A newsletter for alumni and friends of the College of Engineering

CENTENNIAL EDITION | FALL 2014
DEAN’S MESSAGE

This fall the College welcomed 22 percent more freshman students than last year, and total enrollment is at an all-time high with 3,500 students!

As enrollment in the College of Engineering continues to increase, our vision remains the same: produce career-ready graduates who can tackle society’s current and future needs. Indeed, Akron engineering alumni and students are making an impact. Our alumni impress employers with their hands-on preparation and progress throughout their careers to make major contributions to the success of their companies. Our students have garnered worldwide recognition and respect, which is demonstrated by the College’s robust cooperative education program, impressive senior design projects, and numerous victories in national and international competitions.

Hundreds of our alumni and friends volunteer their time, talents, and treasure to help us advance our goals. It is because of their valuable support that we are able to offer important programs to assist our student engineers, including professional mentoring, guest speakers from industry, and engineering scholarships. If you are interested in making a difference to the success of our students, please contact me by email at engineeringdean@uakron.edu.

Thank you for your support of the College of Engineering at The University of Akron.

George K. Haritos, Ph.D., F. ASME Int’l
Dean

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We’re on Facebook!
Find us by searching for “The University of Akron College of Engineering.”

Linkedin
Join the College of Engineering Alumni LinkedIn group!
More than 400 guests attended a gala in celebration of the College of Engineering’s 100th anniversary on May 22, 2014. Faculty, staff, alumni, industry partners, and friends celebrated the College’s remarkable achievements over the past century.
STUDENT NEWS

UA’s first Formula SAE electric car performs well at competition

It’s been four years in the making, and in 2014 our engineering students made history with the completion of the first-ever student designed and built Formula-style electric vehicle at UA.

The Formula Electric team traveled to the Formula Hybrid competition in Loudon, N.H., in May 2014 and participated in the static design event. The team received third place in Chrysler’s Electrification Innovation Award for the vehicle’s battery management system. They finished fourth out of seven electric vehicles at the competition.

“This team gives engineering students the opportunity to expand skills and to really get involved,” says Mark Keenan, Formula SAE electric team manager and electrical engineering student.

Above: The University of Akron’s first Formula-style electric vehicle to compete in competition

Formula SAE combustion team, Zips Racing, continues to excel

Driven figuratively and literally, the Zips Formula race team is taking cues from its success last year, when it ranked eighth in the world out of more than 500 universities.

“This year’s car is an evolution of the ZR13,” says team captain Ryan Kruse. “We found a few areas where we could make changes to further improve the car’s performance.”

The team tweaked the car’s aerodynamics and trimmed off 15 pounds. They also modified the engine to increase its power and efficiency based on computer simulations they conducted to test engine airflow, friction and fuel injection.

And all that testing paid off: the team finished first in engineering design, first in fuel efficiency and fourth overall at Formula Student Czech Republic 2014.

Under the guidance of academic advisor Dr. Richard Gross, mechanical engineering professor emeritus, Zips racing teams have competed in design competitions since 1990.

UNIVERSITY OF AKRON FORMULA SAE® CARS THROUGH THE YEARS

Above: The 2014 Formula Car on the track at FSAE Michigan
Concrete canoe, steel bridge teams win 1st and 2nd place

The University of Akron’s Concrete Canoe team placed first and the Steel Bridge team placed second in the 2014 ASCE regional student competitions. Both teams, led by faculty advisor Dr. Stephen Duirk, assistant professor of civil engineering, qualified for national competition.

The Concrete Canoe team topped more than a dozen teams at the Ohio Valley Student Conference Regional Concrete Canoe Competition hosted by Carnegie Mellon University. As a first-place regional winner, UA’s team went on to the national competition at the University of Pittsburgh, where they placed in the top 10 in most competition categories.

In 2014, the National Student Steel Bridge Competition came to Akron for the first time in event history. In a fast and furious national competition, teams of top engineering students from 50 universities raced against time and one other, using pieces and parts stored in a rectangular box to build a 17- to 19-foot-long steel bridge capable of bearing about 2,500 pounds, to build bridges designed with innovation and judged on lightness and stiffness, along with construction and structural economy.

The top three finishers at the national competition held in Akron were University of California, Davis; Massachusetts Institute of Technology; and University of California, Berkeley.

Engineers Without Borders help locally, make plans for Zimbabwe

Members of the Akron Student Chapter of Engineers Without Borders (EWB), led by advisor Dr. Chris Miller, associate professor of civil engineering, have been volunteering with the Buckeye Trail Association to expand and add trails at West Branch State Park in Ravenna, OH. Student volunteers learned how to clear the trail properly and safely, and have made a great impact!

EWB members are also gearing up for their first overseas project. The students are planning and raising funds to travel to Binga, Zimbabwe, where they will partner with Empty the Orphanage Ministries to assist in adding a dining hall to an existing transition home, called New Hope Home.
The first aerospace systems engineering graduates cross the stage at commencement in May 2014.

In response to industry demands, the College established the country’s first and only (outside of the U.S. Air Force Academy) undergraduate program in aerospace systems engineering. The program produces engineers who have a focus on research, development, technical skills and business acumen.

The four graduates of this program, Drew Bower, Devin Cross, Ian Maatz and Mike O’Neil, are all going directly into positions at Wright-Patterson Air Force Base, Pratt & Whitney and UTC Aerospace Systems.

One employer described her UA student as “one of the best co-op students I’ve had in 20 years.”

Corrosion Academy grows in its second year

During the summer of 2014, 26 local high school students worked in UA faculty laboratories on corrosion-related projects for eight weeks while also participating in organized activities that introduced them to laboratory research, the scientific method and college life. At the end of the program, students presented their research findings in a formal poster session.

This summer’s program grew from the inaugural year, which only included four faculty teams and eight high school students.

New BME design team develops low-cost prosthetics

Students in the Department of Biomedical Engineering now have the opportunity to compete in student design competitions as members of the new BME Design Team. The purpose of the co-curricular team is to give students the opportunity to work on new and innovative medical device ideas. Developed devices will be entered into design competitions and may have the potential for commercialization.

For their first project, students have chosen to enter the LIMBS International 2015 design competition, which is aimed at creating low-cost prosthetics and orthotic devices for the developing world.

The first aerospace systems engineering students graduate

The nation’s first aerospace systems engineering graduates and their professor at a recent aero design competition, from left: Drew Bower, Mike O’Neil, Dr. Jerry Drummond and Ian Maatz
Robotics team excels at NASA Mining Competition

The UA Robotics team was one of 37 teams to compete in NASA's fifth annual Robotic Mining Competition at Kennedy Space Center last spring. The students designed and constructed a robot that would mine, transport and deposit regolith (sand) in a simulated Martian environment. The UA robot was one of only seven robots to mine regolith autonomously.

The team also received the following awards:
- Systems Engineering Paper – 2nd Place
- Technical Presentation – 3rd Place
- Community Outreach – 3rd Place
- Team Spirit – 2nd Place
- Pit Pride – 1st Place.

IDEAs Excellence Awards promote inclusive excellence

The IDEAs Excellence Awards, established in 2013 to promote diversity and inclusive excellence by Ms. Kaye Rowan, former assistant director of development for the UA College of Engineering and current director of development for the College of Optical Sciences at the University of Arizona, are awarded to students for outstanding academic achievement or exceptional leadership skills and community service.

“We are very thankful for Ms. Rowan’s trust and belief in our efforts to increase diversity and student success,” says Dr. Julie Zhao, director of the IDEAs program.

In 2014, Renee Calderon (B.S. BME and B.S. Chem ’14) and Jamara Beard (civil engineering student) received the award.

SAE® Formula Combustion: 5th place overall at SAE Michigan, 1st place overall at Toronto Shootout
SAE® Formula Electric: 3rd place Innovation Award (battery management)
SAE® Aero Design: 1st in Advanced Class competition with record-breaking performance in accuracy
Concrete Canoe: 1st place at Ohio Valley Regional Competition
Steel Bridge: 2nd place at Ohio Valley Regional Competition
Robotics: 2nd place systems engineering paper, 2nd place technical presentation, 3rd place community outreach
New LEAP program helps speed technologies to market

The Leading Entrepreneurial Academics into Practice (LEAP) program is part of the University’s Proof of Concept initiative led by Director Dr. Gopal Nadkarni, associate professor of mechanical engineering. The initiative combines university funding with guidance from industry and entrepreneurship experts to identify commercially ready inventions. Five of six inventions to receive funding from the LEAP program are led by College of Engineering faculty, including:

Akron FFT: A mathematical process devised by Dr. Dale Mugler, professor of biomedical engineering and dean of the Honors College, that could speed computer graphics.

OXAID: A moist hydrogel dressing to treat diabetic foot ulcers formulated by Dr. Nic Leipzig, assistant professor of chemical and biomolecular engineering.

Shrinkage-Reducing Admixture: An admixture that keeps concrete from shrinking as it sets while maintaining its strength, developed by Dr. Donald Visco, associate dean in the College of Engineering.

Two other proposals received conditional funding, requiring them to attract matching money:

Smart Sensor Network: A system for monitoring the condition of the power grid developed by Dr. Yilmaz Sozer, associate professor of electrical and computer engineering, working with Exacter Inc. of Columbus.

Smart Imaging Goggles: A high-resolution device that helps cancer surgeons find tumors, developed by Dr. Yang Liu, assistant professor of biomedical engineering, working with the Cleveland Clinic.

The inventors, working with mentors from local companies and other advisors, will use the money to show the marketplace that their technology is ready to leave the lab. The goal is to attract outside investors or licensing deals.

The faculty-led Proof of Concept program is part of the Innovation Practice Center, created in 2012 through the University’s Achieving Distinction Initiative.

Millions in state funds to support UA research

The University of Akron received more than two-thirds of recently approved state funding through the Ohio Third Frontier in two categories.

Ohio Third Frontier Innovation Platform Awards link established research at the state’s colleges, universities or other nonprofit research institutions to the needs of Ohio companies to help with near-term product innovation and commercialization. College research supported includes:

- $1.74 million awarded to UA, led by Professor of Electrical Engineering Dr. Alex De Abreu-Garcia, in collaboration with Exacter, Inc. and Jacco & Associates, to develop a smart sensor platform for mitigating electrical grid outages, and an HVAC sensor system to regulate airflow and improve system efficiency.

Technology Validation and Start-Up Fund provides grants in two phases. The first phase involves demonstrating that a technology can be commercialized through testing and prototyping. The second phase supports Ohio startup companies that will license and commercialize technology developed at Ohio higher education and nonprofit research institutions. COE research supported includes:

- $50,000 to Akron Fast Fourier Transform (FFT) led by Dr. Dale Mugler, professor of biomedical engineering and dean of the Honors College: This technology will increase the speed of calculations carried out by graphics processing units in computers in procedures such as MRI processing and computer gaming.

- $100,000 Phase II funds to UA-affiliated startup Akron Ascent Innovations LLC – Bio-Inspired Reusable Adhesives Using Scalable Electrospinning Techniques led by Mechanical Engineering Professor Dr. Josh Wong: Funding will commercialize a dry, reusable adhesive that is easily removable without damaging surfaces or leaving sticky residue.
FACULTY NEWS

Mary Verstraete named ASEE Outstanding Teacher

The award selection committee for the ASEE North Central Section unanimously selected Dr. Mary Verstraete, associate professor of biomedical engineering, as the “2014 ASEE NCS Outstanding Teacher.” The award, given by each ASEE section, recognizes the outstanding teaching performance of an engineering or engineering technology educator.

Hossein Tavana named Young Innovator by BMES

Dr. Hossein Tavana, assistant professor of biomedical engineering, is one of 13 professors recognized by the Biomedical Engineering Society (BMES) as a 2014 Young Innovator in Cellular and Molecular Bioengineering. He will present his paper on biphasic tumor spheroid microtechnology for anti-cancer drug testing at the 2014 meeting.

New Faculty

The College welcomed seven new faculty in Fall 2014. We also welcomed our largest undergraduate class to date as total enrollment in the College has surpassed 3,500.

Jin Kocsis
Assistant Professor
Department of Electrical & Computer Engineering
Ph.D., University of Toledo, 2014

Chen Ling
Associate Professor
Department of Mechanical Engineering
Ph.D., Purdue University, 2006

Zhe Jerry Luo
Assistant Professor
Department of Civil Engineering
Ph.D., Clemson University, 2011

Kwek-Tze Tan
Assistant Professor
Department of Mechanical Engineering
Ph.D., Tokyo Metropolitan University, Japan 2011

Shao Wang
Design Professor
Department of Mechanical Engineering
Ph.D., University of Illinois at Urbana-Champaign, 1991

Gopal Nadkarni
Associate Professor
Department of Mechanical Engineering
Ph.D., University of New Brunswick, Canada, 1989

Qixin Zhou
Department Chair
Department of Chemical & Biomolecular Engineering
Ph.D., North Dakota State University, 2014
Harry G. Holcombe, Class of ‘59

When Harry Holcombe graduated from The University of Akron in 1959, he had no idea that he was also making history. Nearly fifty years later, upon “Googling” his name, he learned that he was the first African American to graduate from the College of Engineering at The University of Akron.

“I just didn’t know,” says Holcombe, who received a bachelor’s degree in mechanical engineering. “Everyone was open to me and supportive of me, but it was never made known to me.”

Early encouragement from General Motors
As a high school senior at Patterson Co-op High School in Dayton, Ohio, Holcombe received the opportunity to work for General Motors (GM) at the Inland Manufacturing Division. Holcombe credits his work on the Urban League’s citywide Vocational Opportunity Campaign for the opportunity with GM.

“I served as the chairman of that campaign,” Holcombe says. “I think that must have shown I had leadership qualities.”

He also believes the opportunity came thanks to John D. O’Brien, the general manager at Inland Manufacturing Division of General Motors at the time, who agreed to have an African American student work in his plant as a skilled-trade apprentice – a first for the company.

O’Brien also encouraged Holcombe to apply to the General Motors Institute (GMI), now Kettering University, in Flint Mich., in 1954. Holcombe passed the admissions test, but GM made him another offer: he could attend GMI or receive a full five-year scholarship to attend The University of Akron.

Holcombe knew he would be making history and breaking barriers at GMI. Not interested in that spotlight and the pressure he thought would follow him to GMI, especially given the recently decided landmark U.S. Supreme Court case Brown v. Board of Education, he chose to attend the University of Akron.

‘Cooperate and Graduate’
Holcombe remembers his days as an engineering student fondly. Class sizes were much smaller back then, with only 12 or so in a class.

“We worked closely with one another on some of our studies,” says Holcombe. “We’d find an empty room in Ayer Hall, and five or so of us would do whatever homework we had.”

They called it ‘cooperate and graduate.’ Holcombe was a member of Tau Beta Pi (the engineering honor society), ASME and ROTC. He was also involved in the arts, participating in both University Singers and theater groups.

After graduation, Holcombe went into active duty in the United States Air Force. After three years, he left as a first lieutenant and returned to Inland as a project engineer and obtained his MBA from the University of Dayton in 1969.

The airbag, a new safety feature
In 1970, Holcombe was asked to join GM’s corporate personnel staff in Detroit to recruit students in Historically Black Colleges and Universities (HBCU). Harry spent the rest of his career with General Motors working on various corporate staffs, including engineering, transportation systems and economics. Perhaps his most interesting work came in 1976 when he managed the team responsible for servicing 1,000
Chevrolet Impalas fitted with GM’s first experimental airbags. The cars, all dark green, were built on the assembly line in Doraville, Ga., and distributed to governmental agencies and insurance companies. When an airbag deployed, Holcombe’s team had to travel to the site to service the vehicles.

Retirement from GM came in 1982 for Holcombe, but he wasn’t finished working yet. He purchased a dairy restaurant in an old White Tower Hamburgers building and ran it for nine years. With so many years flying in and out of airports on a rigid corporate travel schedule, Holcombe says he welcomed the change of pace.

“This was my project,” says Holcombe. “I enjoyed getting to know the costumers and being the boss.”

Class of 1959

Today Holcombe resides in Ft. Lauderdale, Fla., where he enjoys the local arts scene and horse racing. He travels extensively and has visited Western Europe, South America, China and Morocco. He says the engineering graduates of 1959 get together regularly, and classmate Kenneth Thompson still puts together an annual newsletter that answers the question, “What did you do last year?”

For Holcombe, the answer to that annual question was easy this year. He spent five weeks on a transatlantic repositioning cruise to the Mediterranean, where he managed to explore several new places, including Madeira, Portugal; Murcia, Spain; Marce, France; and Milan and Venice, Italy. He also returned to his hometown of Dayton, Ohio, for a family reunion.

New scholarship honors Professor Kult

Milton L. Kult joined The University of Akron in 1954 and rose through the ranks to the distinction of professor emeritus. He taught for over 59 years until shortly before his death in December of 2013. Professor Kult was beloved and admired by thousands of graduates.

The Milton L. Kult Endowed Scholarship was created in Professor Kult’s memory by his daughters and their families: Ms. Virginia L. Hulsey, Ms. Elizabeth A. Kult, and Ms. Phyllis K. Weaver. It is the family’s intention to enable his memory to have a lasting impact in the profession he loved and that his scholarship endowment account be added to by others who wish to remember him so that the fund amount grows, and with it the scholarship amount that is distributed.

If you would like to give a gift in the memory of Professor Kult, please contact:

Mrs. Megan Hopper
Director of Development, College of Engineering
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Infocision Stadium, Suite 200
Akron, Ohio 44325-2603
Phone: 330-972-5686
mhopper@uakron.edu

Slide rules to honor engineering’s past

When the College of Engineering asked for donations of slide rules and other out-of-date engineering tools, our alumni answered in droves! We received more than 100 items from more than 60 alumni!

Distinguished Professor Mark Soppeleand from UA’s Myers School of Art is hard at work creating a display for the slide rules. The final product, which will be on display in the College, will honor engineering’s past and serve as a visual reminder of how far the field of engineering has come since the College’s beginning in 1914.

Thank you to all who donated!

Alumni and friends who donated slide rules will be contacted when the displays have been completed.
College of Engineering Advance-
ment Council member and alumnus Dr. Jeffrey S. Kanel (B.S. Chemical Engineering ’85) is
founder and chief executive officer of Renewable Algal Energy, LLC, (RAE), an innovative biotechnology
firm that has developed revolutionary, patented algae harvesting and lipid recovery technology to
produce sustainable products for nutraceutical, animal feed, and renewable fuels markets from microalgae.

How did you get involved with renewable
energy and sustainable products?
I have been interested in extraction for many years, both at Eastman Chemical and Union Carbide. That, coupled
with my entrepreneurial mindset, led to the founding of RAE in 2007. Algae are fascinating organisms. Algae are
vital as primary producers of nutrients, and numerous life forms rely on algae to provide their diet with high-quality proteins, carbohydrates and fats. Algae are also uniquely able to recover carbon dioxide from the atmosphere – providing the world with an opportunity to truly recycle carbon.

How did the UA College of Engineering help
prepare you for a successful career?
I learned the fundamentals of chemical engineering, and how these basic concepts were applicable to a broad range of industries (e.g., biofuels, mining, pharmaceuti-
cals, petrochemicals). I also learned the analogies between the various separation processes, and this knowl-
edge was utilized while I served in Engineering Research at Kodak, Eastman Chemical, Union Carbide, and Dow
Chemical.

Was a certain professor influential in your life
while you were a student?
Professors Max Willis and George Chase both made a huge impact on my career. I had, and still have, the high-
est respect for their professionalism and contribution to the field of chemical engineering. They inspired me to earn a Ph.D. at Georgia Tech and to develop an expertise in separations technology. This area of expertise is the technical cornerstone of Renewable Algal Energy.