

Mini-Clinics Teach Machining Techniques

Non-credit sessions popular among students

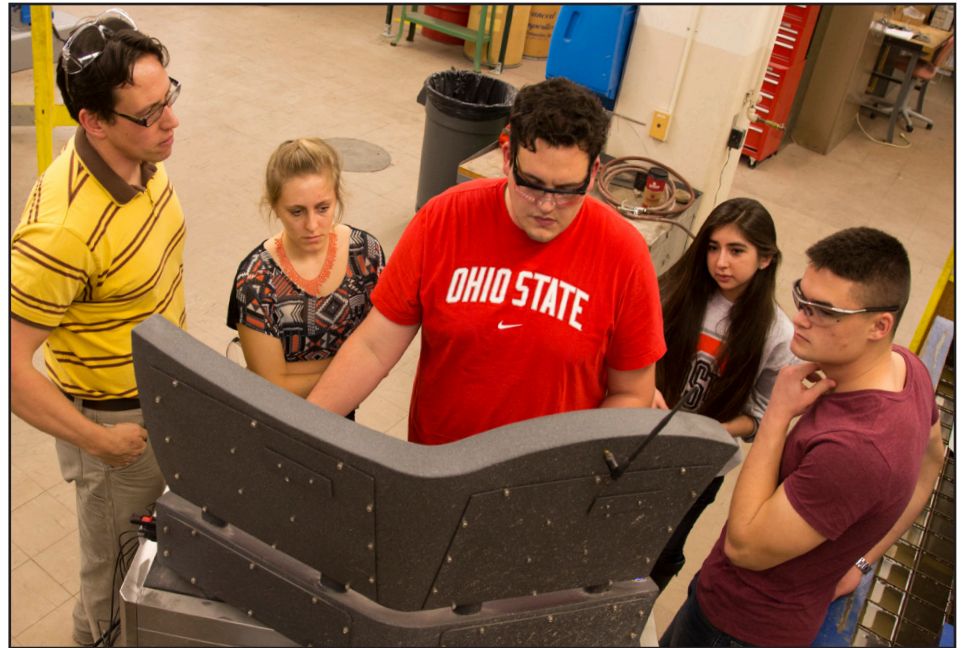
With a spurt of water, the nozzle zooms in on the sheet of steel and, with the force of 60,000 pounds of pressure per square inch pulsing through it, begins carving out the smiley face that matches the design on the nearby computer monitor.

Four integrated systems engineering students watch as the water jet quickly completes the task and is shut down. Each takes a turn setting up the parameters on the monitor and squaring up their piece of metal on the water jet's platform. They've created an image they wish to cut, which they've saved to a flash drive and inserted into the computer to guide the three-dimensional cutting process.

It's not unusual to see students and an instructor in the machine shops, but these students aren't here for a class or to work on a project. They're here on their own time and earning no credit to learn how the machines work.

"I feel like it's a practical application of stuff we may be designing at some point," says Alex Betz, a junior from Columbus. "The more systems I've been exposed to, I think it always helps with my resume and in interviews."

Alex, along with Bill Voellmecke, Alyssa Biggs and Katie Meyers, has been meeting two hours each week with Laboratory Supervisor Josh Hassenzahl for "mini-clinics" like this one. The idea came about when Ohio State switched to semesters. Hassenzahl says ISE 350, Manufacturing Engineering, was divided into two courses, one tailored



Laboratory Supervisor Josh Hassenzahl, left, instructs students on the software that will translate their two-dimensional design to the water jet that will create a three-dimensional version. The students, from left, are Katie Meyers, Alex Betz, Alyssa Biggs and Bill Voellmecke.

Photo: Cedric Sze/ISE

toward mechanical engineering – how the machines work – and one tailored toward manufacturing and materials.

"The interesting thing we discovered is the ISE students were intimidated by the ME students because the ME students knew all the jargon," Hassenzahl says. ISE Department Chair Phil Smith challenged Hassenzahl and Associate Professor Jerry Brevick to offer opportunities where the ISE students could voluntarily learn how to use the machines.

In addition to the high-powered industrial machinery, students also are trained on manual equipment. Biggs and Meyers, both juniors from

San Diego, were students in Brevick's Introduction to Manufacturing Engineering (ISE 2500) course, where they learned the fundamentals of common manufacturing processes, materials and tooling. Meyers says she came into the shop and asked Hassenzahl to teach her how to use the lathe.

"I just think the hands-on part really helps with interviews," she says. "I can go and show that I have this experience."

Hassenzahl begins the sessions explaining how the machines work. On this day, he walks the students

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Photo: Cedric Sze/ISE



The feature stories in this newsletter tell the story of the Integrated Systems Engineering Department very well. The heart of the message they all contain is that we are working to create an atmosphere where everyone contributes energy, effort and excitement (and where I get to go along for the ride).

That means taking initiative, which we see in the story where Josh, our manufacturing lab supervisor, has listened to the students when they asked about getting more hands-on experience and created mini-clinics where the students could get experience working with the machines in the lab – not for credit, but because they want to improve their manufacturing skills.

It means that the students decide on their own to do things like hold a university-wide Leadership Summit. They talked Archie into giving the keynote address, invited interested companies to help sponsor it, organized and publicized the event and got 375 students to sign up for this flawlessly run workshop.

It involves faculty and colleagues like Carolyn, collaborating with Steve, Kevin, Liz, Sharon, Sabrina

and Blaine, committed to working with students such as Radin, SangHyun and Wei-Ting on research applying ergonomics in order to invent new ways to make a medical technologist's job less stressful and more efficient.

It requires someone like Kristen, our undergraduate academic advisor, who has really become the heart of our undergraduate program, providing exceptional advice and guidance to our students as they pursue their degree and experience the challenges of college life.

And it means that we have to find and hire the best new people – faculty like Guzin, who started with the department last January. She not only comes to ISE with credentials as an outstanding researcher (with a National Science Foundation Faculty Early Career Development award for her research on water resource management), but as an exceptional teacher (as evidenced by her achievement at her previous university – winning the 2102 Five Star Faculty Award as the best teacher for the entire university).

These are all people you should get to know. Visit their websites (available at ise.osu.edu), send them an email and go to the website of our Student IIE Chapter (ohiostateiie.org).

Dr. Philip Smith

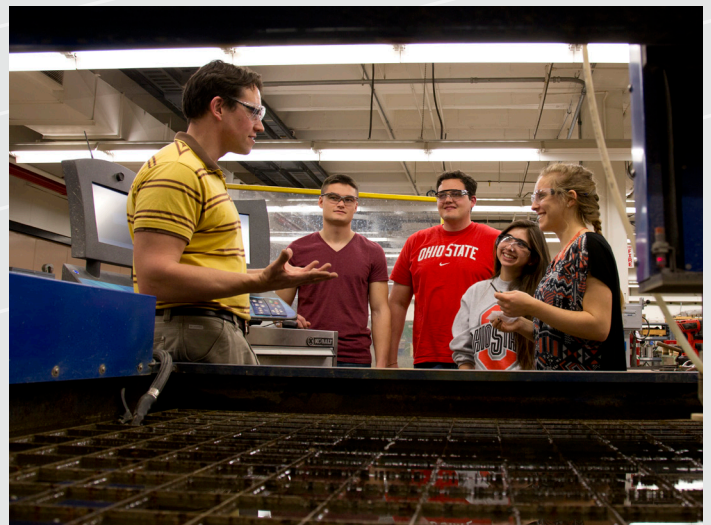
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around the water jet, which is roughly the size of a walk-in closet. He explains the hydraulics, high pressure spikes, supply water and booster pump, advising them that if they spot a leak, they need to shut down the machine and alert him. "These are water streams that could slice your hand," he explains.

Hassenzahl says a total of six student groups meet regularly, including an evening session to accommodate students who already have co-ops, but want the shop experience. He says he would eventually like to train the students, so that they can help other students learn how to use the machines and also do more in-depth projects on their own, such as making tooling for injection molding, die-casting or sheet-metal forming, which are all processes the students have access to in the manufacturing lab.



Hassenzahl explains the mechanics of the water jet (foreground) to Voellmecke, Betz, Biggs and Meyers.

Photo: Cedric Sze/ISE

ISE's Next Generation of Leaders Inspiring Others

Leadership can be defined as one's ability to get others to willingly follow. Every organization needs leaders at every level. A leader with vision has a clear, vivid picture of where to go, as well as a firm grasp on what success looks like and how to achieve it. But it's not enough to have a vision; leaders must also share it and act upon it. Jack Welch, former chairman and CEO of General Electric Co., said, "Good business leaders create a vision, articulate the vision, passionately own the vision and relentlessly drive it to completion."

A leader must be able to communicate his or her vision in terms that cause followers to buy into it. He or she must communicate clearly and passionately, as passion is contagious. A good leader must have the discipline to work toward his or her vision single-mindedly, as well as to direct his or her actions and those of the team toward the goal. Action is the mark of a leader. A leader does not suffer "analysis paralysis" but is always doing something in pursuit of the vision, inspiring others to do the same.

This definition of leadership is clearly being displayed by the IIE Student Chapter at Ohio State. On Feb. 2, the Institute of Industrial Engineers hosted a Leadership Summit, a one-day leadership immersion, open to all students. This event allowed students to uncover their leadership strengths and explore different branches of leadership.

Building on the slogan "IIE Takes You Places," this leadership team has a goal to create a sustainable model so that every ISE student for the next 10 years finds value and a home within the IIE organization.

As a member of the ISE Alumni Advisory Board, I've had the opportunity to interact with the Ohio State IIE Student Chapter leaders. The Alumni Advisory Board continues to be very impressed by the quality of the students the ISE department is attracting. Combined with the lessons learned from an excellent faculty, Ohio State is building the next generation of leaders we need to compete in the global marketplace. Our future is in good hands.

Chuck Elgin (BS, ISE '78)

Chair, ISE Alumni Advisory Board



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Mail to Lindsey Margaroli, The Ohio State University, College of Engineering, Office of Advancement, 167 Hitchcock Hall, 2070 Neil Ave., Columbus, OH 43210-1275



If you would like more information on ISE, or would like to discuss other opportunities to assist the Department, please contact Interim Executive Director of Advancement Lindsey Margaroli at margaroli.1@osu.edu or 614-292-9310.

Student-Led Conference Surpasses Expectations

By all accounts, the 2012 IIE Great Lakes Regional Conference hosted by the Ohio State student chapter was a rousing success. It shattered fundraising goals, offered an enviable lineup of speakers and made other chapters nervous at the prospect of trying to top the record attendance.

Traditionally, the conference's locale rotates among various chapters meaning that OSU won't be the site for another five years. But having tasted the success and experienced the energy of their efforts last year, the officers of IIE weren't content to let the momentum wane.

Instead, they decided to create another event. The first Leadership Summit took place Feb. 2 at the Ohio Union with registration closing early once full capacity of 375 students was reached by mid-January. "Our goal was to reach 200 to 250 students and we far exceeded that, so we were pretty happy," says Briana Schultz, Leadership Summit coordinator and executive vice president of IIE.

Organizers are hoping to make the Summit an annual event. Schultz says last year's conference was "a huge fundraiser for us" and offered opportunities "to grow leaders within our department."

Assistant Summit Coordinator and IIE President Andrew Wharton says they also wanted to create a sustainable event. "One of our strengths is doing something big," he says.

Once it was decided to host the Summit, IIE leaders began assembling committees.

"One of the students had an idea to do a company dinner where companies would pay for tables," Wharton says.

Sixteen companies sponsored the event, and had a chance to collect resumes during the registration process so that they could select students to sit at their tables based on the students' interests and the companies' needs for internships and full-time positions.

Next, committee members looked at ways to involve students in various disciplines. "We wanted to open it to all students – all leaders on campus," Schultz says. They spoke to campus-wide organizations encouraging attendance, including Buckeye Operations Management Society and Alpha Kappa Psi, whose members are enrolled in the Fisher College of Business.

They wanted to make sure the event would not compete with the regional conference, so they focused the Summit around leadership rather than integrated systems engineering.

"Our belief is that leadership is intrinsic in everyone," Wharton says.

Along the way, they also found that they struck a chord with students at other

OSU Alumni Association President Archie Griffin, front row, third from left, joins students at the Leadership Summit organized by IIE students. Shown with Griffin, front row, from left, are Sam Perozek, Briana Schultz and Ahmed Yousif, and back row, Andrew Wharton and Brendan Demuth.

Photo: Cedric Sze/IIE



area colleges; 20 students from Columbus State Community College and one student from Ohio University attended.

Wharton says the goal for the conference next year is to contact OSU branch campuses to encourage attendance by those students.

Both Schultz and Wharton say organizing the event is a valuable learning experience that complements their coursework. "Project Management 3800 is all about managing risks," Wharton says.

"It's working with people and managing teams," adds Schultz.

Students paid \$15 to attend the day-long sessions, which included topics such as "Marketing Yourself," "Personal Finance," "Work-Life Balance" and "Entrepreneurship." Alumni Association President Archie Griffin was the opening speaker, and students attended an etiquette session and were given time to network with company representatives. Speakers included ISE Advisory Board Member Ozan Kaya, director of the Structured Credit Group for Deutsche Bank Securities in New York.

Plans are already underway for next year's Summit and Schultz says they hope to include

a more diverse portfolio of students and companies. "We were in half of the Grand Ballroom," she says. "We could easily have over 100 tables."

Schultz says the challenge is: "How do we go from good to great every year?" Both definitely look forward to a time when they can return to campus as alumni and witness the Summit continuing. For now, they can take pride in their efforts and in the measurable returns.

"One of the biggest things we found out is two different people approached us saying they had job offers because of the Summit," Schultz says.



Photos: Cedric Sze/ISE



Images from the Leadership Summit at the Ohio Union. In photo at right, presenter Michael Giuliano, patent & trademark owner of certified lean®, speaks to students about "Work-Life Balance" at the Leadership Summit hosted by IIE students Feb. 2 at the Ohio Union.

Kristen Arra Keeps ISE Students on Track

It didn't take long for Kristen Johnson Arra to figure out her favorite place to be in the College of Engineering. Arra, the undergraduate academic advisor and graduate studies coordinator for the Integrated Systems Engineering Department says, "I sincerely believe it's the best major in the college."

And the students say that sentiment is evident in everything she does. "She truly lives and breathes for the ISE students and department, saying on several occasions that the best students on campus are ISEs ... obviously," says Ben Freidenberg, a senior ISE major.

In many cases, Arra is the first contact freshmen have with the department, meeting up with them on their second day of orientation to plan their schedules. Her role doesn't end there.

"We are so accessible for them," she says. "ISE is becoming increasingly popular."

Arra maintains an open-door policy and is readily accessible via email to assist students who need to add or drop classes, helping them to stay on track and meet their academic requirements. "A lot of times problems happen in real time," she says. "I would prefer they come see me rather than push them off a couple of weeks."

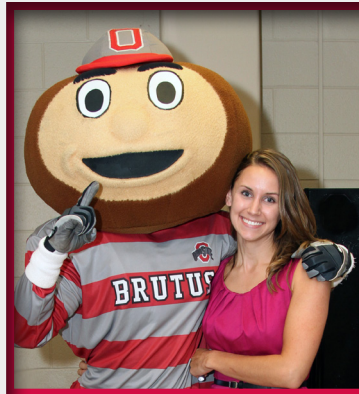
Arra landed in Columbus to be near her now husband, Andrew, who attended college here and is a dietician at Mount Carmel. She holds a bachelor's degree in economics from James Madison University. "I knew I didn't want to go into a traditional job," she says. At James Madison, she assisted transfer students in their orientation to the university, which she found fulfilling. When she arrived in Columbus, she applied for a job at Ohio

State, first working with students in the Fisher College of Business before assuming her current position.

She calls ISE students "a different breed" from other engineering students, saying that they tend to be more outgoing. "They're always planning for the next best thing," she says. "I think there's a confidence that comes with this major. They want to go out there and take over the world already."

Because she is not too far removed from their age group – having earned her degree in 2009 – Arra is able to rein the students in at times and remind them to maintain balance, while reinforcing that the college years can be the best years of their lives. She takes great pride in the fact that many alumni return for visits.

"Our alumni are amazing," she says. "They miss us as much as we miss them. They come back to tell us about what they're doing, and help us with our recruiting efforts."



ISE Advisor Kristen Arra says it was a "dream come true" to meet Brutus.

Arra receives rave reviews from undergraduate students she has assisted and has the reputation of being a problem-solver. "From an advising standpoint, she helps not only choose classes and career paths, but plays a pivotal role in our lives outside of academics," says sophomore ISE student Kartik Malhotra. "Kristen is a very large reason the ISE department is what it is today."

Freidenberg adds, "Kristen is an incredible advisor who, without a doubt, devotes herself to the students in ISE. If you walk by her office in Baker, she almost always is meeting with a student, providing guidance, and helping solve any problems and questions the student may have. And despite the flood of emails she receives daily from students, she somehow addresses all of them."

Güzin Bayraksan Joins ISE Faculty

ISE welcomes Associate Professor Güzin Bayraksan, who will teach stochastic modeling and simulation fall semester at OSU. Bayraksan, a native of Istanbul, Turkey, joined the ISE faculty in January.

In 2012, she received a National Science Foundation Faculty Early Career Development award for water resources management research under uncertainty. She will be studying different models and methods under uncertainty and climate, and methodological development. In her previous role as a member of the faculty at the University of Arizona, she was honored with the 2012 Five Star Faculty Award, which is the only teaching excellence award that is both nominated and selected by students with one award given each year.

She also is the recipient of the 2008 INFORMS Best Case Study award, and is a member of the Committee on Stochastic Programming and treasurer of the Forum for Women

Sommerich's Research Results from Real-Life Reaction

Several years ago, integrated systems engineering Associate Professor Carolyn Sommerich observed a medical imaging technologist “crawling around on the floor” as she set up for a routine scan. Sommerich, whose areas of research include occupational biomechanics and work-related musculoskeletal disorders, recognized this as an opportunity to employ ergonomics methodology to find a solution to make the technologist’s job less physically demanding and more efficient.

She also knew it would require a multidisciplinary team to make it happen. She assembled that team when she came to Ohio State in 2002. Sommerich joined forces with ISE Associate Professor Steve Lavender (who also happens to be a colleague of Sommerich’s from graduate school); Division Chair and Associate Professor of Radiologic Sciences and Therapy Kevin Evans and Associate Professor of Design Liz Sanders. Sommerich also engaged two of her former graduate students, Sharon Joines, associate professor of industrial design and director of the Research in Ergonomics & Design Laboratory at North Carolina State University and Sabrina Lamar, a hospital systems ergonomics consultant. With \$750,000 in funding from the National Institute for Occupational Safety and Health, they began work on an intervention research project focusing on imaging technologists. Five sub-specialties were addressed in the study: diagnostic medical sonographers, vascular technologists, echocardiographers, radiographers and mammographers.



Carolyn Sommerich

Sommerich and the other team members, along with current and former Ohio State University graduate students Radin Zaid Radin Umar, SangHyun Park and Wei-Ting Yen recently shared some of the results of their work at the 2013 International Symposium on Human Factors and Ergonomics in Health Care: Advancing the Cause healthcare symposium in Baltimore March 11-13. The presentation was entitled “Participatory Ergonomics Applied to Radiographers’ Work.”

The research project involved using creativity-based focus groups to determine needs, a concept review phase, field testing working prototypes with practicing imaging technologists and incorporating their feedback in the design process at every stage.

The goal of the symposium presented by the Human Factors and Ergonomics Society is to connect researchers, device manufacturers and the healthcare industry. Sommerich says because of the participatory nature of the research, patents are unlikely, but the team hopes by disseminating the information, one or more manufacturers may decide to produce the equipment.

The project has also provided undergraduate students the opportunity to take a product from concept design to refined functional prototype. Four ISE seniors participated in a special capstone experience, advised by Associate Professor Blaine Lilly, who holds joint appointments in ISE and mechanical engineering. The students advanced the idea for a rolling stepstool designed to assist in transferring patients for imaging tests and created a robust prototype – supporting a 300-pound patient was one of the requirements – for their senior capstone project last spring. “They went back to sites we had visited with an earlier prototype and tested the new device,” Sommerich says. “It was a unique opportunity for undergraduate students to be involved in research.”

in Operations Research and Management Science.

Her research interests include decision-making under uncertainty, Monte Carlo sampling-based methods for stochastic programming and applications in water resources management.

Bayraksan received a bachelor’s of science degree from Bogazici University in Turkey in 1998 and a master’s (’00) and PhD (’05) from University of Texas at Austin. She also has been employed by United Airlines, where she conducted industrial engineering and queuing studies for self-service, check-in kiosks. Bayraksan and her husband James “J.T.” Wakley will reside in Columbus where Wakley’s family has lived for four generations.

Bayraksan says she has found a comfortable atmosphere in Columbus. “Everybody’s so friendly,” she says. “Actually, it reminds me a little bit of UT-Austin. Both are big public schools and very good. It looks like good things are awaiting.”



Güzin Bayraksan



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Dinner with the President

Integrated Systems Engineering students were invited to join The Ohio State University President E. Gordon Gee for dinner in February at Café Bella in Columbus. Dr. Gee asked the students to introduce themselves and share the names of their hometowns. Well-known for traveling the state of Ohio, Dr. Gee shared his favorite stops in their hometowns. Senior Andrew Wharton recounted the experience saying, "It still amazes me – going to one of the largest universities – I've met Dr. Gee three or four times, and had dinner with him once. I don't think many students can say that – even at other universities."



Photo: Cedric Sze/ISE

*Back row, left to right:
Andrew Wharton,
Michael Schuler, Chris
Treiss, Sam Kastan
and Phil Smith
Middle row: Kristen
Arra, Briana Schultz
and Dr. E. Gordon Gee
Front row: Fatima
Kebe, Ben Frieden-
berg, Nick Tedesco,
Patrick McHugh,
Nilav Ranpara and
Sudzy Steyn*

Phil Smith Named ISE Chair

College of Engineering Dean David B. Williams, Monte Ahuja Endowed Dean's Chair, has named Dr. Philip J. Smith to serve as the chair of the Department of Integrated Systems Engineering. Smith had been serving as interim chair since Dec. 1, 2011. His permanent appointment takes effect Sept. 1, 2013.

Smith is a professor in integrated systems engineering, biomedical engineering and the Advanced Center for Computing in the Arts and Design, and also serves as co-executive director of the Institute for Ergonomics. He is recognized as a leader in air traffic flow management, airline operations control, collaborative decision making and the design of distributed work systems in the National Airspace System, as well as in the design of systems for the integrated management of airport surface and airspace constraints. He has extensive expertise in cognitive systems engineering, human factors engineering and human-computer interaction, applied to both the design and evaluation of distributed work systems.