hari” Srihari was renamed the Watson Institute for Systems Excellence (WISE) last summer.

One of Binghamton University’s institutes for advanced study, WISE grew out of the Electronics Manufacturing Research and Services, established in 1990. A one-stop shop for research needs, WISE works with nearly two dozen corporate partners, including General Electric, IBM and Texas Instruments.

Drawing on the expertise of ten faculty members, WISE also employs 54 graduate students who work at corporate locations in areas ranging from healthcare management to food distribution.

“We complement the students’ classroom experiences with excellent real-life problems to which they can apply their knowledge,” says Srihari, chair of the Department of Systems Science and Industrial Engineering and director of WISE.

For 2006-07, WISE had $1.8 million in funding, up from $630,000 in 1997-98. Srihari expects funding to top $2 million this year. “Money is a catalyst that helps us do research,” he said.

While working at sponsor locations across the country, students involved in WISE take courses at Binghamton, either on campus or online via the EngiNet program.

Software donation gives Watson students a competitive edge

Infor Global Solutions and Synergy Resources, leading providers of enterprise resources planning (ERP) software solutions and services, have donated an in-kind software and services gift to the Watson School.

With a commercial value of $165,000, the gift will make VISUAL Enterprise, a world-class ERP software solution, available to Watson School and School of Management students to manage the integrated supply chain for a company, ranging from manufacturing and purchasing, to warehousing and distribution. The VISUAL software was donated by Infor while the implementation and training services were provided by Synergy Resources.

VISUAL has a long-standing track record of innovation in the ERP software market. It has helped thousands of large and small manufacturers improve productivity and profitability by providing real-time data on business operations.

Under the guidance of faculty in the Watson School, the VISUAL software is also expected to create collaborations and research partnerships between the University and businesses and industry in the Binghamton area and across New York state.
Five Watson faculty and staff recognized

Five Watson School faculty and staff members were honored for receiving a 2006-07 State University of New York Chancellor’s Award for Excellence at a dinner last October. They were among 26 faculty, staff and alumni recognized for receiving excellence awards during the past academic year. The Watson School honorees included:

George D. Catalano, a professor of bioengineering and mechanical engineering, received a Chancellor’s Award for Excellence in Teaching. Catalano, who earned a doctorate in aerospace engineering from the University of Virginia, is the director of the Binghamton University Scholars Program. The author of two books and numerous journal articles, Catalano organizes a popular annual conference on ethics, justice and engineering.

Mark L. Fowler ’84, an associate professor of electrical and computer engineering, received a Chancellor’s Award for Excellence in Teaching. Since joining the Watson School in 1999, Fowler has earned a reputation as an enthusiastic teacher who cares deeply about his students. He earned a bachelor’s of technology degree in electrical engineering from Binghamton and a doctorate in electrical engineering from Penn State University.

Douglas H. Summerville MS ’94, PhD ’97, an associate professor of electrical and computer engineering, received a Chancellor’s Award for Excellence in Faculty Service. Summerville, who earned his master’s and doctoral degrees in electrical engineering from Binghamton, was recognized for his leadership skills and administrative activities at the Watson School.

Jessica Fridrich PhD ’95, a professor of electrical and computer engineering, received a Chancellor’s Award for Excellence in Scholarship and Creative Activities. Fridrich, who earned a doctorate in systems science from Binghamton, is a leading scholar in the areas of information security, steganography, steganalysis, digital watermarking and forensics of digital media. In the last decade, she has been awarded 18 research grants. Her work has led to seven patents and generated 83 research papers.

Sharon Santobuono ’94, MA ’95, associate director of student services at the Watson School, received a Chancellor’s Award for Excellence in Professional Service. She earned a bachelor’s degree in applied science and a master’s degree in social science from Binghamton. Faculty members have praised Santobuono for the advising she provides to students.

Watson School students graduate

The Watson School awarded 161 degrees at Binghamton University’s first Fall Commencement last December. The school conferred 44 bachelor’s, 109 master’s and eight doctoral degrees at the ceremony. More than 1,000 degrees were awarded to Binghamton University students during the ceremony.