

Re-Energizing ECE's Undergraduate Labs

Building upon the success of ECE's award-winning Integrated Sophomore Experience (ISE), a series of revamped lab courses piloted in 2010, the department is transforming the way its undergraduate students are educated in laboratory courses.

The Integrated Sophomore Experience has received rave reviews from industry and students alike. It also earned two awards from the College of Engineering. The ISE engages students with fun and challenging lab projects, from building a recordable programmable keyboard to implementing digital filters on a FPGA (field-programmable gate array).

The new undergraduate lab environment will be similar to that of the ISE. Several smaller rooms in Caldwell Laboratory were combined into one open, modern space that will house approximately 50 lab benches. Each bench will contain the same state-of-the-art equipment utilized by industry, including oscilloscopes from Agilent, power supplies and signal generators from Rigol, and iPads that provide step-by-step instructional videos and custom lab materials.

Beginning autumn semester, the new space will be home to redesigned undergraduate lab courses in analog electronics, power electronics and microcontrollers. These courses will follow the new lab model, which exploits technology to empower self-guided learning through video instruction and carefully designed manuals.

Experienced students help the assigned teaching assistant for each course by serving as lab monitors who use specially prepared documentation to provide guidance and staff the lab space. Together, these changes will enable the department to offer courses to more students per term than ever before.

"We're really treating our undergraduates differently than most universities," says Associate Professor Furrukh Khan, who played the major role in developing the ISE and leads the current transformation. "We're providing early exposure to advanced electrical and computer engineering concepts."

In addition to students gaining experience with state-of-the-art technologies and equipment, industry will benefit from ECE's new initiative by being able to hire graduates who are more experienced than ever before. Ohio State ECE grads entering the workforce will already be trained on critical software and equipment.

This transformation required a significant financial investment.



The new lab environment will closely resemble the Integrated Sophomore Experience space pictured here.

Texas Instruments provided \$80,000 each from its analog and microcontroller business units, in addition to equipment.

"When we presented our lab concept to Texas Instruments, they viewed our approach as a game changer in educating electrical engineering students," explains Robert Lee, chair of electrical and computer engineering. "They readily agreed to partner with us."

The College of Engineering provided \$200,000 of needed funds, with the department covering the remaining \$270,000.

"Because this approach is scalable, we expect to handle lab enrollments of 1200 students per semester without difficulty," says Lee. "It gives us some room to grow since current enrollment is expected to be about 900 per semester." •

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From the Chair



Lee

Beginning summer 2012, the university moves to a semester-based calendar with two 14-week semesters, a one-month May session and a summer term. The change from quarters to semesters (Q2S) has dominated many of the educational activities in the department. It was a Herculean task for the faculty and staff to restructure our undergraduate program and tear apart all ECE quarter courses to remake them as semester courses. Although it would have been expedient to do a simple conversion to semesters without making major changes to our program, we felt that was not the best approach. Instead, we viewed the quarters to semesters change as a great opportunity to rebuild our program from the ground up.

In restructuring our program, we had three main goals in mind. The first was to make sure that our students have a strong technical base. Ohio State ECE graduates have always been known for their strong technical skills. In our new electrical engineering program, all students are required to take eight

courses that cover the fundamental concepts of all electrical engineering subdisciplines. For our computer engineering program, we worked closely with the Department of Computer Science and Engineering to craft a technically strong program as well.

The second goal was to give students the flexibility to individualize their programs. Under our current program, many courses throughout the university do not count in our technical electives, so many students graduate with a large surplus of credit hours. In our new program, we have removed technical electives and replaced them with directed electives, which can be drawn from a much larger group of courses at the university, including many introductory courses. This approach makes it easier for students from other majors to switch to ECE without losing much time. It also allows students to pursue multidisciplinary interests without being penalized. Students can now take courses to prepare for careers in medicine, law, business, etc. and have those courses count toward graduation.

The third goal was to reduce the credits required for graduation to ensure that students can more easily graduate in four years. We were able to reduce it somewhat, to 128 credits from 132 equivalently in quarters, but not to the university-preferred 120 credits. This higher level is necessary in order to maintain the technical emphasis for which our graduates are renowned.

We are pursuing several other exciting educational initiatives in addition to the quarters to semesters transition.

The use of technology to deliver educational material has received a lot of national publicity these days, and we are just as excited to see if technology can improve learning outcomes. The success of our new iPad-based sophomore laboratories has led us to expand this concept to most of the undergraduate labs, as described in the cover article. We are also experimenting with the inverted classroom concept where students watch recorded lectures online for homework and do problem solving in the classroom. This autumn approximately 300 students will be taking the first ECE class (ECE 2000), with about half of those enrolled learning with the traditional approach and the other half learning with the inverted classroom. It will be interesting to see the outcome of this real-world experiment.

In terms of research, the department is doing very well. Research expenditures continue to be high and should be more than \$21 million for the 2011-2012 academic year. We also received three of the prestigious Department of Defense Multidisciplinary University Research Initiative awards. No other university won more this year. In addition, ECE faculty won two university-level awards this year. Professor Bradley Clymer won an Alumni Award for Distinguished Teaching (see the story on page 4) and Professor Jin-Fa Lee won a University Distinguished Scholar Award. We were the only department with winners in both categories. •

Did You Know?

In the 2011-2012 academic year, the Department of Electrical and Computer Engineering granted 167 BSECE degrees (138 electrical engineering and 29 computer engineering), 122 MS degrees, and 41 PhDs.



Spring 2012 ECE graduates

Paper Speakers Bring Music to the Ears of Future Engineers

Nearly 300 seventh-grade students at 24 Columbus schools were able to play their favorite music through speakers made of paper, wire and magnets, thanks to an innovative program designed by Ohio State ECE students and faculty, in collaboration with Big Brothers Big Sisters of Central Ohio.

Representatives of Project Mentor—an educational outreach initiative between Columbus City Schools and Big Brothers Big Sisters—invited Betty Lise Anderson, professor of electrical and computer engineering, to talk to middle school students and Big Brothers Big Sisters volunteers. She knew just the activity to spark kids' interest in science and engineering, the speaker project which is one of six hands-on activities developed by ECE students during a senior capstone design class. Anderson, who leads the ECE department's outreach program, has used the projects to reach more than 4,000 kids at some 20 Ohio schools since 2008. The only problem was that all 24 school visits had to take place in just five days. Anderson turned to members of RISE^ECE (Recruitment and Retention Initiative for Successful Engineers: Electrical and Computer Engineering) to coordinate the visits.



A future engineer tests his speaker.

RISE^ECE is a new student organization seeking to engage future engineers, promote engineering as a potential career, and spark interest in science and mathematics.

Led by Edwin Lee, RISE^ECE president, and Paul Berger, faculty adviser, nearly 60 student volunteers were recruited from the Ohio State Minority Engineering Program, the Department of Electrical and Computer Engineering, and across campus. Volunteers had to learn how to make the speakers, prepare 300 audio cables, and cut 300 pieces of magnet wire and 300 speaker templates.

“The RISE^ECE team, especially Edwin, recruited students from the

National Society of Black Engineers, Society of Hispanic Professional Engineers and the Lambda Psi Engineering Honorary, as well as students from outside engineering, to pull off this Herculean effort,” said Berger. “Activities like this show kids that science can be fun and introduces them to career possibilities, like engineering, that many may have never considered.”

Project Mentor aims to help students work toward graduation and a lifetime of success through strong mentoring relationships. The program focuses on the assets required to improve academic performance and high school graduation, with the goal of improving the entire education community—one child at a time.

“This is actually a foreshadowing of our future event, a shadowing day, where STEM-oriented middle school students can visit the OSU campus, hosted by a Big Brother or Big Sister volunteer,” said Berger. “We want to influence these students before they enter high school and perhaps help them choose the correct math and science track to keep them engineering eligible.”

RISE^ECE is accepting donations to enable one-on-one mentorship for future programming. Learn more about RISE^ECE at rise.ece.ohio-state.edu. Instructions for the speaker project are available at ece.osu.edu/about/outreach.



PHOTOS: PAUL BERGER

Ohio State engineering students Jasmyne Walker and Kenny Green assist Columbus City Schools students with building their speakers.

Bradley Clymer Receives Alumni Award for Distinguished Teaching

Bradley Clymer, associate professor of electrical and computer engineering and biomedical informatics, received a 2012 Ohio State Alumni Award for Distinguished Teaching. The award was presented on February 8, 2012 in a surprise visit by President E. Gordon Gee and Archie Griffin, president and CEO of the Ohio State Alumni Association.

Clymer, who joined Ohio State's faculty in 1987, is passionate about many things—engineering, Buckeye football, teaching—but most of all he is passionate about students. Colleagues say his student-focused approach comes across in his ability to challenge students and stimulate critical thinking, the personalized and caring way he supports students, and the amount of time he works on behalf of students outside the classroom.

“Bradley gives considerable thought as to how best to convey difficult technical information, adapts readily to varied learning styles, and knows

how to prepare students for advanced coursework,” says Betty Lise Anderson, professor and associate chair of electrical and computer engineering. “He has a knack for making complex material understandable and dry material interesting.”

Clymer pioneered distance learning in the ECE department, starting in the early 2000s when the idea was very new. He developed a system, including the hardware, for recording lectures and uploading them to the web. Originally envisioned as a way to allow students to review lectures, Clymer expanded it to include distance-learning sections of his medical imaging course.

This allows twice as many students to take the course. His system has since been adopted by several other faculty for their own courses.

Clymer continually receives high marks from students who commend his willingness to help, his presentation of complex materials and the array of resources he provides.

“I can't imagine a better professor,” writes one student in a course evaluation.

“Posting notes and lectures online is excellent for those who don't quite understand something the first time around.”

“Dr. Clymer is a wonderful professor,” writes another student. “I would take a class with him any quarter. Medical imaging was probably one of the top five classes I have taken at OSU, if not the best. I learned a lot and I loved that the final project was so open ended.”

In addition to teaching and advising a significant number of graduate students, Clymer also serves as the ECE scholarship coordinator, and the ECE honors and undergraduate research coordinator. He takes part in the ECE department's curriculum design, revision and improvement efforts, and participates in recruiting events.

Clymer led the establishment of the Honors in Engineering program and was the lead on the proposal to create the comprehensive engineering and science of biomedical images graduate interdisciplinary specialization.

A two-time alumnus of Ohio State (BS '81, MS '82), Clymer is an avid proponent of giving back to his alma mater. He formed the EE/ECE Alumni Society, which became official in 2009, to provide fellowship and help further professional relationships among the alumni, students, faculty, staff and friends of the society.

A dedicated Buckeye both inside and outside of the classroom, Clymer attends each home football game and every commencement, totaling more than 76 ceremonies to date. At the spring ceremony he makes a special point to go into the stands and shake the hand of every electrical and computer engineering graduate as they file down to receive their diplomas. •

“He has a knack for making complex material understandable and dry material interesting.”



Clymer (second from right) was surprised with the award by (from left): David Tomasko, associate dean for undergraduate education and student services; Betty Lise Anderson, associate chair for electrical and computer engineering; Archie Griffin, Ohio State Alumni Association president and CEO; and President E. Gordon Gee.

Sebo Still Passionate After 44 Years at Ohio State

As he walks in front of the standing-room only crowd, teens hold their smartphones high in the air to record his every move. The audience screams and jumps during the act and, following the grand finale, begs for an encore. He acquiesces and the crowd cheers.

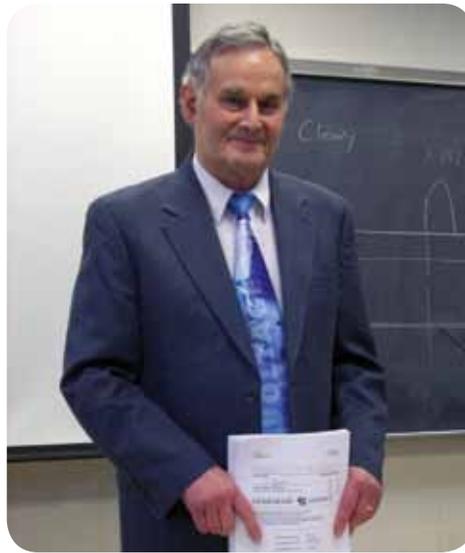
Just another day in the life of a celebrity? Not exactly. These teens are standing in a university laboratory, albeit one that can create some of the biggest sparks and arcs in North America. The man with all eyes on him is none other than Steve Sebo, professor emeritus of electrical and computer engineering.

Sebo has given High Voltage Lab demonstrations to thousands of people since the lab opened in 1994. Able to entertain diverse audiences from high school students to senior citizens, Sebo has a special knack for engaging people of all ages and technical levels with his infectious passion for high voltage and power engineering.

“I think that if you try to say things people understand, then no matter what their age, they will find it interesting and fascinating,” says Sebo.

Sebo led the effort to create the present High Voltage Laboratory in the first place. Planning began when the initial lab located in the former Communications Laboratory building, created by Professor Neal Smith, had to be moved due to the scheduled demolition of the building.

“It’s a unique experience when you go through the different phases of lab development, design, construction and so on, and then get to work in a new, modern, beautiful and useful lab,” says Sebo.



Sebo wears a high voltage tie during his last class.

“That was one of the highlights of my tenure at Ohio State.”

Few people know that Eva, Sebo’s beloved wife of four and a half decades, picked the bright green color of the High Voltage Lab walls, he says.

Watching his students develop and knowing they can do something useful after graduation are two of the reasons Sebo has enjoyed teaching at Ohio State for 44 years.

“When I think about my best students, it is more and more difficult because it is an expanding list. Many of them are absolutely brilliant and successful in life, and they deserve it,” says Sebo. “If they say that I started them along a long road then I am very pleased and humbled.”

As for research highlights, Sebo places a series of projects regarding AC/DC substation environmental effect performance investigations, sponsored

by the Electric Power Research Institute (EPRI), at the top of the list. Along with colleagues Ross Caldecott, Bob DeVore and Don Kasten, he built working models of substations that could be energized.

“We built several model substations, which is why it took 20 years to go through all sorts of different stations, components, arrangements and field experiments,” explains Sebo. “It was a fascinating series of research projects and was a very good effort for Ohio State to show how much we can do for the electric utility industry.”

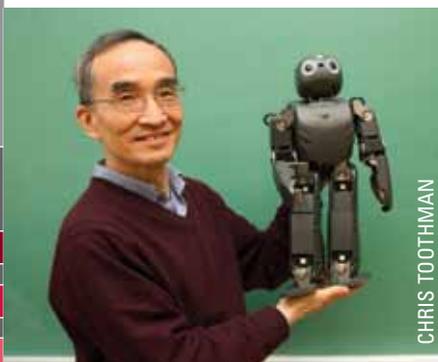
Sebo’s interest in engineering began when he was very young and his father took him to visit a nearby train station and see the steam engines. Later he supplied Sebo with a series of metal erector sets that enabled him to build his own creations.

“I think my dad successfully steered me towards engineering,” Sebo explains. “He was an old-fashioned physician, so he made quite a few house calls, in the middle of the night too. You know, parents think that their kids should do better, so he thought I should not answer house calls during the night.”

Despite retiring in 2003 after 35 years with the ECE department, Sebo has remained active in teaching, research and outreach. He was also instrumental in raising the needed funds to open a faculty position for his replacement, Assistant Professor Jin Wang.

At the end of winter 2012, Sebo celebrated the end of his last course, but plans to continue his other activities.

“I feel I still have the physical and mental strength to keep doing what I like,” he says. •



CHRIS TOOTHMAN

Around ECE: Meet DARwin

Visitors and students alike are getting a kick out of DARwin (Dynamic Anthropomorphic Robot with Intelligence), who is part of a National Science Foundation grant awarded to a consortium which includes Ohio State. Yuan Zheng, professor of electrical and computer engineering (pictured left), is responsible for Ohio State’s participation. As the department’s ambassador for robotics research, DARwin charmed prospective students by showing off his vision recognition skills during a recent open house and helps students of multiple skill levels practice programming on a working robot. •

Getting to Know the Faculty: Jin Wang

Jin Wang is an assistant professor of electrical and computer engineering.

Tell us about your current research.

I spend most of my research efforts on power electronics circuit topologies and control strategies. Power electronics is a key enabling technology for renewable energy integration and vehicle electrification. One of my current projects concerns high voltage power electronics circuits for very large scale photovoltaic power plants. In the past two years, I have been working with Ford Motor Company on new generations of switching devices and associated circuits for hybrid electric vehicles.

What made you decide to become an engineer/professor?

Electrical engineering is what I have always wanted to do from my high school days.

My first-full time job was at Ford Motor Company, working on the traction drive system of the Fusion Hybrid. Being a professor, I have the privilege of teaching the next generations of power engineers and the opportunity to work on an array of power electronics based solutions for ongoing energy problems.

What brought you to Ohio State?

The power program at Ohio State has a long history and great reputation. Some of my role models either graduated from or are still teaching here. Becoming a professor at Ohio State is a dream come true.

What do you like best about teaching?

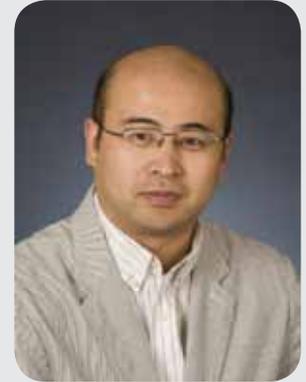
The best thing about teaching is that at the end of the quarter students say

that they did learn something from the class. It is definitely a rewarding feeling to lead and guide the students

as they build their knowledge from the very basics to the most advanced technological developments.

What inspires you?

Somehow, the more I work on the current technology, the more I am inspired by Nicholas Tesla, a visionary inventor and engineer. •



ECE Welcomes New Faculty

Yuejie Chi joins the ECE department in August 2012 as an assistant professor. She received a PhD from Princeton University. Besides conducting research at Princeton, Chi has been a visiting scholar at Stanford, Duke and Colorado State. She also completed research internships at Mitsubishi Electric Research Lab and Qualcomm, Inc. Chi's research interests include high-dimensional data analysis, statistical signal processing, compressive sensing, machine learning, wireless communications and networks, and active sensing.



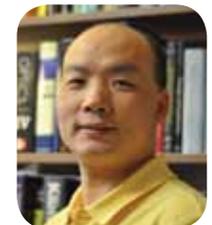
Chi

Lori Dalton joins the ECE department in August 2012 as an assistant professor. She was formerly a post-doctoral researcher at Texas A&M University, where she earned a PhD. Her research interests include genomic signal processing and pattern recognition with biological applications.



Dalton

Guoqiang Li joined the ECE department in January 2012 as an associate professor with a co-appointment in the Department of Ophthalmology and Visual Science. He received a PhD from the Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences. Li was previously a member of the faculty of the College of Optometry at the University of Missouri – St. Louis. His research interests include vision optics, biomedical optical imaging, electro-optical devices and holography.



Li

Kubily Sertel is a new assistant professor in ECE. He has been a member of the ECE department since January 2003 as a research scientist at the ElectroScience Laboratory. Sertel received a PhD from the University of Michigan in 2003. He is a Senior Member of IEEE, and a member of the IEEE Antennas and Propagation and IEEE Microwave Theory and Techniques Societies. He is also an elected member of URSI Commission B. His research interests include terahertz devices, sensors and systems; THz sensing and real-time high-sensitivity THz imaging.



Sertel

ECE Graduates Have Big Plans

More than 100 electrical and computer engineering undergraduate students were among the 10,642 who earned degrees—the largest spring quarter graduating class ever—during the final quarter commencement exercises at Ohio State on June 10, 2012. Gwynne Briggs and Tom Zajdel are two of these outstanding ECE graduates.

Gwynne Briggs graduated with a BS in electrical and computer engineering—the fourth member of her immediate family to do so. Following graduation, her next adventure will be to move to Stuttgart, Germany and work for M.C. Dean, Inc. There, Briggs will focus on control systems for U.S. Department of Defense facilities

around Germany. At Ohio State, she was an undergraduate teaching assistant with the Fundamentals of Engineering for Honors program for three years. During the past year, Briggs was also an active member of Eta Kappa Nu, the honorary for electrical engineering, and the IEEE @ OSU Student Chapter.

Tom Zajdel earned a BS in electrical and computer engineering. Not one to sit on the sidelines, he served as a teaching assistant, tutored students, researched radio wave scattering at the ElectroScience Lab, and conducted perceptual experiments with cochlear implant patients. Zajdel earned the top award in the engineering category at the 2012 Denman Undergraduate



Briggs



Zajdel

Research Forum with a project that attempts to improve the simulation pattern for individuals with a cochlear implant.

Zajdel plans to pursue a PhD in electrical engineering at the University of California, Berkeley, researching implantable circuits and systems for brain-machine interfaces. His long-term goal is to become a university faculty member.

Read more stories of recent ECE graduates at ece.osu.edu/news/2012grads.

In Memoriam



Herman Weed, professor emeritus of electrical engineering, passed away on January 5, 2012. He was 89.

Weed is likely the longest-serving member of the electrical engineering faculty at Ohio State, serving for 50 years from 1946-1996. He founded the Biomedical Engineering Center at Ohio State in 1971 and served as its first director, until 1988. The center became a department in 2005. Weed also served as director of the HOPE Biomedical Engineering Program worldwide from 1979 until he retired.

Weed was a Senior Life Member of IEEE and was involved in many national and international professional groups. He received many awards, including the ASEE Outstanding Bio-Medical Engineering Educator of the Year (1987).



Thomas Earl Tice, former professor of electrical engineering, passed away on December 20, 2011. He was 87.

Tice, a three-time Ohio State alumnus, received his PhD in electrical engineering in 1951. He remained at Ohio State as a professor and director of the OSU Antenna Laboratory, now called the ElectroScience Laboratory, from 1954 to 1961. Moving to Arizona in 1961, he became a chief engineer for Motorola Government Electronics Division before returning to his first love of teaching at Arizona State University. Tice served as chair of the ASU Electrical Engineering Department for many years.

Tice is a World War II veteran, who served in the U.S. Army Signal Corps, setting up communications and electronic air navigational aids in North Africa, Europe and the Middle East.



Frank Carlin Weimer, professor emeritus of electrical engineering, passed away on November 18, 2011. He was 94.

The three-time Ohio State alumnus received his PhD degree in 1943 and was a member of the electrical engineering faculty at Ohio State from 1941 to 1983. He also helped reactivate the Gamma Chapter of Eta Kappa Nu after World War II. Weimer received an Ohio State Alumni Award for Distinguished Teaching in 1960 and received the department's first H.C. Ko Meritorious Service Award in 2008.

He was a member of Tau Beta Pi, Sigma Xi, the American Society for Engineering Education, the American Association for the Advancement of Science, and the National Society of Professional Engineers. He was also a Senior Member of IEEE.

Spotlight on Alums

David L. Beamer, 1965



Beamer

David Beamer's first job after graduating from Ohio State in 1965 with a bachelor's degree in electrical engineering was at Cape Canaveral, helping with preparations for the Saturn V launch program. Following that first exciting blast into engineering, he spent the rest of his career working in technology sales and marketing, as well as general management positions. Later in his career, Beamer became chief operating officer of Legato Systems, which was acquired by EMC. He retired from EMC as senior vice president of Legato Operations.

Beamer has many fond memories of his time at Ohio State, including the feeling of turning in a blue book after a final exam, Coach Hayes and the great times in the Horseshoe. He lived in the stadium scholarship dormitory, which was indeed housed in the Horseshoe in the 1960s. One memory he definitely won't forget is from his freshman calculus class. "A German professor running calculus that day for freshmen engineering students said take a look at the guy on your right and the guy on your left, in six weeks they won't be here. Which was one way of saying, two-thirds of you guys are either going to switch majors or not make it. I won't forget that line!" says Beamer.

Today, he is happily involved in volunteering with and encouraging various September 11 memorial projects. His son was Todd Beamer, the young man on Flight 93 in Pennsylvania, who said, "Let's roll!" Beamer and his wife also value having "the opportunity to salute and thank the young men and women who continue to fight on in the conflict, some of whom have devastating injuries" and enjoy spending time visiting with troops and veterans.

Beamer and his wife, Margaret, reside in Jacksonville Beach, Florida.

Douglas Coates, 1985



Coates

Douglas Coates earned a bachelor's degree in electrical engineering from Ohio State in 1985, and a master's in manufacturing management from Kettering University. He is also a certified Project Management Professional.

Coates has 25 years of business development and marketing experience in the radar, RF and satellite communications field. Most recently, as program/product marketing manager at Maxwell Technologies, he delivered a first-to-market ultracapacitor solution used in the Peugeot/Citroen start/stop hybrid vehicles. Coates specializes in product development and has been instrumental in the founding of six start-ups including KDC TechSolutions where, as founder and managing partner, he launched numerous voice, satellite, and data communications products for clients around the globe. His prior experience includes engineering, management and business development positions at HE Microwave, Schlumberger and the USAF Civil Service.

Currently, Coates works with Field Intelligence, Inc., a two-year old company that provides satellite telemetry services for remote monitoring of assets in the agriculture, industrial, oil and gas, and environmental services areas. He worked with the founder as he set up the company and recently joined the management team.

The professional achievement Coates is most proud of is being responsible for the first-to-market delivery of automotive collision warning systems in Jaguar cars in the late '90s while he worked for HE Microwave, the Hughes Aircraft/Delco Electronics joint venture.

"It took a massive effort from the most talented group of engineers that I have ever been associated with. I probably never worked so hard in my life," he says.

Among his many fond memories of his time at Ohio State, one that stands out is meeting Kathryn, his wife of 26 years, at Mirror Lake.

Spotlight on Alums

Gary Voelker, 1966

Gary Voelker graduated from Ohio State in 1966 with bachelor's and master's degrees in electrical engineering through the combined program. After graduation, he worked at Industrial Nucleonics in Columbus for four months before accepting a Navy recruiter's offer to try flying. Voelker earned his commission in June 1967, his Navy wings of gold in February 1968, and married Janet, his wife of 44 years, in March 1968 after a very brief courtship.

In the Navy, Voelker flew in the back seat of the F4J Phantom, like "Goose" in the movie "Top Gun" for several years before becoming involved in research and development. After nearly ten years serving in the U.S. Navy, he joined the Energy Research and Development Administration in 1974, which in 1979 was folded into the Department of Energy (DOE). There, Voelker focused on energy related research and development. His last job at DOE, before he took an early retirement in 1994, was to be the first manager of the DOE Ohio Field Office in Miamisburg. The office managed several hundred federal employees and several thousand contractor personnel with an annual budget of about \$800 million. After leaving DOE, Voelker took a position as chief operating officer and ran his own successful residential construction company. He followed that with a brief try at full retirement, but it was "not enough adventure."

Today, Voelker and John Arnold, a chemist, are co-inventors of a concept to use ultraviolet or electron beam curable binders to replace the solvent based binders used today in manufacturing lithium-ion battery electrodes. Instead of tens of minutes of drying time and the capital expense of huge drying ovens, the UV/EB curable binders cure in less than a second, with a much smaller capital investment. The technology has the potential to dramatically reduce the manufacturing cost of lithium-ion batteries that are used in everything from cell phones and laptops to hybrid and electric cars. Miltec UV International, Voelker's current employer, has been selected for two DOE cost-shared contracts to develop and demonstrate the technology.

Voelker lives with his wife Janet by Lake Anna, Virginia, and enjoys being active with their six grandchildren.



Voelker

Chakka Parker, 2002/2004

Chakka Parker earned bachelor's and master's degrees in electrical and computer engineering from Ohio State in 2002 and 2004 respectively. She was awarded the Litton Fellowship for graduate studies by the ECE department and was advised by Steven Bibyk. Other key mentors during her studies at the university included ECE faculty Hooshang Hemami, Bradley Clymer and Patrick Roblin, as well as Assistant Dean Minnie McGee.

While at Ohio State, Parker enjoyed studying abroad and participated in three study abroad programs to South Africa and Zimbabwe, Egypt and China. These cultural experiences enriched her life in many ways and are some of her fondest memories from Ohio State. Other fond memories included pledging Delta Sigma Theta Sorority Inc., a public service organization fostering sisterhood, scholarship and public service. Her outreach to South Africa jointly with the university community landed her an Ohio State Kaplan Humanitarian Award (2002).

In 2003, Parker was awarded a Texas Instruments fellowship as she pursued her graduate studies in analog circuit design and was a member of the TI research group at Ohio State. Upon completion of her graduate studies, she joined Texas Instruments full time, where she was a contributor in the Analog Business Group for five years. In 2008, Parker became a senior electrical engineer within Space and Airborne Systems at Raytheon Company where she is currently employed. Parker is continuing her studies, gaining more insight into the business strategic leadership perspective of industry. She is enrolled in a dual degree program where she will receive her Executive MBA (2013) and a MS degree (2013) in international management studies.



Parker

Online Extra: Read complete alumni interviews at ece.osu.edu/alumni/spotlight

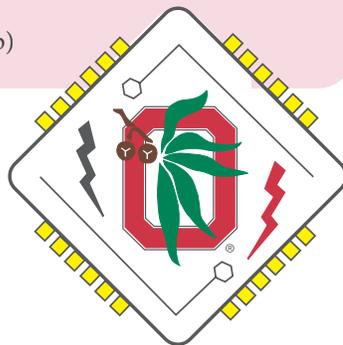
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Membership & Activity Fee

Beginning in 2012, the OSU EE/ECE Alumni Society is instituting an activity fee of \$20 per calendar year. Note that all alums of the EE/ECE department are automatically members of the society, and are welcome to participate in most society events without paying the activity fee; however, there are several advantages for members who pay the annual fee:

- The activity fee must be paid for society members to qualify for the **football ticket lottery** for the Reunion-Homecoming Weekend game (vs Nebraska) on October 6. Alums may participate in other Reunion-Homecoming Weekend events without paying the activity fee.
- Alumni who have paid the activity fee qualify for a **discounted price** for any charges at other society events.
- Alumni who have paid the activity fee qualify for a **discounted price** on any society merchandise (coming soon).

The activity fee duration is based on the calendar year, so the 2012 activity fee will expire December 31, 2012. Renewal of the activity fee is required for society members to qualify for items above during the 2013 calendar year.

The income from the activity fee will be used as funds to help the operation of the society and as seed money to help sponsor new events for the society. •

President's Message

Written by Robert Borel, EE class of 1965



Although spring quarter recently ended, with our luncheon honoring graduates on June 6, 2012, it's time to think about planning for the OSU Alumni Reunion-Homecoming Weekend, October 5-7, 2012. Specifically, we hope all our alums can attend the EE/ECE Society's Annual Meeting on October 6, and stay for the Engineering Tailgate prior to the evening Nebraska football game. Please consider this letter as my personal invitation for you to attend all the activities scheduled for Reunion-Homecoming Weekend, and specifically participate in the ECE luncheon and annual meeting on October 6.

As an additional invitation, please consider paying the annual \$20 activity fee, which provides discounts for all ECE events, and also makes you eligible for the ECE football ticket lottery for this year's Nebraska football game.

I am also pleased to report that for the 2011-2012 academic year, the society awarded four scholarships totaling \$1,750 to undergraduate Ohio residents, and two scholarships totaling \$850 to undergraduate nonresidents. While this may not sound like a lot of money in the grand scheme of things, you can be sure the scholarships mattered to these students. Thank you to everyone who has contributed, but remember, the funds that are distributed don't get replenished without your continued support. You can donate to any of the EE/ECE Alumni Society scholarships online at ece.osu.edu/alumni/support/scholarships.

Looking forward to seeing you in October! •

Robert Borel graduated from The Ohio State University with a BSEE, MS in 1965 and an MBA in finance from the University of Rochester in 1974. He is currently the CEO of BeamAlloy Technologies, LLC and lives in Naples, FL with his wife, Lynn.

Join ECE for Reunion-Homecoming Weekend!

Celebrate Reunion-Homecoming Weekend with your friends in the Department of Electrical and Computer Engineering and the EE/ECE Alumni Society on Saturday, October 6, 2012. Join us for a luncheon, award presentations, student poster competition, lab tours and a bunch of fun!

The EE/ECE Alumni Society has been allocated a small block of football tickets to the OSU v. Nebraska game on October 6. If you would like the opportunity to purchase up to two ticket packages to the game and you meet the eligibility requirements*, please visit ece.osu.edu/alumni/society/2012football to print and complete the form.

A lottery will be conducted from the checks/forms received to determine ticket recipients. Priority for football tickets will go to those alumni from the classes of 1962, 1987, 2002 and 2007. Additional tickets will be made available for the lottery if the demand does not exceed the supply for these classes.

All forms and checks **must be received by Friday, August 10, 2012** to be eligible for the lottery.

If you are chosen to purchase ticket packages, an e-mail will be sent on Monday, August 13, 2012 and your check will be cashed immediately. If you were not chosen to purchase tickets, your check will be shredded on Monday, August 13. The \$95 cost of each package includes one football ticket, one seat at the luncheon and awards presentation, and one College of Engineering tailgate entry bracelet. The student poster competition and lab tours are available at no cost to everyone and do not require registration.

Please note that a maximum of two packages may be purchased, applicants must meet eligibility requirements*, and tickets must be picked up in person by the EE/ECE alum from 12:00 to 1:00 p.m. in the lobby of Dreese Laboratories. We are not allowed to mail tickets or allow anyone other than the purchasing alum to pick them up. For your safety and ours, a photo ID will be required.



Event Schedule: Saturday, October 6, 2012

- 1:00-2:30 p.m. Catered luncheon and award presentations (*Dreese lobby*)
- 2:30-4:30 p.m. Annual student poster competition and lab tours (*Dreese & Caldwell Labs*)
- 4:30 p.m. Annual general meeting of EE/ECE Alumni Society (*Dreese Labs, room 260*)
- 5:00 p.m. College of Engineering Tailgate (*between Hitchcock Hall and Knowlton*)
- 8:00 p.m. OSU vs. Nebraska football game (*for those with tickets*)

*Lottery eligibility requirements:

- You must be a current dues-paying member of the OSU Alumni Association. If you are not a member and wish to pay your OSUAA dues, visit ohiostatealumni.org/membership.
- You must have paid the EE/ECE Alumni Society 2012 activity fee by the time we receive your payment. If you have not paid the 2012 society activity fee and wish to, please send a separate \$20 check with your lottery application or make a \$20 payment on PayPal. Details about the society's activity fee, as well as a link to PayPal, are online at ece.osu.edu/alumni/society/2012football. The \$20 2012 activity fee will **not** be refunded if you are not chosen in the football lottery.
- You are not eligible if you received OSU vs Nebraska game tickets through the OSUAA lottery, or any other source, including season ticket holders (whether in your name or your spouse's name).

For people NOT entering or picked in the football lottery:

If you are not entering the EE/ECE Alumni Society football ticket lottery, but would like to attend the department luncheon and awards presentation, the cost is only \$10 per person. To register, please visit ece.osu.edu/alumni/2012reunion. There are a limited number of seats available, so please register early if you would like to attend. Registration for the luncheon must be received by Friday, August 17, 2012. Registration will be honored in the order received until available seating is filled.

The student poster competition and lab tours are available to everyone at no cost and without registration. If you would like to attend the College of Engineering tailgate, you may purchase tickets, for \$10 per person, at the tailgate entrance the day of the event, while availability lasts. No alcohol is served at this tailgate. •

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Portrait of a Scholarship Recipient: Kyle Salberg

Kyle Salberg is a fourth year ECE and CSE double major, focusing on computers and controls.

Why did you choose to attend Ohio State?
Going into college, I didn't have much of an idea of what I wanted to do, but I knew it was going

to be something math or science related. I chose Ohio State because it's a great school and a big school. I knew I could have the opportunity to fully explore whatever option I wanted to pursue here.

What have been some of the highlights of your Ohio State experience?

Freshmen year in the FEH robot project was a big highlight. It was my first big group project experience. A lot of stuff went wrong during the building process, but it was a good learning experience. We ended up doing pretty well in the end. Some of the computer labs I've taken have been fun too. Last quarter, I took had two labs in the same day, one working with a complex programmable

logic device, and another using assembly language to program a microcontroller. It was really interesting working on two different levels of abstraction to accomplish similar goals.

How have the ECE scholarships you have received affected your college experience?

The scholarships have really helped. I'm a double major, so I end up taking a lot of classes and don't have a lot of time to work. The scholarships I've received have really helped allow me to focus on my studies.

What would you say to your benefactors if they were here now?

First off, thanks. It really means a lot that you're willing to help someone you've never even met, so they can succeed in their education. It makes a lot of things possible, that I would otherwise have not even considered.

Have your studies made an impact on your life outside the classroom?

I certainly know a lot more now than when

I did coming into college, and I share what I've learned with others. I was a mentor for FIRST Robotics last year, where I helped guide a couple of high school students through practical applications of what I was actually learning in my classes at the time. I'm also a member of the Fencing Club, and I have been able to use my knowledge of circuits to fix some of the electrical equipment that is used.

What are your future professional aspirations?

As of yet, I'm still largely undecided. I have an internship this summer doing software development, which I really enjoy. At the same time, I also still want to continue my learning, so it is very likely that I'll decide to go to grad school for at least my master's, and possibly even a PhD. For now though, I'm just taking things one step at a time. •

Visit ece.osu.edu/alumni/support for information on how you can support ECE students.