From The Dean's Office

Dear Friends and Alumni:

As enrollment in the College of Engineering, Architecture and Technology continues to grow, the new, 72,000 square foot ENDEAVOR laboratory will be the leading edge of our curriculum. As construction continues, we are preparing to transform the undergraduate experience with large-scale, hands-on labs with entrepreneurial manufacturing space for student ideas and dreams.

President Hargis and I kicked off OSU's largest partnership with China this past spring, engaging students from Southwest Jiaotong University in a dual degree program in fire protection and safety engineering technology. Sixty Chinese engineering students are in the first program and they will join the Stillwater campus between 2018 and 2020.

With our student population on the rise, we teamed up with OSU Residential Life to offer another new experience for our incoming freshmen. Parker Hall has been completely renovated as the new CEAT living and learning program (LLP). CEAT upperclassmen will mentor the LLP freshmen, providing incoming students with diverse backgrounds advantages in their first year. Parker Hall will be a community of support, tutoring and new friends for CEAT freshman.

CEAT is also pushing out into the community to encourage the next generation to study engineering. We recently hosted the first unmanned aerial systems summer camp for high school students. The camp introduced students to circuits, design and the engineering industry. Students came away with a new understanding of systems engineering, unmanned aerial vehicles and the different aspects of engineering that are required to collaborate in the industry.

I recently established the CEAT Dean's Club at the OSU Foundation for distinguished supporters who have made significant investments in the college's priority projects. Those who have given $5,000 annually to the CEAT Fund or college priorities, or more than $250,000 in their lifetime receive membership. Dean's club members will have a $2,500 scholarship in their name funded by an anonymous donor. They also get the opportunity to meet with me to discuss new ideas, legislative initiatives and help with the strategic direction of the college.

On behalf of OSU and CEAT, I hope you enjoy the Impact on OSU. The college could not be at the forefront of innovation without the investment of alumni, friends, industry partners and people like you.

Go Pokes!

Paul J. Tikalsky, Dean, College of Engineering, Architecture & Technology

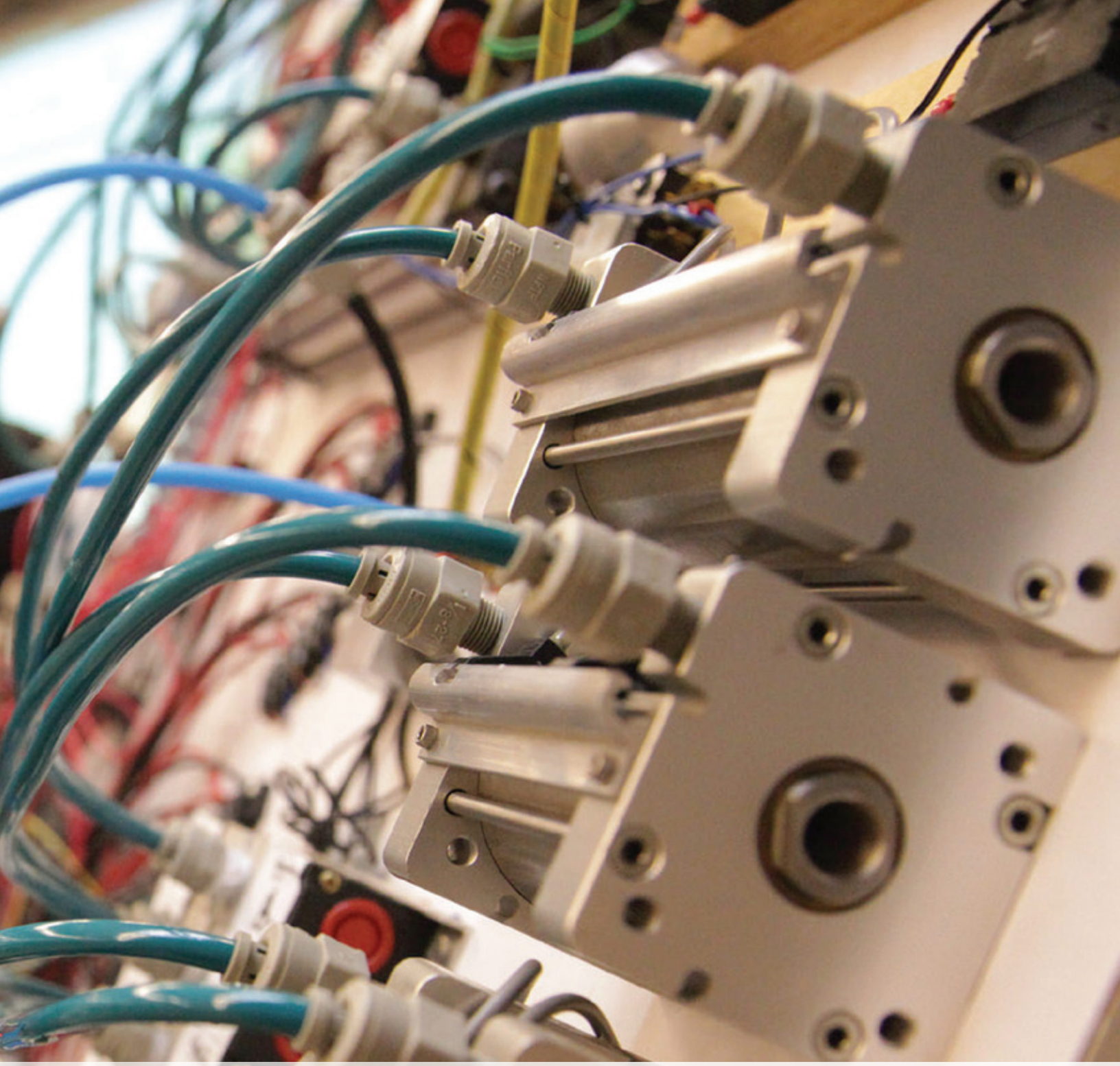
Going Global

BY BRITTANY BELLI & PAM REYNOLDS

When it comes to international impressions, landlocked Oklahoma is probably the last thought on anyone's mind. However, Oklahoma State University has been making an impact since the 1950s. It began with Alemaya University in Ethiopia, with the legacy of Henry G. Bennett, former OSU president. Throughout the last 65 years, OSU's international presence has only grown, spreading across the globe.

Dr. Keith Teague, Electrical and Computer Engineering (ECE) professor, has been fostering a relationship between Oklahoma State University and Vietnam for the last seven years.

"The Vietnam Ministry of Education and Training (MOET) has established several programs



to increase the quality of their universities and make them more competitive internationally," explains Teague. One of these programs is the advanced program, which has the goal of developing degree programs at Vietnamese universities, patterned after U.S. programs and taught in English in Vietnam.

"MOET and the Vietnamese Education Foundation select and fund top Vietnamese students for graduate study in the U.S. We have accepted a number of these excellent students in ECE, and then they return to Vietnam after completing their advanced degree."

Teague worked closely with Thai Nguyen University of Technology (TNUT) to establish an agreement stating that OSU will support

Visiting students from Tianjin University explore the OSU campus.

TNUT's development of an electrical engineering curriculum – the same one used at OSU – with all costs paid for by TNUT and MOET.

"For the last three to three and a half years, we've been hosting Vietnamese faculty members in Stillwater," says Teague. "They come here and attend classes, improve their skills, work in our labs and experience our teaching methods and culture firsthand. Then they take these experiences home and implement them into their ECE program."

Vivian Wang, OSU's manager of Chinese development, shares a similar relationship with universities in China. She says OSU is a strategic partner with Southwest Jiaotong University and Tianjin University, offering traditional student exchange programs, dual degree programs and faculty training programs.

Tianjin University has been working with OSU's ECE program for over 20 years. Through this program, Chinese students come to OSU during their summer break to enhance their education.

A dual degree program with Southwest Jiaotong University was first established with the school of Civil Engineering in 2008. The program has expanded through the years to include students in Electrical Engineering, Industrial Engineering, Mechanical Engineering, and Architecture. A new dual degree program was established this year between Southwest Jiaotong University and the College of Engineering, Architecture and Technology's Fire Protection and Safety Engineering Technology (FPSET) program. The presidents and deans of both

universities attended the signing ceremony in Chengdu, China in April 2017.

Up to 60 Chinese engineering students will begin the new dual degree program in fall 2017. The students will take core courses such as math, physics, chemistry and engineering science in China. The students will then transition to the OSU Stillwater campus between 2018 and 2020, where they will enroll in the FPSET program to finish all major courses. The students will graduate with two bachelor's degrees, one from OSU and one from Southwest Jiaotong University.

In yet another recent example of international collaboration, the School of Mechanical Engineering Technology hosted three student interns from the Kumoh National Institute of Technology in South Korea this past year. The students had the opportunity to gain hands-on experience by working on projects in the MET laboratories.

These international partnerships within the College of Engineering, Architecture and Technology provide students with a global perspective, strengthen relationships between universities, and allow OSU to further increase its international visibility.

OSU President Burns Hargis meets with SouthWest Jiaotong University President Fei Xu.

ENDEAVOR to Change the World

BY BRITTANY BELLI
& PAM REYNOLDS

For the past few months, a crane adorned with the Oklahoma State University logo hugged the skyline of the Stillwater campus. Foundation was poured, supplies were trucked in and construction workers erected the steel skeleton of the new College of Engineering, Architecture and Technology (CEAT) ENDEAVOR.

Fifteen laboratories, five design suites, four instruction spaces, four industrially aligned labs and three maker spaces will fill the 72,000 square foot, three-story building.

Generous donations from Valero Energy Corporation, Blair, Brewer, Exxon Mobile and Chesapeake will support enhancements to the building's process and transport laboratory and the pre-laboratory instruction room.

The process and transport laboratory will offer students hands-on experiences with equipment similar to what is used in the industry. It will include a high bay space to assist with research and engineering courses as well as space to conduct multiple experiments at the same time.

"It's very exciting to see our donors come to the table to help us advance the building and better

Special touches, like this one, are inlaid in the floor of the new building.

prepare the next generation of engineering, architecture and technology students," says CEAT Dean Paul Tikalsky.

In addition to the interdisciplinary lab space, CEAT students and faculty were able to include a personal touch. Current CEAT students used the Design and Manufacturing Laboratory to machine the inlays into the floor of the building in stainless steel.

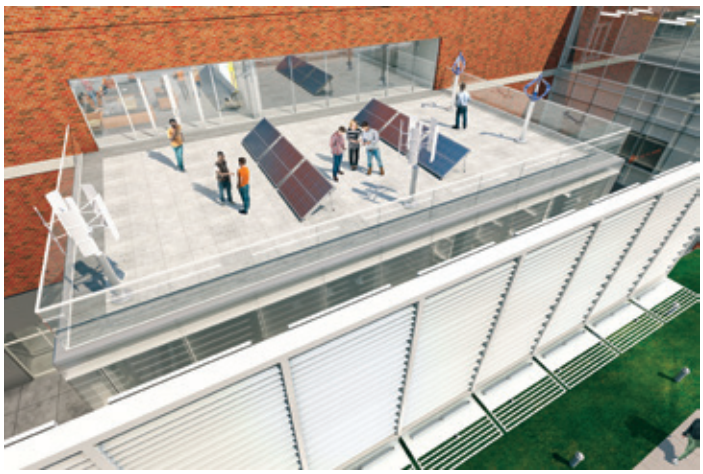
The ENDEAVOR Laboratory is scheduled to open in Fall 2018. Its prime location near the School of Architecture, CEAT and the Spears School of Business will help students foster interdisciplinary relationships between architecture, engineering, entrepreneurship and industry.

CEAT continues to expand its resources in order to accommodate a growing student population and an increase in industry need for well-educated engineers.

Support from alumni, friends and industry partners is paramount to keep the college at the forefront of engineering. The most impactful way to support the college is with a contribution to the Engineering Building Fund (26-71500).

To launch the college into the next era of engineering and education, visit osugiving.com/yourpassion/ceat-undergraduate-lab.

Hands-on, interdisciplinary laboratories will offer students a unique, educational experience. Classes are slated to start in Fall of 2018.



CEAT
by the Numbers

DEGREES GRANTED IN 2015-2016

BACHELOR'S
689

MASTER'S
142

DOCTORAL
25

GRADUATES WITH HONORS
138

UNDERGRADUATE STUDENTS
4203

GRADUATE STUDENTS
561

HONORS DEGREES
35

SCHOLARSHIPS AWARDED
$2.2 MILLION

RANKED #1
FOR NATIVE AMERICAN
BS ENGINEERING
STUDENTS

FEMALE
ENGINEERING
STUDENTS
927

81
YEARS OF PARTNERSHIP WITH
FPP TO BETTER TRAIN FIRE
PROFESSIONALS

FACULTY
178

OVER
5000
IGSHPA
MEMBERS
WORLDWIDE

Parker Hall, LLP

BY BRITTANY BELLI

The College of Engineering, Architecture and Technology has teamed up with Oklahoma State University Residential Life to offer a new experience to incoming freshmen.

The newly renovated Parker Hall is designated as a CEAT living and learning program (LLP). This LLP was created to build and support a community of students through mentoring, tutoring, networking, special programming, and more. Freshmen interested in pursing engineering, architecture or technology degrees will have the opportunity to live alongside experienced CEAT upperclassmen who can offer mentorship, tutoring and friendship.

"Within just three weeks, capacity for Parker Hall was filled," says Julie Blatt, CEAT Student Services coordinator. "With upperclassmen nearby and amenities like tutoring, the value simply sold itself."

In addition, the LLP includes subsections for CEAT Diversity Programs (CDP) and Maude's Quad. The Maude's Quad LLP was created for female freshmen majoring in CEAT. Maude's Quad is named after Maude Spears, the first woman to receive an engineering degree from Oklahoma A&M College. The CDP LLP will enhance the first-year experience of students desiring to live in a diverse community environment with other CEAT students.

"There's research showing that community-style living during a student's freshman year helps with retention," says Blatt. "Establishing that feeling of a community early on will keep students here on campus, in this degree program."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etm.okstate.edu
OKLAHOMA STATE UNIVERSITY

Public Partnerships

BY BRITTANY BELLI
& PAM REYNOLDS

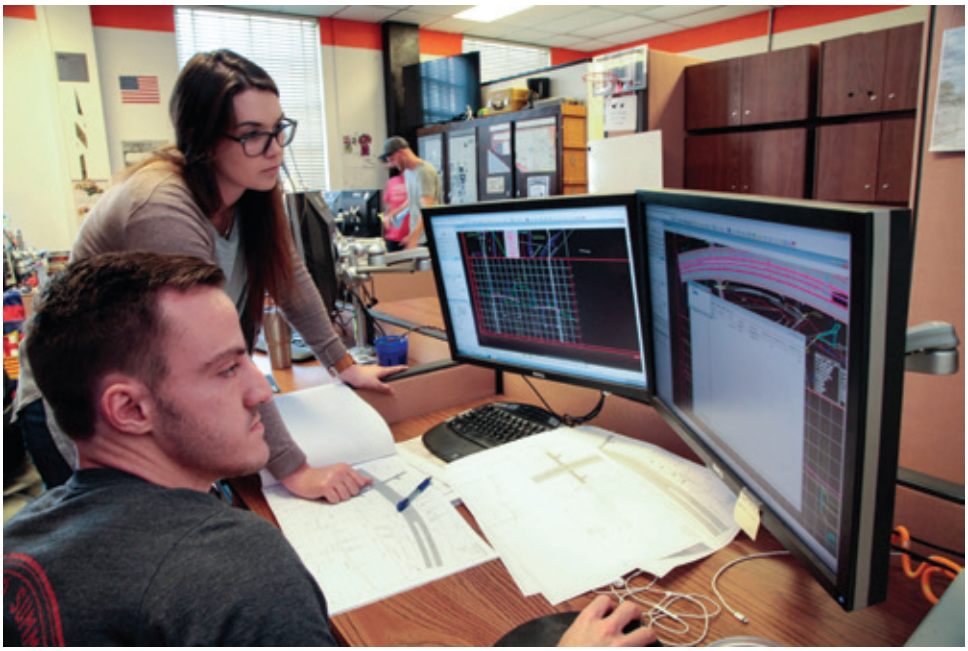
The College of Engineering, Architecture and Technology has established partnerships that connect Oklahoma State University and the public sector.

The Oklahoma Department of Transportation (ODOT) has operated the OSU Roadway Design Squad in the school of Civil Engineering at OSU since 1970.

"We hire civil engineers in the hope that they will later come to work for ODOT full-time as engineers," said Mattie Abbott, ODOT Roadway Engineering Manager.

The OSU Roadway Design Squad provides the roadway designs for Division 1 in Oklahoma. Roadway problems are identified by the Division 1 engineer in the field, and then the Roadway Design Squad develops roadway plans using the CAD and design software used by ODOT. According to Abbott, it is a great experience for students to learn to design with the software programs specifically used by ODOT.

Civil engineering students can apply for the OSU Roadway Design Squad after they have completed 20 hours on their civil degree sheet. To be co-op engineers in the Roadway Design Squad, students must maintain GPA requirements, carry 15 credit hours a semester, and work 20 hours a week. Students receive full employee benefits working for ODOT in the program, and if they sign a commitment to work for ODOT for two years after graduation, ODOT will pay for their tuition.



Students in the Roadway Design Squat at work
Photo: Clint Parker

Two of the college's outreach programs, the Center for Local Government Technology and the Southern Plains Tribal Technical Assistance Center, have an extensive partnership with ODOT to train federal employees throughout the state and surrounding areas with facilities located on or near the Stillwater campus.

CLGT has worked with ODOT for over 20 years, and ODOT is the primary funder for its local technical assistance program (LTAP). The LTAP program at OSU is one of 58 programs throughout the nation and provides technical transportation assistance to all 77 counties in Oklahoma out of its Richmond Hills facility in Stillwater, Okla. In addition, the Southern Plains Tribal Technical Assistance Center also works closely with ODOT on tribal transportation issues in Oklahoma, Kansas, Nebraska and Texas.

In fiscal year 2016, a contract with ODOT gave the college a critical role in administering the Highway Construction Materials Technician Certification Board (HCMTCB) program. To comply with federal mandate 23 CFR 637.209, ODOT requires all materials technicians working on federally funded highway construction projects to be registered with the HCMTCB. The program provides training and certification in sampling and testing procedures for asphalt and cement concrete, soils, aggregates and pavement smoothness, as well as specifically designed training for highway construction inspectors.

Classroom instruction and written examinations are conducted in the college's professional development classrooms, while hands-on training and technician evaluations take place in the new, state-of-the-art Bert Cooper Engineering Laboratory. The 33,000 square-foot facility, which opened in 2015, has the capacity to test structures and materials in a real-world environment in a consistent range of temperatures.

"ODOT and OSU have a long history of working together to improve the transportation infrastructure in Oklahoma, and our relationship with ODOT includes outreach and research initiatives," says Ed Kirtley, assistant dean of outreach and extension for the college. "We are proud of our partnership with ODOT."

South Africa

BY ED KIRTLEY, ALEX GREER & AMANDA WILLIAMS

Imagine living in a shack-like home constructed of corrugated tin, steel or cardboard, a home with limited access to electricity, water and sewage systems. Imagine living in a home where fire is one of the leading risks, with at least one fire occurring per day, over 160 fire deaths occurring per year and over 15,000 being hospitalized. This is the reality for those living in informal settlements in South Africa.

This past July, the Fire Protection and Safety Engineering Technology Program (FPST) and the Fire and Emergency Management Administration Program (FEMP) spent part of their summer in South Africa to gain a better understanding of the fire risk in these informal settlements.

The organizers of this study abroad experience believed it was important to take the students to South Africa so they could see the reality with fire in the municipal realm. It's not just about technology. There is always a social and economic element. The experience of working in the informal settlements - meeting and visiting with the residents and aid workers - put all of the elements into perspective, bringing to light how factors that contribute to fire and disaster risk are created and perpetuated.

Oklahoma State University collaborated with Stellenbosch University and the Western Cape Government Disaster Management which are already leading a research initiative to improve fire safety in a number of informal settlements in the Stellenbosch and Cape Town areas.

First, they are conducting a pilot test program where they are working closely with the Breede Valley Fire Department, installing fire alarms in homes in an informal settlement near the fire department, educating residents on how the alarms work and how to respond to alerts.

Second, they are working to reduce the sensitivity of these smoke alarms to work better in their homes and to reduce nuisance alarms while maintaining the advance warning needed to escape a fire. Third, researchers are seeking methods to prevent infiltration of insects into smoke alarms, consequently causing them to fail during a fire situation. This was a truly unique experience that prepared the students to work in other cultures and understand fire risks that are drastically different from those commonly found in the United States.

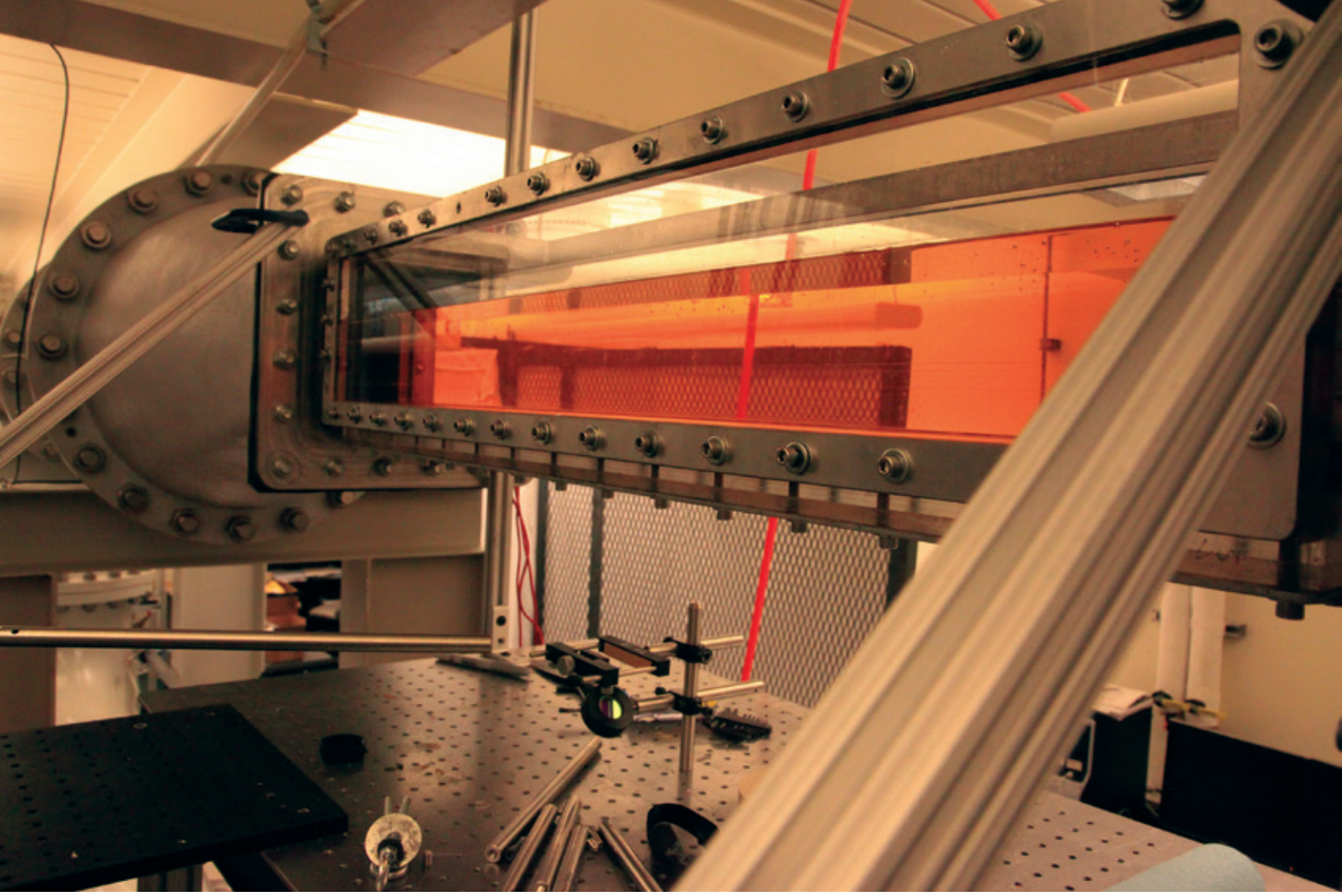
Assistant CEAT Dean and co-organizer of the study abroad experience stated "I wanted this trip to change their perspective on the world and show them they can make a positive difference. I believe that it truly did," said Ed Kirtley, Assistant CEAT Dean and co-organizer of the study abroad experience.

This study abroad experience was crucial for these students, given that both FPST and FEMP graduates often work in international settings, including the Middle East, Asia and Europe.

Four students joined the inaugural trip, including FPST undergraduates Zach Sales, Jacob Branstetter, Khalid Alkhaldi and FEMP doctoral student George Navarini. The trip was organized by Assistant CEAT Dean Ed Kirtley and FEMP faculty members Alex Greer and Tristan Wu. Financial support for the students was provided by FPST and the CEAT dean's office for 2017.

This is the first of many planned future study abroad collaborations between FPST, FEMP and partners in South Africa.

To donate to Study Abroad programs such as the South Africa program, visit osugiving.com and direct your gifts to fund 26-85200



A Resource for Research

BY KAIT BURTON

On the first floor of the Advanced Technology Research Center, with lights off and computer screens lit, Dr. Brian Elbing, Assistant Professor in Mechanical and Aerospace Engineering, peers into the iridescent water of a water tunnel, testing a new method of reducing friction between water and solid surfaces.

This is just one of many research projects that Elbing and fellow Assistant Professor Dr. Arvind Santhanakrishnan are pursuing in the Mechanical & Aerospace Engineering lab that they share with their graduate and undergraduate students. With the construction of the new ENDEAVOR, anticipating additional space and new equipment, the two professors will be expanding and furthering these projects.

As one of the broadest areas of engineering, MAE utilizes a wide range of equipment and systems, including wind and water tunnels, lasers, image processors and unmanned aerial vehicles. Even while focusing their studies on experimental fluid dynamics, Elbing and Santhanakrishnan may utilize many different resources.

"Most of the problems that I study are related to fluid flows in biological systems," says Santhanakrishnan. "Flows in the heart, how small animals fly and swim and pump and feed; as a part of that, we use some pretty expensive equipment to visualize the flows: cameras,

including slow motion and multiple lasers, depending on the project."

The research carried out in MAE with this equipment benefits society as a whole, says Elbing. For example, Elbing's study of polymer drag reduction, or the reduction of friction between water and objects such as ships utilizing water-soluble polymers, may increase shipping and travel efficiency.

The two professors believe that research also benefits their students. By participating in research, students become better equipped to enter the engineering industry, gaining hands-on and real-life experiences. Rather than just a theoretical understanding of problem solving, students who participate in research practice applying what they have learned in classes, developing the skills and practical knowledge they need to succeed.

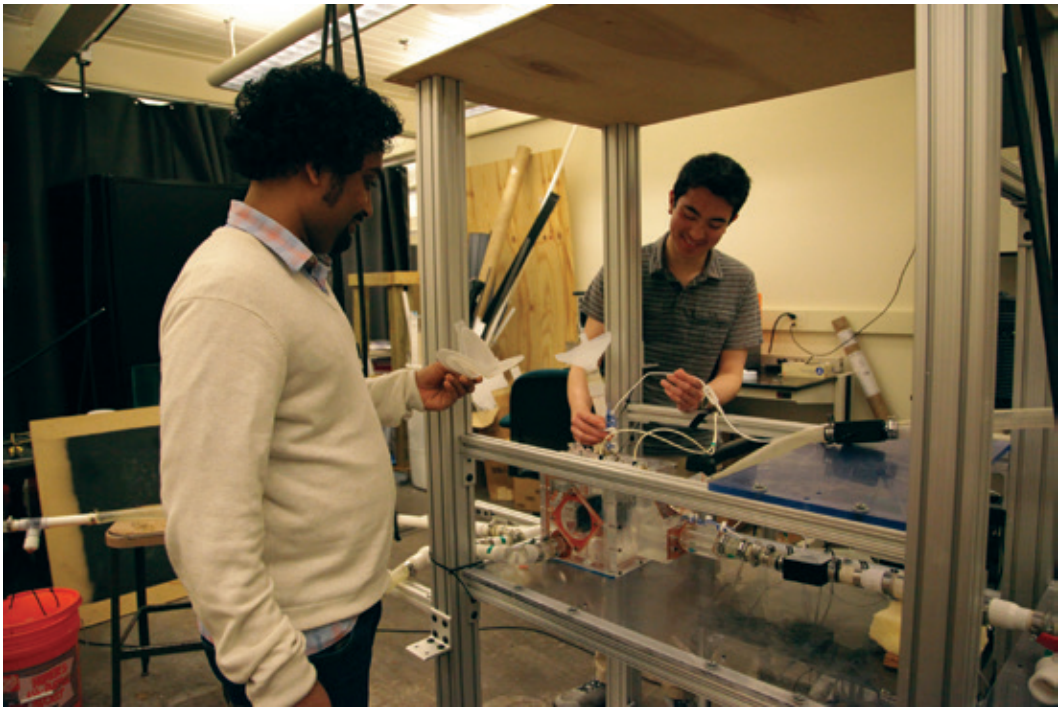
To give as many students as possible the opportunity to participate in research, the two faculty members open their lab to undergraduate research and incorporate their research questions into their undergraduate classes.

"We already have our students in our experimental fluid dynamics class design, perform and analyze experiments," says Elbing. "That class is structured so that we have teams of students working on semester-long projects that are tied to our research activities. The students use the research-quality equipment and become familiar with actual research."

The new ENDEAVOR, which includes 20 lab spaces and new equipment, will offer increased opportunities for both faculty and student research. The ENDEAVOR will include mechanical and physical property testing labs, a flow lab, a precision lab, a pre-lab, electronics and communications labs, a process and transport lab, chemical, biomedical and environmental labs and student project spaces.

"Things like the new ENDEAVOR laboratory are not commonly found," says Santhanakrishnan. "It's going to help us put our students in a higher caliber, not just because of the labs they're doing in my class, but the types of techniques they're learning are similar to a graduate student."

Offering the space, equipment and environment to enable and encourage exploration, the ENDEAVOR will serve as a resource for research, furthering the educations of engineering students and supporting the research of faculty.



Dr. Santhanakrishnan conducts research with one of his students.

Space Grant for CEAT

BY PAM REYNOLDS

Oklahoma's success in the aerospace industry can be attributed in part to the NASA Space Grant, says Andy Arena, Director of the Oklahoma Space Grant Consortium.

NASA's Space Grant College and Fellowship Program, also known as Space Grant, was established in 1989 to provide opportunities for affiliates across the United States to participate in NASA's aeronautics and space projects by supporting science and engineering education, research, and public outreach efforts.

"Oklahoma would not be where it is in unmanned systems and OSU would not have the reputation we have in unmanned aerial systems without Space Grant," Arena said. "If you go to the MAE office, you see all the trophies; every single one of those vehicles was sponsored in part by Space Grant. If you go down the hall at the DML and see all the world record airplanes, the 50 plus airplanes we developed over the years, every single one of them was supported by Space Grant. All of that success has bred more success, and you've got other faculty members that are doing great things built on the foundation that we built on Space Grant."

Space Grant allows students in states that do not contain NASA centers to get involved in NASA research. "They're really building the STEM workforce," stated Arena. "They are helping develop the new engineers and scientists that will work for NASA, so it's smart from their perspective to keep feeding that pipeline."

The NASA Oklahoma Space Grant Consortium (OSGC) includes 16 affiliates, including eight universities (OSU, OU, Cameron, Langston, East Central, Southeastern, Southern Nazarene, Southwestern), two community colleges (Redlands, Tulsa), two industrial affiliates (Frontier Electronic Systems Corp., Science Applications International Corp.), two informal science education affiliates (Stafford Air and Space Museum, STARBASE Oklahoma), research center affiliate

(Center for Spatial Analysis), and city government affiliate (Norman Economic Development Center).

The OSGC was founded in 1991, and Dr. Victoria Snowden of the University of Oklahoma served as director until her death in August 2016. Arena was selected as OSGC director after Snowden's passing.

Arena said Snowden was a great mentor to him. "The thing I really liked is the way she set up the consortium," said Arena. "All of the affiliates use their strengths along with the funding to develop programs for students to meet NASA goals. That's the way I've continued to do things."

OSGC affiliates offer programs in the following categories: Internships, fellowships, and scholarships; higher education; research infrastructure; precollege; and informal education. Examples of programs at OSU that receive NASA funding through OSGC include:

- Speedfest – This annual high-speed unmanned aircraft design competition includes classes for both high school and collegiate teams.
- Mission to Planet Earth – College students training to be teachers go through a year-long mentorship where they are immersed in hands-on STEM-based activities that they will be able to apply in their classrooms.
- X-Hab – Focused on deep space missions, project teams design, assemble, and test their systems and concepts in cooperation with members of NASA's Human Exploration and Operations Mission Directorate.
- OSU American Institute of Aeronautics and Astronautics High-Power Rocketry Team – Formed in 2016, this OSU team won first place at the Argonia Cup competition in Kansas in April 2017 by constructing a rocket that included an autonomous drone payload.

Asked what he sees for the future of OSGC, Arena stated, "Honestly, more of the same. We have established a reputation as one of the most successful space grants in the country, and that's the way we're going to keep it."

"My job is to keep focused on NASA goals and match our strengths in the consortium to NASA's goals. NASA gets what they need, and our affiliates benefit in the ways they need. We're helping to put Oklahomans together with NASA."

MAE Students prepare their aircraft for flight during the 2017 Speedfest competition.

CEAT Student Organizations

To support student activities, you can direct your philanthropic gifts toward the CEAT Student Societies Fund 26-97680

AEI

Jenna Harbert
jenna.harbert@okstate.edu

Provides students with timely technical information, professional advocacy, continuing education and opportunities to excel in architectural engineering careers.

Alpha Epsilon

Danielle Bellmer
danielle.bellmer@okstate.edu

Honorary organization recognizes outstanding agricultural, food and biological engineering students.

Alpha Omega Epsilon

Kayla Walters
kayla.walters@okstate.edu

Professional and social sorority for women in engineering and technical sciences.

Alpha Pi Mu

Zach Brundage
iseokstate@gmail.com

Recognizes academic excellence and promotes scholarly activities related to industrial engineering education and fosters social interaction between students and faculty.

American Indian Science and Engineering Society

Cory Hopcus
chopcus@okstate.edu

Recruits and retains Native Americans and Alaskan Natives in engineering, science and other related technology-based disciplines.

American Institute of Aeronautics and Astronautics

Shawn Parsons
shawn.m.parsons@okstate.edu

Encourages and facilitates activities of OSU aerospace engineering students and enhances members' professional development.

American Institute of Architecture Students

Madeline Layland
madeline.layland@okstate.edu

Promotes excellence in architectural education, training and practice, and fosters an appreciation of architecture and related disciplines.

American Institute of Chemical Engineers

Vik Krishnan
vikaskk@okstate.edu

Serves OSU students, especially chemical engineers, and provides a place where they can come together outside of class.

American Society of Agricultural and Biological Engineers

Michelle Allen
michelle.e.allen@okstate.edu

Acquaints students with engineering in agricultural, food and biological systems through networking with industry professionals.

American Society of Civil Engineers

Rachel horsman
rachel.horsman@okstate.edu

Provides a communication link between students of civil engineering and their professional society.

American Society of Heating, Refrigeration and Air Conditioning Engineers

Omer Sarfraz
sarfraz@okstate.edu

Promotes the sciences of heating, refrigerating and air-conditioning.

American Society of Mechanical Engineers

Ryan Rutherford
ryan.rutherford@okstate.edu

Promotes ethics and fellowship among mechanical engineering students.

American Society of Mechanical Engineers Technology

Dane Mcintosh
danemm@okstate.edu

Provides an understanding of the mechanical engineering industry.

American Society of Safety Engineers

Kody Brodwater
kody.brodwater@okstate.edu

Founded in 1911 as the United Association of Casualty Inspectors in the wake of tragic events.

Architectural Engineering Institute

Bonnie Arnold
bonnie.arnold@okstate.edu

Social and professional society aimed at creating a community among architectural engineers on campus and preparing students for their careers.

Architecture Students Teaching Elementary Kids

Erin Yen
erin.yen@okstate.edu

Educates elementary children about aspects of architecture and art, strengthens camaraderie among students of the OSU School of Architecture and develops leadership.

CEAT Student Council

John Hiett
john.hiett@okstate.edu

Represents students of the College of Engineering, Architecture and Technology.

Chemical Engineering Graduate Student Association

Samyukta Koteeswaran
samyukta.koteeswaran@okstate.edu

Promotes professional development via its programs and its relations with other student groups, specifically the Graduate and Professional Student Government Association.

Chi Epsilon

Megan Buchanan
megan.l.buchanan@okstate.edu

Recognizes scholastic achievement in civil and architectural engineering.

CEAT Diversity Programs

Provide services to support, retain and graduate all CEAT students including underrepresented populations.

Concrete Canoe

Maddie Smith
madeline.s.smith@okstate.edu

Gives students the opportunity to work independently and develop skills that are sought in the workplace.

Construction Management Society

Eli Herzog
eli.herzog@okstate.edu

Promotes the success of students in construction.

Construction Specifications Institute

Scott Cornelius
scott.cornelius@okstate.edu

Promotes the integration of construction, architecture and engineering through extracurricular activities, networking with local practicing professionals and more.

Cowboy Motorsports

Heath Moorman

Design competition geared toward providing undergraduate students with experience designing and building a quarter-scale vehicle.

Cowboy Waterworks

Jasmine Roe
jasmine.roe@okstate.edu

Promotes public awareness and education of water quality and water power, develops leadership among its members through participation in branch activities and competes in ASABE environmental design competitions.

Engineers Without Borders

Matt Miller mmill11@okstate.edu

Works to improve the quality and length of life for others around the world.

Eta Kappa Nu

Zach Brundage
zach.brundage@okstate.edu

Nationally recognized honor society promotes scholarship, community and service in the School of Electrical and Computer Engineering.

Fire Protection Society

Jake Barry
jebarry@okstate.edu

Provides students with opportunities in public service, academic and professional development and social interaction with other students in the Fire Protection and Safety Engineering Program.

Firefighter Combat Challenge

Jacob Smith
jacob.smith15@okstate.edu

Educates members about the fire service.

Fluid Power Society

Houston Snow
houstbs@okstate.edu

Professional organization for engineers interested in fluid power.

Institute For Operations Research and Management Science

Uttara Tipnis
uttara.tipnis@okstate.edu

Interdisciplinary branch of math, engineering and science that applies analytical methods to make better decisions.

Institute of Electrical and Electronic Engineers

Cameron Jump
cameron.jump@gmail.com

Educates students and interested parties on aspects of electrical and computer engineering.

Institute of Industrial & Systems Engineers

Susan Weckler
susangw311@okstate.edu

Institute of Electrical and Electronic Engineers Technology

Zachary Langley
zachary.langley@okstate.edu

Institute of Industrial Engineers

Connor Mojo
connor.mojo@okstate.edu

Professional society that serves the needs of industrial engineers. Student officers lead the OSU IIE chapter, advised by a faculty member from the School of Industrial Engineering.

LGBT STEM

Masen Stewart
masen@okstate.edu

Mercury Robotics

Max Lewis
Maxwell.lewis@okstate.edu

National Society of Black Engineers

Logan Clark
loclark@okstate.edu

Assists black engineering, technology and architecture students in their college careers to increase the number of culturally responsible black engineers who excel academically and succeed professionally.

Omega Chi Epsilon

Josh Cole
josh.cole@okstate.edu

Recognizes and promotes high scholarship, original investigation and professional service in chemical engineering.

OSU Automation

Monica Bannurkar
mbannur@okstate.edu

Spreads awareness and promote automation and control systems as a discipline at OSU and aims to provide professional understanding to coursework, bridging academics and industry.

Pi Tau Sigma

Alexandra Martin

Fosters high ideals in engineering professions, supports developmental activities, develops leadership and citizenship among members.

SAE BAJA

John Ruggeri
john.ruggeri@okstate.edu

Provides students with a challenging project that involves planning and manufacturing tasks found during the introduction of a new product to the consumer-industrial market.

SAE Formula Racing

Dillan Randall
diranda@ostatemail.okstate.edu

Automotive design team that designs and manufactures a quarter-scale race car every year and competes against other FSAE teams in several international competitions.

Student Association of Fire Investigators

Jake Barry
jake.barry@okstate.edu

Unites public officials, students and private persons engaged in fire investigation and the control of arson.

Society of Fire Protection Engineers

Leigh Kelly
leigh.kelly@okstate.edu

Maintains a high ethical standard among its members and fosters fire protection engineering education.

Society of Hispanic Professional Engineers

Daniel Salinas
dsalin@okstate.edu

Stimulates and develops minority student interests in science, technology, engineering and mathematics; also creates and sponsors events that help students focus on academics, service and community outreach.

Society of Petroleum Engineers

Nicole Tucker
scarlnt@okstate.edu

Aims to produce well-rounded engineers with the ability to apply their skill sets to the oil and gas industry.

Society of Women Engineers

Yen Nguyen
yen.t.nguyen@okstate.edu

Encourages women to consider science and technology fields, especially engineering, and assists men and women in leadership and professional skills.

Tau Beta Pi

Alicia Aguilar
alicia.aguilar@okstate.edu

Honors the best engineers and fosters culture within engineering colleges, forging relationships between engineers.

Tau Sigma Delta

Madeline Maker
mmaker@ostatemail.okstate.edu

Honor society for students who have completed five semesters of the architecture curriculum and are in the top 20 percent of their class entering the School of Architecture.

Theta Tau

Tate Rosencutter
ceat.phigamma@gmail.com

National professional co-ed engineering fraternity develops and maintains a high standard of professional interest among its members, and unites them in fraternal fellowship.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Raising the Oklahoma Standard

BY BRITTANY BELLI

Grain workers enter grain bins across Oklahoma on a regular basis, and many times these grain workers unknowingly place themselves in danger.

"It's just so sad when someone dies in a grain bin because the workers hadn't been properly trained in what to do," says Dr. Carol Jones, biosystems engineering professor. "That's just not acceptable in Oklahoma and our standards are higher than that."

Under the Susan Harwood OSHA grant, Oklahoma State University's Fire Service Training (FST) worked with the Stored Products Research & Education Center to create an awareness and safety operations program.

The grain bin safety training is a cooperative effort between grain workers and firefighters. The workers are trained to spot hazards within a grain bin and when to enter or abstain from entering a bin. Firefighters are trained how to successfully rescue entrapped workers and also when to abstain from entering a bin in dangerous conditions.

"The goal is prevention," says Dr. Erick Reynolds, FST director. "Most folks don't know the dangers inside of grain bins, so we're trying to educate them so that they don't end up in a situation where firefighters have to go inside and get them."

Workers can become entrapped in grain bins in a variety of scenarios. They can fall through crusts that have formed from moldy or frozen grain or become trapped under grain that they're removing from the sides of the bin. Workers should never enter a bin when grain is moving into or out of a bin, as they can get sucked into the grain as it flows.

"Whenever you try to move grain, more of it flows back onto you, and when you exhale, the grain comes in because your chest has deflated

Training participants experience what it's like to be engulfed in grain.

A new, forty-foot, fully-contained trailer allows FST to mobilize their training program.

some," says Jones. "Each breath is harder to take because the grain keeps moving into that space, so there are reports of people dying because they just couldn't get that next breath; there's just too much weight on their chest."

If a worker or firefighter is trapped in grain up to their waist, it requires 600-800 pounds of force to pull them out. If they are engulfed to their head, it requires 1,300-1,400 pounds of force.

"If someone is completely engulfed, it's a matter of minutes," says Jones. "That's why it's important to train grain bin workers so that they know what to do until the fire department can get there."

The most recent addition to support training is a forty-foot, fully contained trailer complete with a grain bin housed inside, funded by the Federal Emergency Management Agency (FEMA) Assistance to Firefighters grant. Since training cannot occur in an actual grain bin, the trailer offers a way to deliver hands-on, situational training in a safe way, just on a smaller scale.

"The grain bin can hold grain product and transfer it to a set of augers while workers learn how to use the safety equipment," says Caroline Reed, FST assistant director. "It will help us teach participants about the physics of grain, and how quickly you can become crushed by the weight of the grain."

The training is provided to participants at no cost, as long as the Susan Harwood grant still receives funding. It's also available in Spanish, to accommodate the increasing number of agricultural workers who speak a second language.

"The key is preparing for these incidents in the first place," says Jones, "so that if they do happen, we know how to respond."

Solve Challenges. Change the World.

BY AMANDA WILLIAMS

Humanity has always sought to overcome challenges and improve our way of life. Over the past century, engineering, architecture and technology have been at the forefront of these improvements; air travel, spacecraft, water distribution, air conditioning, health technologies, television, computers, the internet. As remarkable as these achievements are, there are more challenges to overcome for the next century.

In 2008, an international group of world scholars partnered with the National Academy of Engineering to identify the Grand Challenges for the 21st century. They established 14 Grand Challenges that if solved would improve life and change the world.

The College of Engineering, Architecture and Technology (CEAT) has partnered with the National Academy of Engineering (NAE) to offer the Grand Challenge Scholars Program at Oklahoma State University. This is a combined curricular and extra-curricular program with five key components that are designed to prepare students to solve the 14 Grand Challenges of their generation.

This program offers students an opportunity to focus their studies on one of the four themes that the NAE suggests the 14 Grand Challenges fall into: Sustainability, Health, Security, or Joy of Living. This year, May 2017, CEAT graduated its first two Grand Challenge Scholars, Jacquelyn Lane and Rachael Davis. The two scholars each focused on the Health theme and on the Grand Challenge 'Engineering Better Medicines'. Their final project

Grand Challenge Scholar Rachel Davis researches nanoparticle drugs for the treatment of retinal eye diseases.

included the development of a contact lens that could deliver nanoparticle drugs for the treatment of retinal eye diseases.

Students interested in becoming Grand Challenge Scholars must apply by October 1 of their sophomore or junior year at OSU and must demonstrate academic excellence with a minimum 3.25 GPA.

This program not only provides students with the opportunity to graduate with a nationally recognized honor but also prepares them to walk into any organization with an understanding of the global marketplace and the challenges facing industry, the economy, and the world.
The Grand Challenge Scholars Program in CEAT wouldn't be possible without the generous donation from Rickie Fowler. Fowler may be known for his PGA Tour successes and talent in the sport of golf but he has always been passionate about science, technology, engineering and mathematics. His gift reflects that passion and shows just how important it is to him to support OSU and help students solve the challenges of the 21st century.

Fowler helped establish the Grand Challenge Scholars Program with his initial donation of $100,000 through the Rickie Fowler Foundation. He plans to continue contributing to the fund until it is well established at $1 million. With this gift, CEAT is determined to graduate twenty scholars per year from the Grand Challenge Scholars Program who will have access to funding for research, entrepreneurship and global awareness.

CEAT is dedicated to attracting and graduating a diverse cohort of students who will embrace innovation and collaboration through sustainable and affordable solutions. Establishing the Grand Challenge Scholars Program is one way in which CEAT has illustrated that dedication.

Five Key Components of the Program:

1. Research
2. Interdisciplinary Curriculum
3. Entrepreneurship
4. Global Awareness
5. Service Learning

The 14 Grand Challenges:

1. Make solar energy economical
2. Provide energy from fusion
3. Manage the nitrogen cycle
4. Provide access to clean water
5. Develop methods for carbon sequestration
6. Advance health informatics
7. Engineer better medicines
8. Restore urban infrastructure
9. Prevent nuclear terror
10. Secure cyberspace
11. Reverse engineer the brain
12. Enhance virtual reality
13. Advance personalized learning
14. Engineer the tools of scientific discovery

For more information on the 14 Grand Challenges visit: engineeringchallenges.org/challenges.aspx

For more information on the CEAT GCSP visit: ceat.okstate.edu/gcsp

OSU Takes on Revolutionary International Project

BY KATZEE REESE

Today's average passenger aircraft burns about nine gallons of fuel per minute and spends around 20 minutes taxiing between the boarding gate and the runway. According to the U.S. Energy Information Administration, during this time, the burning fuel emits around 3,798 pounds of carbon dioxide into the air.

With growing conversations around the world about fuel emissions, air pollution and global warming, these numbers come as a shock when it's noted that they're still growing and there is not a working solution in sight.

However, one Polish company saw the need for change and came to Oklahoma to entrust Oklahoma State University's New Product Development Center Director, Robert Taylor, with the endeavor.

"I approached many universities, and everyone told me Dr. Taylor was the guy we needed to hire at OSU," said Vince Howie, ATS World Wide, LLC., CEO. "I know the quality of engineering that comes out of OSU, so I agreed."

Entrepreneur Stan Malicki, born in Poland, founded ATS World Wide, LLC. After immigrating to Germany at a young age, he supported himself as a plumber and went on to found a company that manufactured polypropylene pipe. While building this successful

manufacturing business, he was developing the idea of an airplane transportation device and searching for its next step.

Malicki met Howie, the State of Oklahoma's Aerospace and Defense Director, while attending the Paris Air Show in 2015. After speaking with Howie, he decided it was in his company's best interest to bring it to the United States for manufacturing. With Howie being located in the middle of the United States in Oklahoma, the partnership seemed obvious.

Howie joined Malicki in his creation of ATS World Wide, LLC., and the company obtained patents for the system in more than six countries. The next obstacle was finding someone to help develop a working prototype. Howie came straight to OSU's New Product Development Center.

The NPDC is an OSU College of Engineering, Architecture and Technology outreach unit that serves Oklahoma manufacturers, businesses and inventors with education, guidance, technical engineering assistance, resources and referrals.

In November of 2016, ATS World Wide, LLC., signed an agreement with the OSU NPDC to conduct research and develop engineering drawings that will lead to the prototype development of the automated system for airport taxiways.

The underground device will revolutionize the efficiency of daily airport functions as well as cut costs and fuel emissions for airports around the world. It will transport aircraft from the runway to the boarding gates and then back to the runway with an underground track system that will essentially tow the plane with a cart attached to the front wheel.

A two-year contract was agreed upon during which time OSU engineers will work on the design and development of the system's concept. A functional prototype section of the underground system is the primary goal for the OSU team.

To accomplish the engineering tasks required, Taylor devised a team of OSU faculty, staff and undergraduate student interns.

"It's real-world projects like these that really allow our students to flourish in their education," said Taylor. "A large project with this many components and this much potential allows students to not only gain experience for their future career but also be a part of developing a project that has the potential to revolutionize an industry."

According to ATS estimates, fuel savings at an airport such as the Chicago O'Hare Airport are estimated to be around 145 million gallons per year. Cost savings for airports indicate a payback on installation in as little as five years. Taxiway collisions will be eliminated and taxiway noise will be drastically reduced.

"We look forward to the next year and a half to see where exactly this project goes," said Taylor. "The potential impact it will have on the aviation industry is astonishing and we are excited that OSU is able to have a hand in this kind of innovation."

ENDEAVOR Pedagogy

BY PAM REYNOLDS

ENDEAVOR is much more than just another undergraduate laboratory building. It provides the opportunity for a significant paradigm shift in education that affects every department in the College of Engineering, Architecture, and Technology (CEAT).

According to CEAT's Associate Dean of Academic Affairs, Randy Seitsinger, "In today's world, the nature of problem solving in engineering, architecture and technology is rapidly changing. Today's challenges are increasingly interconnected and complex and are most effectively solved within an interdisciplinary environment with collaboration between professionals with varied backgrounds and expertise. Endeavor will allow us to change our educational pedagogy to match this reality.

Traditionally, engineering education has mostly been structured within a silo-type environment, meaning the students gained most of their educational experience within their own departments without having significant interdisciplinary learning interactions with students from other departments. Now, ENDEAVOR has been developed with the idea that its hands-on labs do not belong to one school, but instead are designed around the needs of interdisciplinary focus groups, breaking down potential silos across all disciplines.

Endeavor's focus areas include Mechatronics and Robotics, Instrumentation and Sensors, Energy and Power, Flow Systems, Materials and Sustainable Design, Process & Transport, Environmental Systems, and Digital Manufacturing. Industry Aligned Labs will provide flexible space for industry/student joint projects, and electronic and digital maker spaces will facilitate prototyping. A first floor test arena will facilitate the testing of autonomous vehicle prototypes, entrepreneurial projects and senior design projects.

Clinical faculty assigned specifically to ENDEAVOR will help students and other faculty engage and make connections among the schools and the college.

ENDEAVOR's lead clinical faculty member, Brad Rowland, describes ENDEAVOR as a "hands-on immersion experience where students will learn by doing and from observing how other students solve problems. ENDEAVOR will have a vast array of sophisticated equipment such as metal, plastic, and composite 3d printers, universal test machines, a wind tunnel, flume, and water tunnel, and of course – state-of-the-art laboratories

ENDEAVOR will allow CEAT students to learn by doing.

such as a fully functioning analytical lab with high pressure liquid chromatography, gas chromatography, mass spectrometry, infrared spectrometers, and other instruments. In fact, the ENDEAVOR building itself is a learning tool for students that provides lessons in the mechanics of building structures, energy consumption, and the use of renewable energy. An outdoor energy deck will allow experiments with solar panels, a wind turbine, and a ground source heat pump system will be monitored in the first floor test arena."

New spaces will allow equipment and activities that would not have been possible in standard laboratories.

After students go through training to know how to safely use the equipment, the equipment in ENDEAVOR will be available to them without the students having to be in a particular course.

"ENDEAVOR will be like a giant tool box of very sophisticated and expensive equipment available to CEAT students." Seitsinger said. "It will provide them an outlet for their entrepreneurial creativity and curiosity, a venue for them to test, refine, and prototype their ideas. I would love to see companies launched out of ENDEAVOR by our undergraduate students!"

Civil Engineering School Head Norb Delatte said he is not only excited about better facilities for existing labs, but he is also enthused about being able to enhance courses that have been lecture only in the past with more of a hands-on lab focus. Of the 55 courses that ENDEAVOR will support, only half currently have existing laboratories. This 72,000 square foot facility will accommodate over 3,000 students per week.

"In a lot of the areas it's going to be a substantial leap of opportunity", said Delatte. "I don't know very many civil engineering undergraduate programs that use a wind tunnel to look at wind effects on structures, but now we will have that capability. ENDEAVOR will allow us to do things we haven't even thought of yet."

One of the requirements for a senior design project in ENDEAVOR is that the project will be interdisciplinary. "With the workspace and equipment, there's really no limit on what a senior design project can include when you take an integrative approach," said Rowland.

Another ENDEAVOR goal is to get students involved in hands-on design experiences much earlier in the curriculum than in their final senior design projects. "We want to start integrating those hands-on design experiences earlier in the curriculum so that by the time they get to senior design, they can approach an interdisciplinary project with confidence," said Seitsinger.

The interdisciplinary focus of ENDEAVOR will make CEAT students more competitive. "In the real world, you typically have to work with groups of people from different educational backgrounds," said Rowland. "So when our students are able to effectively do that, they will become more competitive and be head-and-shoulders ahead above their peers from other universities, because they will be able to constructively work in a team from day one."

A Summer with STEM

BY BRITTANY BELLI

One of the goals of the College of Engineering, Architecture and Technology (CEAT) is to be present in the Oklahoma community in order to encourage the next generation of students to study Science, Technology, Engineering and Mathematics.

To work toward this goal, the first weeklong unmanned aerial systems (UAS) summer camp for high school students was recently hosted by CEAT's Professional Development program. High school students involved with Project Lead The Way (PLTW) from Northeast Technology Center and Francis Tuttle Technology Center had the opportunity to learn from current CEAT students and CEAT faculty about unmanned aerial vehicles (UAVs) and were introduced to circuits, design, flight simulations and the engineering industry.

"My favorite part of the camp was definitely the simulator," says Maycey Baxter, camp participant. "Watching other people explain how it works, and being able to mess with all of the settings was pretty fun."

The high-school students built their own UAVs by hand, with limited help from instructors and CEAT students.

"I was really excited to get to fly the UAV," says Baxter. "We learned so much about building a plane, as well

High-school students work on constructing their UAV

Camp participants, sponsors and CEAT students celebrate a successful UAS summer camp.

as circuits, and these are skills that we don't necessarily get at our vo-tech."

CEAT students involved with the camp were impressed by how quickly the high-school students learned new skills.

"None of these students have had any experience with UAVs before, and they picked up on the dynamics and what it takes to build and fly an aircraft," says Levi Ross, recent CEAT graduate and master's student. "We had budgeted in three full days for the students to build their aircraft, and they finished in two and a half days."

CEAT has hosted similar camps for teachers with Boeing and NASA in the past, but this is the first camp to be offered to high school students.

On the last day of the camp, the students saw their hard work take flight at the OSU Unmanned Aircraft Flight Station (UAFS), which is home to Speedfest, one of the largest and most innovative UAV competitions in the United States.

In addition to offering a unique, hands-on experience, the camp also solidified some students' plans to pursue an engineering degree at OSU.

"I decided I wanted to be an aerospace engineer when I was in the seventh grade," says Joseph Vizcaino, camp participant. "I know that OSU has a really great engineering school, so I want to be a Cowboy."

UAS SUMMER CAMP

2017

Raye Montague

BY CIARA SPEIGHT

Raye Montague, the "Hidden Figure" of the United States Navy, was the keynote speaker for the CEAT Diversity Programs Awards Banquet hosted by the College of Engineering, Architecture and Technology at Oklahoma State University.

The banquet took place on April 18, 2017, at the Wes Watkins Center on the OSU campus in Stillwater, OK.

Montague is a retired, internationally registered professional engineer for the U.S. Navy. She became the Navy's first female programs manager of ships, holding the civilian equivalent rank of captain, and is credited with creating the first computer generated rough draft of a U.S. Naval ship. However, the road to these accomplishments was not an easy one.

Montague was born on January 21, 1935, in Little Rock, Arkansas. She graduated from high school in 1952 and desired to become a naval engineer, but since no colleges in Arkansas were awarding engineering degrees to African-Americans or women, she got her degree in business. After graduation, Montague began her career with the U.S. Navy, first as a digital computer systems operator and then as a computer systems analyst for the Naval Ship Engineering Center.

She served as programs director for the Naval Sea Systems Command Integrated Design, Manufacturing and Maintenance program. She also became the division head for

The USS Dwight D. Eisenhower

the Computer-Aided Design and Computer-Aided Manufacturing (CAD/CAM) program. Montague also worked on the USS Dwight D. Eisenhower, the first landing craft helicopter-assault ship and the Seawolf-class submarine.

In 1972, Montague received the Navy's third-highest honorary award, the Meritorious Civilian Service award. She is also the first female professional engineer to receive the Society of Manufacturing Engineers Achievement award and the National Computer Graphics Association award for the advancement of computer graphics.

Montague's great accomplishments in the face of adversity were a source of inspiration for the 190 guests who attended the banquet, including CEAT students, alumni, faculty and staff, as well as the corporate partners. With humor and wit, she explained the importance of "turning obstacles into challenging situations."

At the conclusion of the banquet, Montague was presented with the OSU Challenge Coin to recognize her great dedication and courage to break barriers in pursuit of her dreams. At the request of Montague, her honorarium fee was awarded as a scholarship to female African-American engineering student, Rikiyah Fletcher. In addition, the Vice President of Institutional Diversity, Dr. Jason Kirksey, has agreed to give an annual scholarship in Montague's honor.

After the banquet, Montague spent an hour talking and taking pictures with the crowd of eager students that surrounded her. She greeted each one with a smile, a warm embrace and words of encouragement.

Concluding her stay at Oklahoma State University, Montague met with OSU's First Cowgirl, Ann Hargis, who presented Montague with a gift for visiting the university. Montague enjoyed her stay at Oklahoma State University, and spoke of the beauty of our campus and her plans to return annually for the awarding of the Montague scholarship.

BY ERIN PORTMAN

More than 400 people involved in the ground source heat pump industry converged on March 14-16 in Denver, Colorado, to DIG IN to the ground source heat pump industry at the 2017 IGSHPA Conference and Expo. Seven training workshops were held in conjunction with the conference and 50 industry exhibitions showcased their technologies.

"IGSHPA has worked diligently with the industry the last few years to ensure the course offerings are meeting the needs of the industry," said Roshan Revankar, former IGSHPA Acting Executive Director. "The Residential Designer Workshop, Open Loop Geothermal Solutions Course and Understanding Grouting Applications & Innovations course were developed to enhance current offerings."

Dr. Jeffrey Spitler, Regents Professor and OG&E Technology Chair in the College of Engineering, Architecture and Technology at Oklahoma State University coordinated a research track featuring 44 presentations from researchers worldwide. Thirty-six conference sessions were held in residential applications, commercial applications and technical applications tracks.

"The executive scientific committee for the research track and the conference planning committee produced a solid program for conference attendees," said Erin Portman, IGSHPA Manager & conference coordinator. "By adding in the research track, we were able to expose attendees to the latest industry research while also giving researchers and graduate students a common place to present their latest findings."

Dominika Rydel and José Acuña, IGSHPA Sweden Chapter representatives, spoke to attendees on the partnership with IGSHPA over the last year.

"Partnerships with our international chapters are what makes our organization truly international," Portman said. "One of IGSHPA's goals is to grow and develop relationships with people worldwide involved in our industry so IGSHPA can continue to stay at the forefront of groundbreaking technology and research."

IGSHPA honored outstanding supporters and projects in the industry during an inaugural awards dinner in the areas of the IGSHPA Ambassador, IGSHPA Visionary, Friends of the Industry, Commercial Innovation, and Residential Innovation.

"The people involved in the geothermal industry are passionate about the industry and how the industry can help the environment," Revankar said. "I am pleased to have this group of people and these projects carrying the torch for the industry into the next year. The successes that have been accomplished through their work are truly inspiring."

IGSHPA

HERITAGE Society

The ***Heritage Society*** recognizes OSU's alumni and friends who have made future provisions of any value for the OSU Foundation in their estate plans. This includes bequests, trusts, annuities, life insurance, retirement plans or other means.If you have chosen to support OSU through one of these methods, we invite you to join the Heritage Society. When you share the good news of your generosity with us, we can ensure your wishes for its use are met, including requests for anonymity.

Heritage Society members enjoy the satisfaction of providing a pipeline of future support for our students, faculty, staff, facilities and programs. For more information about the Heritage Society or to let us know your support of OSU already includes an estate provision, please contact the **Office of Gift Planning | 800.622.4678 | OSUgiving.com/estateplanning**.

Promoting Passion for CEAT

BY BRITTANY BELLI

Throughout the year, College of Engineering, Architecture and Technology (CEAT) Ambassadors participate in, and lead, over 25 events to promote the college to prospective students, donors and industry.

"The CEAT Ambassadors are the face of our college to prospective students and guests," says Julie Blatt, prospective student services coordinator. "The ambassadors' primary purpose is to expose our guests to the various opportunities with our CEAT degree programs along with the support our college provides, assisting each student in reaching their maximum potential during, and after, their college experience."

Since August 2015, CEAT Ambassadors have promoted their college at prominent events including OSU Scholar's Day, OSU UpClose, OSU Senior Day, OSU Saturday Browse Sessions and Tour Days, Orange Friday Browse Sessions and K-12 outreach programs through various CEAT organizations.

The CEAT Ambassadors also work on projects that target current CEAT students, including the #tweetCEATPete social media campaign and updating the CEAT Student Services bulletin board.

As the years go by, the CEAT Ambassador program grows in popularity.

"2016 was the first year to have 25 ambassadors for the program who went through the application and interview process," says Blatt. "Previously, the ambassador group consisted of fewer than 10 students."

The CEAT Ambassadors are chosen each spring for the following school year through an application and interview process. In order to be eligible, applicants must be a sophomore, junior or senior for the following school year, enrolled in any CEAT major and have a minimum GPA of 2.75.

"We specifically seek a diverse group of students who are involved on campus and in CEAT," says Blatt. "The Ambassadors' passion and enthusiasm for their majors and CEAT are the best selling points to prospective students!"

Biosystems Engineering student Adrian Saenz demonstrates the effects of water erosion to high school students

2017-2018 CEAT Amabassadors

Abbye Coan – Junior, Industrial Engineering

Aya Al Sakini – Senior, Architectural Engineering

Braden Kellogg – Sophomore, Civil Engineering

Brooke Ryan – Sophomore, Architecture

Caleb Carter – Sophomore, Electrical Engineering Technology

Chase Barrow – Senior, Mechanical Engineering

Clay Patterson - Senior, Computer Engineering

Colton Tubbs - Junior, Mechanical Engineering

Connor Begansky – Sophomore, Electrical Engineering

Dionne Mayibeki – Junior, Chemical Engineering

Garrett Weber – Junior, Mechanical Engineering

James Hood – Sophomore, Electrical Engineering

Joanna Quiah – Junior, Biosystems & Agricultural Engineering

Lauren Lenaburg – Junior, Mechanical and Aerospace Engineering

Lindsey Marsh – Sophomore, Biosystems & Agricultural Engineering

Link Strickland – Senior, Mechanical Engineering

Loren Emerson - Junior, Civil Engineering

Marley Macaluso – Senior, Chemical Engineering

Nicholas Foster - Senior, Mechanical and Aerospace Engineering

Rachel Epp - Senior, Architectural Engineering

Samantha Huckabay – Senior, Mechanical and Aerospace Engineering

Samuel Lewallen – Sophomore, Mechanical Engineering

Sarah Beth Anderson – Senior, Industrial Engineering

Sarah Desharnis – Junior, Chemical Engineering

Sarah Sargent – Senior, Construction Management Technology

Sydney Hinegardner – Senior, Industrial Engineering

Willis Cook – Senior, Industrial Engineering

Zach Brundage – Senior, Electrical Engineering

W.W. Allen Scholars

The W.W. Allen Scholars Program develops some of the nation's top engineering graduates.

This elite award includes more than $135,000 in scholarship, enrichment activities, professional development and national and international travel, followed by full tuition and housing for one year to pursue a Master of Philosophy degree at the University of Cambridge in the United Kingdom. This unique opportunity truly distinguishes the program and is made possible by a generous donation by W. Wayne Allen, former chairman and CEO of Phillips Petroleum Co.

The W.W. Allen Scholars Program was created to accelerate leadership and professional development, stimulate intellectual growth, develop interpersonal skills, develop career and cultural perspectives and prepare graduates for a full awareness of global forces and opportunities.

Global competition is a reality for the nation's leading industrial firms and a way of life for the intellectual leaders of those firms. Allen Scholars graduate fully prepared to walk into any organization with an understanding of the global marketplace and its impact on their industry and this country.

Two new scholarship recipients are selected each year as incoming freshmen. For more information about the program, requirements and benefits visit:

wwallen.okstate.edu

The members of these prestigious programs for the 2017-18 academic year include:

Jennifer Litchfield

Midwest City, Oklahoma

Freshman Allen Scholar, Biosystems Engineering at OSU

Wade Witcher

Tulsa, Oklahoma

Freshman Allen Scholar, Chemical Engineering at OSU

Alexis Vance

Leawood, Kansas

Sophomore Allen Scholar, Chemical Engineering at OSU

Savannah Robisch

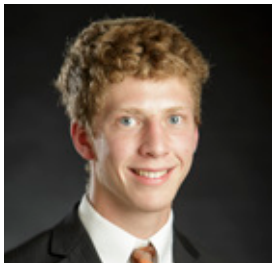
Fulshear, Texas

Sophomore Allen Scholar, Chemical Engineering at OSU

Maddie Hawkins

Carrollton, Texas

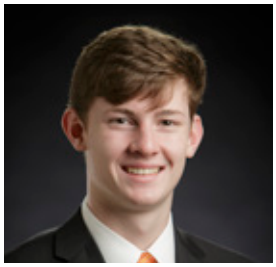
Junior Allen Scholar, Industrial Engineering and Management with a minor in Computer Science at OSU



Patrick Steichen

Tulsa, Oklahoma

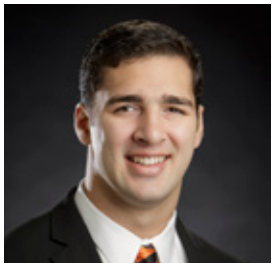
Junior Allen Scholar, Mechanical Engineering at OSU



Tyler Goldsmith

Texarkana, Texas

Senior Allen Scholar, Chemical Engineering at OSU



Tyler Martin

Omaha, Nebraska

Senior Allen Scholar, Chemical Engineering with a minor in Petroleum Engineering at OSU

Jacquelyn Lane

Beulah, Colorado

M.S. Allen Scholar, Cambridge University

MAKING GOOD FIRE FIGHTERS GREAT

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THE NATION

AND THE WORLD

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Professor of Civil and Environmental Engineering

Dr. Chuck Bunting

Associate Dean of Research and Sponsored Programs

Bellmon Chair
Professor of Electrical Engineering

Randy Seitsinger, FAIA

Associate Dean of Academic Affairs

AT&T Professorship in Engineering

Dr. Raman P. Singh

Associate Dean of Engineering at OSU-Tulsa

Helmerich Family Endowed Chair
Professor and Head, School of Materials Science and Engineering
Professor, School of Mechanical and Aerospace Engineering
Director, Helmerich Research Center

Ed Kirtley, M.A.

Assistant Dean of Outreach and Extension

College Heads

Suzanne Bilbeisi, AIA

Professor and Head

Centennial Professor of Architecture
School of Architecture

Dr. John Veenstra, P.E., BCEE

Professor and Interim Head

Decker Dawson Chair
School of Biosystems and Agricultural Engineering

Dr. James (Rob) Whiteley, P.E.

Professor and Head

Bartlett Chair
School of Chemical Engineering

Dr. Norb Delatte, P.E., F.ACI, F.ASCE

Professor and Head

M.R. Lohmann Endowed Professor of Engineering
School of Civil and Environmental Engineering

Dr. Jeffrey L. Young, P.E., F.IEEE

Professor and Head

OSURF Endowed Chair of Engineering
School of Electrical and Computer Engineering

Dr. Sunderesh Heragu

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The ongoing construction of our new ENDEAVOR Laboratory facility is the latest project that captures the excitement and energy taking place during this special time in CEAT's history. Over 40 percent of the funding for the ENDEAVOR facility came from the private support of individuals as well as businesses and industry.

Many of our alumni and friends continue to be integral partners of this growth. Therefore, as you consider how to philanthropically invest in this great college, please consider how the CEAT development team can be of service. The team works every day with our alumni and friends to bridge the interest-gap between both entities. Ultimately, the team wants to ensure that your generosity is captured to its fullest intent.

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HALL OF Fame

Please join us for the 2017 Hall of Fame & Lohmann Medal Ceremony

October 28, 2017 | ConocoPhillips Alumni Center | OSU-Stillwater Campus

HALL OF FAME INDUCTEES

LEGAND BURGE JR., PH.D.

President & CEO at LLBurge &Associates, LLC
(Ret) Vice-Commander of the U.S. Air Force

Bachelor's, Master's and Doctorate in Electrical Engineering from OSU – 1967 to 1979

Legand Burge Jr. received his B.S. (1971), M.S. (1973), and Ph.D. (1979) in electrical engineering from OSU with research interest in coding theory, information theory, digital signal processing, communications, and engineering education.

Burge had a successful career in the Air Force and retired at the rank of colonel. A number of the positions he held included: Associate Professor in electrical engineering at Air Force Academy, Air Force ROTC Commander of Tuskegee Detachment 015, Operations Officer for Secretary of the Air Force Special Projects, Division Chief for Information Security/Communications Security/Computer Security/Cyber Security at the National Security Agency, Vice Commander of the entire Air Force ROTC program, and Dean of the Acquisition Management School at the Defense Systems Management College.

Following retirement from the Air Force, Burge became Dean of the College of Engineering, Architecture and Physical Sciences at Tuskegee University. Next, he worked as Assistant Provost for Institutional Effectiveness at Alabama State University, where he retired.

Burge started an information technology consulting firm, LL Burge & Associates, LLC, which he operated with his son, Legand Burge III. Burge has three adult children: Legand Burge III, LeAnn Crisp, and Lamuelle Burge, and a step-son Louis Burge.

His service on advisory boards has included: NSF Engineering Directorate, Advisory Committee on Government Performance Assessment, Northwestern University McCormick School of Engineering, Advancing Minorities' Interests in Engineering, Historically Black Colleges and Universities Council of Deans of Engineering, and National Society of Professional Engineers. Burge was elected to the ASEE Engineering Deans Council Executive Board. He is the author of numerous articles and has received many awards and recognitions throughout his career.

JACK GOERTZ, P.E.

Tandems, Ltd

Bachelor's and Master's in Industrial Engineering & Management from OSU – 1972, 1974

Jack Goertz graduated from the Industrial Engineering and Management program at OSU with a BS in 1972 and an MS in 1974. Through research grant as a graduate student, he received Top Secret clearance from the U.S. Air Force and worked on debugging simulation programs for Eglin Air Force Base.

Goertz had a 26-year career with Southern Company Services, the design engineering division for Southern Company, parent company of Alabama Power, Georgia Power, Gulf Power, Mississippi Power, Southern Nuclear, and other companies.

In the early '80's, he was part of the team that evaluated and selected a CAD-CAM system for the company. Personal computers were just entering the workplace, and Goertz used a PC to evaluate economics of the CAD-CAM systems under consideration. Due in part to his evaluation of CAD-CAM systems, PCs were brought into the company's engineering functions.

After transferring to the IT department, Goertz developed a variety of programs, such as a program to ensure all valves at a power plant were inspected during a 10-year cycle. His final years at Southern Company were in the Customer Service department, where he was deeply involved with data mining, reviewing massive amounts of data to do Root Cause Analysis to help determine what was happening when a particular system failed.

Goertz's entrepreneurial passion has always been bicycles. In 1974, he bought interest in a bicycle shop that has been recognized as a "Top 100" bicycle shop several times. In the '80's, he owned a business specializing in high-end bicycle components. In 1984, he opened a third bicycle shop, Tandems, LTD, which is a premier source for tandem bicycles, with customers in all 50 states and 10 foreign countries.

JOHN KLOPP

(Ret) Former Worldwide Vice-President, Business Development for Johnson & Johnson Diabetes Care Franchise

Bachelor's and Master's in Chemical Engineering from OSU – 1963, 1965

John Klopp earned two OSU chemical engineering degrees – a BS in 1963 and a MS in 1965.

He currently resides in San Jose, CA, after two full careers working for DuPont (1965 – 1993) and Johnson & Johnson (1993 – 2009).

Klopp spent most of his career in business development. He was responsible for licensing, acquisitions, start-up and turnaround management, and strategic planning. He was Worldwide Vice President, Business Development, for Johnson & Johnson's Diabetes Care Franchise when he retired in 2009.

While at Johnson & Johnson, Klopp led a $2 billion acquisition of a diabetes monitoring technology that brought in over $40 billion in revenue, took the #1 position in market share, saved over 1500 jobs, and improved the lives of countless patients living with diabetes.

He currently serves on the Board of Directors for Applied BioTech, Inc., a division of Astellas Pharma, Inc. and is the Non Executive Director for SpeeDx Pty Ltd, a private Australian biotech company specializing in molecular diagnostic solutions to improve healthcare. Klopp is a recognized industry expert on diabetes and was appointed to the Research and Development Committee of the Juvenile Diabetes Research Foundation in 2010.

GARY RIDLEY, P.E.

(Ret) Secretary of Transportation, State of Oklahoma

Studied Civil Engineering at OSU from 1967-1972

No one has done more for transportation in Oklahoma than Gary Ridley.

Ridley began working at ODOT in 1965 as an equipment operator and worked his way up through the ranks as maintenance superintendent, traffic superintendent, field maintenance engineer, maintenance engineer, and division engineer. He studied civil engineering at OSU from 1967 to 1972 while commuting to his job. Ridley left ODOT in 1997 to become executive director of the Oklahoma Asphalt Paving Association. He returned to ODOT in January 2001 as Assistant Director for Operations. In August 2001, he became ODOT Director.

Ridley worked with the state legislature and governor to pass landmark legislation to improve transportation funding. He also improved the process for preparing the state's eight-year construction work plan, removing the prioritization from political influence, and instead relying on engineering and safety criteria. Under Ridley, ODOT led the nation in implementing life-saving cable median barriers, which are now a national standard. Ridley also created ODOT's four-year Asset Preservation Plan to maximize the life of transportation infrastructure.

Along with his work as ODOT Director, Ridley was appointed as Secretary of Transportation by Governor Brad Henry in 2009. He was appointed as Director of the Oklahoma Turnpike Authority that same year. He continued to serve concurrently in all three positions under Governor Mary Fallin. Ridley retired from ODOT and from the Oklahoma Turnpike Authority in 2013. He continued as Transportation Secretary until he retired in June 2017.

LOHMANN MEDAL RECIPIENT & HALL OF FAME INDUCTEE

ERIC WOODROOF, PH.D.

Founder of Profitable Green Solutions

Master's in Environmental Sciences from OSU– 1995
Doctorate in Industrial Engineering
& Management from OSU – 1998

Erick Woodroof is one of the foremost authorities and advocates for energy/green/sustainability policies and practices. He is a strategic advisor, project developer, expert witness, trainer and keynote speaker.

Since founding ProfitableGreenSolutions.com in 1994, Woodroof has helped organizations and governments save over $150 million in energy expenses. By looking at sustainability issues from the viewpoint of an engineer, Woodroof is able to provide solutions that make sense from environmental as well as economic perspectives.

Woodroof earned his master's degree in Environmental Studies from OSU in 1995, after earning a bachelor's degree in Physics from the University of California, Santa Barbara in 1992. He earned his Ph.D. in Industrial Engineering (Energy Mgmt.) from OSU in 1998.

Woodroof has been Chairman of the Energy Management Professional Council since 2015. He was the 2011 President of the Association of Energy Engineers (AEE), a nonprofit professional society of over 18,000 members in more than 100 countries. As AEE President, Woodroof created scholarships for energy-focused students, expanded membership and personally visited energy leaders on four continents.

In addition to serving as AEE President, Woodroof has held many other offices in the association. He is the youngest member ever inducted into the AEE Energy Manager's Hall of Fame.

He is the author of over 100 books, articles and webinars on improving profitability through energy efficiency and management, including two best-selling books on the topic.

2016 CEAT Hall of Fame Inductees

The College of Engineering, Architecture and Technology at Oklahoma State University inducted two industry leaders into its Hall of Fame at its annual ceremony. Hall of Fame inductees included Mark Brewer ('88 Electrical Engineering) and Ann Oglesby ('87 Chemical Engineering). These distinguished professionals were honored by OSU for their exceptional leadership and contributions to advancing the fields of engineering, architecture and technology.

MARK BREWER

Mark Brewer is the former senior leader of information technology at Seagate Technology. He has extensive experience with enterprise level security issues and operations, and he has spoken in several forums on privacy and security topics related to information technology. Brewer's experience in the industry expands beyond the borders of the United States. He spent two years in Singapore while he supported IT operations for Seagate in Singapore, Malaysia, Thailand, China and Japan.

Prior to working at Seagate Technology, Brewer served as an engineering assistant and development engineer at AT&T Network Systems. He is a member of the board of trustees at Oklahoma Christian University, a member of the strategic advisory council for the College of Engineering, Architecture and Technology at OSU and certified in production and inventory management (CPIM).

A loyal and true alumnus, Brewer received his bachelor's, master's and doctorate degrees in electrical engineering from Oklahoma State University.

ANN OGLESBY

Ann Oglesby is the general manager of lubricants at Phillips 66. Before assuming her current role in March 2013, Oglesby was vice president of communications and public affairs for Phillips 66. She served in that same capacity for ConocoPhillips from 2010-2012. During her tenure with ConocoPhillips, she served as the general manager of corporate planning and strategy from 2009-2010, manager of climate change and sustainable development from 2007-2009, president of specialty products from 2004-2007 and manager of emerging technology from 2001-2004.

Oglesby began her career in the oil industry in 1987 with Mobil Corporation where she was involved in various engineering, supply, business development and planning positions focused on petrochemicals.

Oglesby currently serves as the Phillips 66 executive liaison for Oklahoma State University. She is also a member of the executive advisory council for the Women's Energy Network.

Originally from Fort Smith, Ark., Olgesby became a loyal and true cowboy in 1987 when she earned her bachelor's in chemical engineering from Oklahoma State University.

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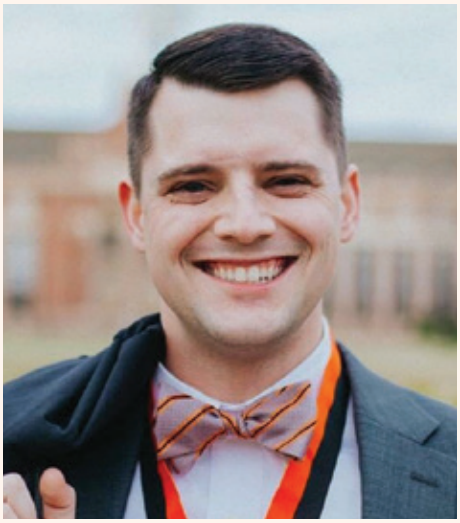

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JACQUELYN LANE
Chemical Engineering
Beulah, Colo.

RYAN NEAL
Chemical Engineering
Elgin, OK

COURTNEY WOLFE
Architecture
Lucas, Texas

3 Represent CEAT in 3MT® Contest

TANAJI PAUL

Tanaji Paul, doctoral candidate in mechanical and aerospace engineering, won first place at the CEAT Three Minute Thesis (3MT®) competition with his thesis on the sintering of amorphous alloys for structural application.

The primary objective of his research focused on investigating the mechanism of sintering amorphous alloys for applications as structural components. The defect-free disordered atomic structure of amorphous alloys results in excellent resistance to corrosion. This attractive feature can be utilized by consolidation of amorphous powder into bulk-sized, corrosion-resistant components and coatings. They harbor the potential to bring about significant reduction in the annual direct cost of corrosion.

ERANDA EKANAYAKE

Eranda Ekanayake, mechanical and aerospace engineering master's student, placed second with his thesis, "Effect of Age on Biomechanical Imbalances in Relation to Osteoarthritis Onset."

His research focused on developing efficient risk assessment protocols and strength training programs tailored specifically towards older adults in relation to osteoarthritis (OA). He plans to develop a computer model to estimate the size of the forces in the hip and knee joints to determine which age-dependent walking balance parameters create high contact forces that would cause OA.

BOSHRA KARIMI

Boshra Karimi, civil and environmental engineering doctoral student, placed third with her thesis, "Forecasting Emission to Have Healthier Workers."

The number of heavy duty diesel (HDD) equipment operators is growing at a rate of 19%, which is faster than the national average for other occupations. This means that 500,000 operators are in danger of exposure to diesel-related pollutants by 2022. Forecasting emission rates using time-series analysis based on equipment and engine activity to apply appropriate intervention strategies, like filtration systems, can protect HDD operators from acute and chronic health affects such as asthma and lung cancer.

3MT® THREE MINUTE THESIS
FOUNDED BY THE UNIVERSITY OF QUEENSLAND

Three Minute Thesis (3MT®) is a research communication competetion developed by the University of Queensland. The exercise challenges research degree students to present a compelling oration on their thesis/dissertation topic and its significance in just three minutes using just one static slide.

New Faculty Hires

The OSU/A&M Board of Regents has approved the following new faculty members for the College of Engineering, Architecture and Technology for the 2016-2017 school year.

Architecture
School Head, Professor
Suzanne Bilbeisi

Adjunct Assistant Professor
Jay Yowell

Electrical & Computer Engineering
Assistant Professor
John O'Hara

Industrial Engineering & Management
Assistant Professor
Juan Borrero

Mechanical & Aerospace Engineering
Assistant Professors
Hadi Noori
Imraan Faruque
Richard Gaeta

Chemical Engineering
Research Assistant Professor
Rudra Bhomick

CEAT Strategic Advisory Council

Members of the OSU College of Engineering, Architecture and Technology's Strategic Advisory Council and their professional affiliations are:

Debbie Adams
Consultant

Shay Braun
Treehouse Foods

Mark Brewer
Technology Consultant

Larry Bryce
Kohler Co.

Mike Carolina
Oklahoma Center for the Advancement of Science and Technology

John Doerner
XTO Energy

Garen Ewbank
Ewbank Geo Testing LLC

Jeff Fisher
American Energy Partners

Jim Hassenbeck
Studio Architecture

Steve Huckaby
Meritage Midstream

Jeff Hume
Continental Resources Inc.

Mitch Johnson
Consultant

Jack Lee
Jamco Aerospace Inc.

Stan Lingo
Lingo Construction Services

Jamie McAlpine
Chermac Energy Corp.

Bob Milan
Eagleclaw Midstream

Bill Remy
TBM Consulting Group

Ed Stokes
ConocoPhillips

Rick Webb
Webb Consulting Group

WE'RE BETTER TOGETHER!

CEAT DIVERSITY PROGRAMS

Providing services to support all CEAT students including underrepresented populations such as Minorities, Women, First-Generation, Non-Traditional, Disabled, Veterans and LGBTQ+.

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COLLEGE OF
Engineering, Architecture and Technology