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2020

Arkansas Engineer

The Alumni Magazine of the University of Arkansas College of Engineering

COVID-19

Students, staff and faculty come together

FEATURE STORY | 8

2020-2021 SCHOOL YEAR

The 2020-21 academic year will be one for the history books as students, staff and faculty adapt to teaching and learning during the COVID-19 pandemic. Masks, social distancing and increased remote learning are the norm for this unique school year.

FROM THE COVER

Face coverings are the norm on campus during the 2020-21 academic year. Students, staff, faculty and even the Il Porcellino statue on the north end of campus have been doing their part to keep the community safe.

Dear alumni and friends,

Like all of you, we in the College of Engineering have been working hard to adapt to the curveball of COVID-19.

Universities are built on the principle of bringing people together in a high-density space for face-to-face, hands-on learning. COVID-19 restrictions mean we have to do just the opposite of that to keep our campus community safe.

It has presented challenges, but also new opportunities. Our faculty, staff and students have been incredible in their perseverance, flexibility and compassion as we all navigate this unprecedented time together.

In the pages ahead, you'll see many of the ways our College has continued the life-changing work of education and research. In fact, many of our researchers have played prominent roles in helping during this pandemic, from modeling data to developing new technology that limits the spread of the virus and more.

These successes would not be possible without the tremendous support we receive from our alumni and friends around the world. Thank you for all you do to support the College of Engineering as we work to build a better world every day.

All my best,

Kim

Kim LaScola Needy

Kim LaScola Needy

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$194.7 Million Grant Transforms U of A Research Engine, Creates Institute for Integrative and Innovative Research (I3R)

Professor Jin-Woo Kim conducts research in his laboratory. Kim is a director of the Bio/Nano Technology Laboratory and a Professor in the Department of Biological and Agricultural Engineering Department, Biomedical Engineering graduate program, Cell & Molecular Biology graduate program, Micro-Electronics & Photonics graduate program, and Institute for Nanoscience & Engineering.

I3R WILL TRANSFORM the research, innovation and economic development culture of the university. The grant is one of the largest single private gifts ever given to a university for advancing research and economic development and counts toward the $1.25 billion goal set for Campaign Arkansas, the university's capital campaign.

"All transformational solutions start with questions," said University of Arkansas Chancellor Joseph E. Steinmetz. "How does the University of Arkansas distinguish itself as a great research university among a sea of great and distinguished universities? How do we do that in a way that drives economic development and creates clear avenues for industry involvement? How do we ultimately change the culture of collaboration in such a way that it advances the research and commercialization profile and production of the university? And how do we change the way we do science on campus?

"The creation of an interdisciplinary and wholly integrative research institute was the answer." I3R is envisioned as a unique approach to research that will distinguish the University of Arkansas by creating a flexible, state-of-the-art collaborative framework designed to facilitate the integration of research across five overlapping clusters of innovation:

I3R Innovation Clusters

- Data science
- Food and technology: Food systems and the future of food
- Materials science and engineering
- Bioscience and bioengineering research in metabolism
- Integrative systems neuroscience

The grant will grow the university's research engine and also drive commercialization and entrepreneurship education.

"Arkansas has long been known for its entrepreneurial spirit and as a place where businesses thrive. This grant will support the University of Arkansas as it seeks to drive innovation and transform entrepreneurship and research to commercialization for industries nationwide," said Steuart Walton, chair of the Walton Family Charitable Support Foundation Board.

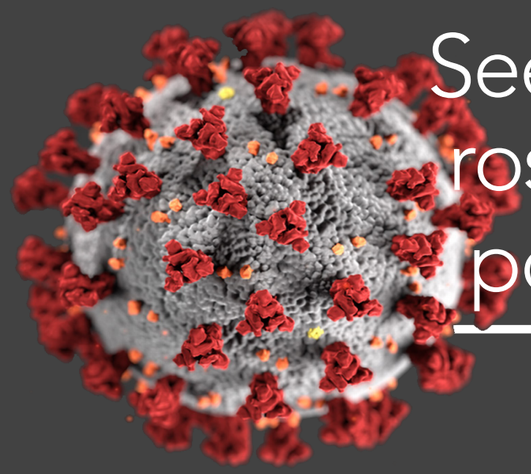
Gov. Asa Hutchinson said, "The enhancement of the University of Arkansas's focus on research to commercialization and entrepreneurship education will have a lasting impact on the state, its businesses, and economy. The funding is a clear position of confidence in the University of Arkansas and will strengthen their position as a leading public research university."

"Even during this time of uncertainty — in higher education and beyond — we know the University of Arkansas is positioned to become a national leader in research and innovation," said Heather Larkin, president and CEO of the Arkansas Community Foundation and board member of the Walton Family Charitable Support Foundation. "This grant is a step toward building a stable economy and a future where we are better equipped to respond to a changing environment."

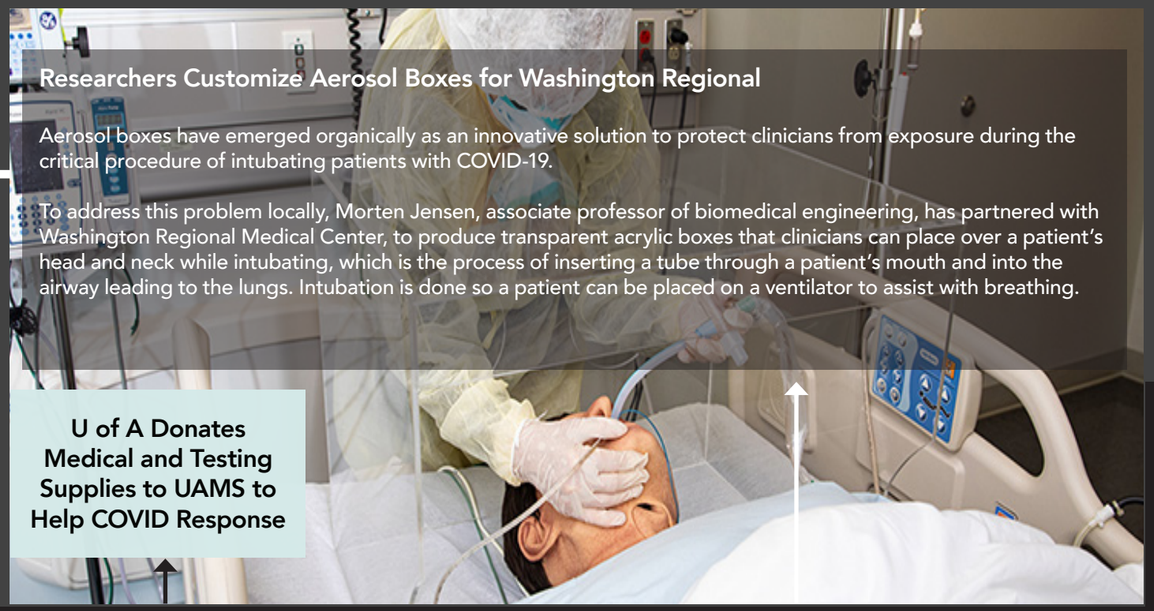
The grant from the Walton Family Charitable Support Foundation will be used to support the construction of the university's new research facility, which will house the Institute for Integrative and Innovative Research and to endow the I3R, which will serve as the hub for many activities.

Not only will the building and institute add much-needed research space, and act as an interactive and integrated hub for the innovation clusters, it will drive innovation on the edges between identified research clusters.

Funding will help attract and hire 20 new faculty with established research programs and a history of external support. These hires will seek to diversify the University of Arkansas faculty in experiential as well as demographic dimensions.



See how the College of Engineering rose to the challenges posed by COVID-19



Researchers Customize Aerosol Boxes for Washington Regional

Aerosol boxes have emerged organically as an innovative solution to protect clinicians from exposure during the critical procedure of intubating patients with COVID-19.

To address this problem locally, Morten Jensen, associate professor of biomedical engineering, has partnered with Washington Regional Medical Center, to produce transparent acrylic boxes that clinicians can place over a patient's head and neck while intubating, which is the process of inserting a tube through a patient's mouth and into the airway leading to the lungs. Intubation is done so a patient can be placed on a ventilator to assist with breathing.

Remote classes begin

Departments of biomedical engineering, biological sciences & nursing gather lab supplies and personal protection equipment to give to UAMS

U of A Donates Medical and Testing Supplies to UAMS to Help COVID Response

March 16 | March 19 | March 21 | March 25 | April 2 | April 3 | April 17 | April 24

Begin working remotely

The Board of Trustees votes to postpone or cancel in-person commencement. Graduates to join the fall 2020 commencement.

University summer camps are canceled and all summer classes will continue to be taught remotely

Arkansas Researchers Developing Prediction Models for Coronavirus

Data science professor, Justin Zhan, is collaborating with University of Arkansas for Medical Sciences professors David Ussery and Xuming Zhang to develop accurate predictions of genomic variation trends of coronavirus.

Their work will help public officials monitor the outbreak and adapt to changes. It could also provide valuable information for the design of vaccines.

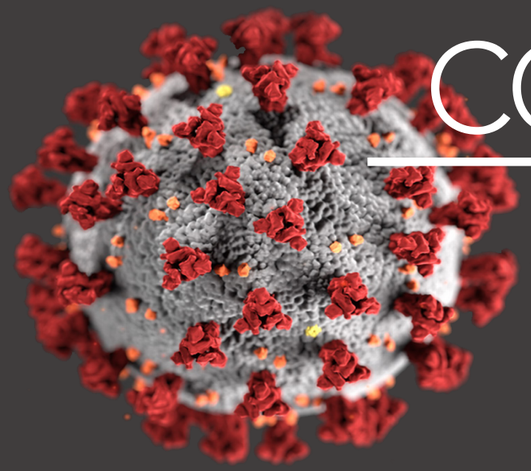
Team Develops Easy-to-Produce Ventilators for COVID-19 Patients

Faculty from the College of Engineering, Eleanor Mann School of Nursing and Fay Jones School of Architecture and Design have been working to develop a high-quality ventilator that can be manufactured quickly and cheaply for clinicians at Washington Regional Medical Center. The device developed at the U of A is known as the AR-Vent. AR-Vent automatically pumps existing Artificial Manual Breathing Unit bags, and puts air into a patient's lungs. The design focuses on a mechanical apparatus that can compress the bag to ventilate the patient.

www.uark.edu/determined

SCAN ME

COVID-19 // CONTINUED



The Board of Trustees approves a plan to process and distribute $7.7 million in student aid to University of Arkansas students. The board also approves a resolution of intent to have on-campus classes in the fall.

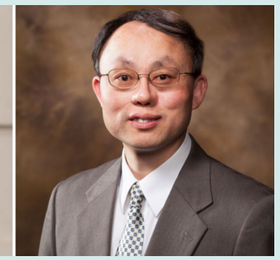
May 4

May 14

Engineers Use 3D Printer to Produce Protective Masks for Rehab Clinic

A design team led by engineering professors Raj Rao, Wenchao Zhou and Zhenghui Sha have used a 3D printer to produce and deliver 50 protective masks to be used by a Northwest Arkansas rehabilitation clinic. As the COVID-19 pandemic hit, Dr. Joel Sebag, director of Spine and Sports Rehabilitation, realized his clinic did not have enough equipment to protect therapists and patients. He discussed the problem with Rao, who has spearheaded or contributed to several university projects aimed at providing protective equipment to hospitals and clinics in Arkansas. Sebag said the masks will be used by Spine and Sports Rehabilitation therapists serving Edgewood Health and Rehabilitation Center in Springdale, Rogers Health and Rehabilitation Center and the Springdale Senior Center, in addition to Washington Regional and Northwest Medical Center.

June 3



U of A Researchers Explore Ways to Clean Single-Use PPE for Reuse

An interdisciplinary team of University of Arkansas researchers is fighting COVID-19 using microwaves and plasma to disinfect personal protective equipment for medical professionals. Researchers hope it will enable single-use equipment to be safely reused. Samir El-Ghazaly, distinguished professor of electrical engineering, and Yuchun Du, associate professor of biological sciences, received a $299,963 grant from the National Science Foundation to investigate how microwave and plasma doses can kill the coronavirus within five minutes while preserving the integrity of equipment.Researchers are working to understand how the effective combination of microwave and plasma doses, exposure time, humidity and temperature can destroy the virus. “We wanted to focus on this research to improve the personal protective equipment shortage and develop a versatile and environmentally friendly decontamination approach,” El-Ghazaly said. With virus cases on the rise and medical teams facing equipment shortages, El-Ghazaly and his team want to develop a safe and effective method for disinfection. “The proposed disinfection process does not use chemicals or emit toxic gases,” El-Ghazaly said. “Thus, it presents an environmentally friendly approach to the decontamination process.” The team has begun testing at the University of Arkansas Engineering Research Center in south Fayetteville. “We will build a test system that combines microwave energy and plasma,” El-Ghazaly said. “The test system will precisely control the intensity of the microwave and also the plasma density.” The device chamber will help the team monitor the temperature and humidity. Researchers will use influenza A viruses, which are enveloped viruses similar to COVID-19. “Like coronaviruses, influenza A viruses are RNA viruses and are surrounded by a host-derived lipid bilayer,” El-Ghazaly said. “It has been widely used in vaccine studies and vaccine productions and has a very low risk. The effective destruction of influenza A virus would guarantee the system’s capability to destroy COVID-19.”

July 16

Researcher to Study Whether Sewage Can Help Track COVID-19

Wen Zhang, associate professor of civil engineering, was awarded $40,000 through the Coronavirus Aid, Relief, and Economic Security (CARES) Act, to study wastewater to help community leaders better understand the prevalence of the disease in their area. Coronavirus has been detected in patients’ feces throughout the illness and after recovery, so Zhang’s study focuses on collecting wastewater samples to test for evidence of the virus. The study also seeks to develop a method of estimating spread of COVID-19 in communities based on the concentration of the virus found in wastewater. “Given the shortage of Covid-19 test kits, this can be particularly helpful to estimate the spread of the disease in a community, because asymptomatic individuals who are not tested could also excrete the virus and release them into wastewater,” she said. Zhang said the research explores virus spread in a non-invasive way, using tools that are relatively inexpensive. “By detecting the virus in wastewater, we hope to utilize this information to estimate the most affected communities,” she said. “It will provide information about the virus spread without testing every individual person in the community. And hopefully this information can assist the state and public to make future decisions combating the pandemic. ”And, Zhang said, the presence of coronavirus in wastewater could pose its own public health risk.“Even though the risk of contracting the disease through feces of an infected person is believed to be low, the release of SARS-CoV-2 into wastewater could still pose a risk to the public health, especially if the virus is only partially removed in wastewater treatment plants,” she said. Zhang said she’s pleased to be able to leverage her experience as an engineer to fight the spread of coronavirus. “We have the right equipment and expertise for this project,” she said. “I love that I have the opportunity to play a part in ending this pandemic. It’s really a team effort, and I have already received support from multiple wastewater facilities, the state of Arkansas and the Arkansas Department of Health.” Zhang said the project scope is one year, and she hopes to have results in the fall of 2020.

August 24

Fall semester begins with safety measures in place.

Campaign Arkansas

THE UNIVERSITY OF ARKANSAS SUCCESSFULLY CONCLUDED ITS CAPITAL CAMPAIGN, Campaign Arkansas, by raising a record $1,449,703,813 for student, faculty, program and capital support. The gifts and pledges made during the eight-year effort will advance academic opportunity at the university, continue to transform the campus and promote student success.

“The success of Campaign Arkansas can be attributed to the generosity of the university’s alumni and friends and support from the entire campus community, as well as the hard work of our deans and unit leaders and advancement team,” Chancellor Joe Steinmetz said. “All of these groups were unwavering in their commitment to strengthening the university and providing additional resources for student and faculty success.

“We also recognize that celebrating this accomplishment comes with an acknowledgement of the current circumstances in our region, state and our country. We realize many of our fellow Arkansans and others around the country are facing difficulty at this moment. We hope to be able to do our part in helping students and their families overcome their financial obstacles, support faculty who are involved in innovative research, restore economic development for our region and our state, and offer vital programs on campus to keep our students on track for success, all thanks to Campaign Arkansas.”

Over the course of the campaign, gifts accounted for the following:

37% — Student scholarships and academic programs
25% — Faculty and staff support
32% — Capital improvements
6% — Other key initiatives.

There were 1,026 new student support accounts, such as scholarships and fellowships, created as a result of Campaign Arkansas, as well as 112 faculty and staff support funds, including 46 new endowed faculty positions.

Rafael Toche Pizano, a first-generation student from Springdale who is a double major in German and computer science, also received scholarship support for his study abroad experience through the Honors College. The experience afforded him the opportunity to spend the summer in Germany in 2018 and strengthen his knowledge of the language and culture. “The life experiences and the knowledge that is acquired while studying abroad is invaluable,” he said. “Continuing to fund students to study abroad is crucial for the sake of our future. Not only is it becoming a necessity in our increasingly globalized world, but it is also an opportunity to learn acceptance, humility and discipline. It is impossible to express how meaningful these types of scholarships are to students who struggle financially.”

The silent phase of Campaign Arkansas began on July 1, 2012 with an initial goal of $1 billion. It launched publicly in fall 2016, and the goal was raised to $1.25 billion in spring 2018. More than 123,400 benefactors contributed during the campaign, and $348.9 million will be added to the endowment once received.

Gifts from individuals, such as alumni, friends, parents, faculty and staff, made up 22% of the campaign total. Another 24% came from corporations, while 47% came from foundations and 7% came from other organizations, including trusts and estates. All private gifts and pledges to the university are designated and allocated for specific purposes set forth by each donor and used solely for these purposes. The university makes every effort to align donors’ giving interests with campus priorities.

“This fiscal year was undoubtedly a challenge with all of the uncertainty surrounding us and our constituents, however it was also one of the most rewarding,” said Mark Power, vice chancellor for university advancement. “We saw benefactors step up to help students who were facing emergencies as a result of COVID-19 and gained renewed optimism for the future of research with the grant to create the Institute for Integrative and Innovative Research. So, while we have been experiencing unprecedented challenges, there is also a great deal of hope for the future. Campaign Arkansas will usher in new possibilities for our students, faculty, staff and campus - and for our state and nation as well.

“Throughout this year, our advancement team remained steadfast in their work - even remotely - and we experienced incredible support from the deans, unit leaders and campus community,” Power said. “This year, we truly worked as a team to help each other - whether showing compassion and support to our colleagues or amplifying the voices of students who needed our assistance. I’m very proud of what we have accomplished through the entirety of Campaign Arkansas, especially this year.”

The largest gift to Campaign Arkansas was announced shortly before its conclusion - a $194.7 million grant from the Walton Family Charitable Support Foundation for the Institute for Integrative and Innovative Research (I3R). The gift helped push the university past its goal of $1.25 billion.

“It was an honor to serve as chair of the Campaign Arkansas Steering Committee for the final year,” Steuart Walton said. “The university staff and the committee made a lot of progress, but we can’t be complacent with our efforts. We must work together to continue accelerating the transformation of the U of A for all Arkansans as a center for innovation and growth, pushing forward in our collective pursuit of excellence.”

Annual Giving also made a sizeable impact during the campaign. More than 500,000 gifts and pledges added up to $96.4 million during the course of the campaign, demonstrating the power of collective giving. Assisting with this was the implementation of All In for Arkansas, an annual giving day held each spring to celebrate the university’s birthday. The event raised more than $1.4 million since its launch in 2016 through spring 2019.

CAMPAIGN *Arkansas*

2021 COLLEGE OF ENGINEERING ALUMNI AWARDS BANQUET

Due to COVID-19 we will celebrate the 2020 awardees in 2021.

Congratulations to our awardees!

2020 HALL OF FAME INDUCTEES
Grady E. Harvell, P.E., BSCE ’72
John A. White, Jr., BSIE ’62

2020 DISTINGUISHED ALUMNI
Gregory Blair, BSCmpE ’01
Keith Bradshaw, BSME ’87
Jerrel M. Fielder, BSCSE ’88
Dan R. Goodrich, Brig Gen (ret) USAF, MS ’83
Brock Hoskins, BSCE ’89
W. Kent McAllister, BSChE ’87
Richard T. Penn, BSAgE ’82, MSE ’92
Malik Sadiq, BSEE ’88, MSIE ’91, Ph.D. ’93
Gopi Manogna Reddy Sirineni, MSEE ’96

2020 EARLY CAREER ALUMNI
Amanda Compean Day, BSChE ’13
Asmaa Elkadi, Ph.D. ’15
Steven J. Head, P.E., BSCE ’10
Kyle David Kimpel, BSIE ’06
Luke E. Osborn, BSME ’12
Kyle C. Sligar, MSOM ’13
Rusty Tate, P.E., BSBE ’08, MSEnE ’10

A Birthday Surprise

A VISIT TO A COLLEGE OF ENGINEERING OUTREACH EVENT LED TO AN UNORTHODOX BIRTHDAY GIFT FOR ONE U OF A ALUMNUS — A LEGACY.

THE WM. KENT MCALLISTER SCHOLARSHIP in Chemical Engineering will provide $2,000 annually to support undergraduate chemical engineering students.

Sara McAllister, Kent's wife, who is also an Arkansas alumnus, worked with university fundraising officials and the family's financial planner to set up the gift as a surprise for Kent's 55th birthday in March.

Kent is a graduate of the College of Engineering and serves on the Dean's Advisory Council for the College. He is also a member of the Arkansas Academy of Chemical Engineers.

The decision to give was motivated by a few key factors, Sara said. Both are graduates of the University of Arkansas and Fayetteville High School, but she said it was a moment during a visit to campus that cemented the idea.

Sara said an experience during the College of Engineering Dean's Advisory Council was a motivating factor in her decision to give.

Members of the Engineering Dean's Advisory Council were in Fayetteville in October 2018 for the twice-annual meeting. The meeting focused on the college's outreach efforts, and Sara had a chance to participate in an outreach event in a local school.

"The guests went to a local school and taught fifth graders about closed circuits by making a fun Halloween card with watch batteries and mini light bulbs that light up," she said. "This activity was so fun with the kids. I taught hands on labs such as this one in Texas for years. I truly see the influence that teaching science with hands on activities makes science concepts easier and less intimidating for children.

McAllister also heard from U of A students who had participated in the programs as children.

"They told us about how attending the engineering camps led them to choose engineering for their major. That was the deciding moment for me to give the scholarship because I saw the impact that the College of Engineering made in the schools with this program and with the engineering camps."

The hardest part was keeping the whole thing a secret, McAllister said.

"I must confess that I didn't make it to his birthday in March," she said. "I told him on Valentine's Day. We had just had a lovely dinner. I gave him a card and told him that I was giving him something that would last forever. I told him I had already worked out the details, which is key for engineers, regarding a scholarship in his name at the College of Engineering. I didn't want to wait until long after we are both gone to do this."

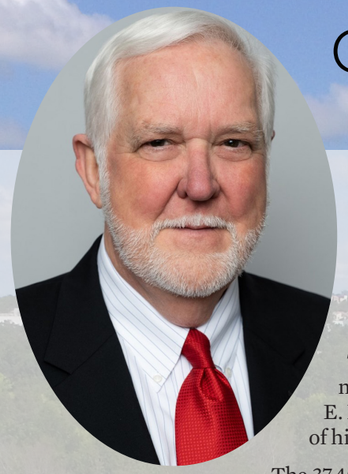
Kent said the gift was a total surprise. "I was completely shocked and touched that Sara was so proud of what I had done in my engineering career and wanted to create a legacy in my name to support students who might not have the opportunity to become an engineer without financial support," he said. "I had tears of joy and love that she had done this for me." Sara said the gift was a chance to support the institution that helped set Kent on a path to success.

"This is one way of giving back to the College of Engineering that gave him such a strong education foundation for his first career as a Naval officer on a submarine, and his current career in the oil and gas industry," she said.

Kent said the opportunity to reconnect with his alma mater has been a journey he won't forget. "It has been such a great experience to get reconnected with the University and the Department of Chemical Engineering over the last decade," he said. "Each step, from speaking at an American Institute of Chemical Engineers banquet, to being in the Arkansas Academy of Chemical Engineers, to supporting the College of Engineering through the Dean's Advisory Council has brought me back to our purpose of educating young adults. It is important to provide educational opportunities to the next generation, so they can grow and improve our world through the benefits that engineering brings to society.

"My engineering degree provided me with the background and opportunity to grow my career from driving nuclear submarines to leading an offshore engineering organization. It's up to us to provide the next generation, who will take the lead in the world's future, with the opportunity and means to attain their dreams through higher education."

Civil Engineering Research Facility to Be Named for Alumnus



A NEW CIVIL ENGINEERING RESEARCH CENTER in the Arkansas Research and Technology Park will be named for alumnus Grady E. Harvell in honor of his support of the project.

The 37,400-square-foot facility in the Arkansas Research and Technology Park will be named the Grady E. Harvell Civil Engineering Research and Education Center in honor of Harvell, who graduated with a bachelor's degree in civil engineering in 1972 and is the president of W&W|AFCO Steel.

An estate gift commitment from the Harvell family helped the project reach its final fundraising goal, and the facility is now under construction. This is just one of several gifts the family provided toward the capital project, and their gifts counted in Campaign Arkansas, the university's recently concluded capital campaign that raised nearly $1.45 billion to advance academic opportunity at the U of A.

The Grady E. Harvell Civil Engineering Research and Education Center will include a high-bay structural testing facility with a four-foot thick "strong-floor" capable of testing large-scale structural systems and components. It will also house a 25-ton rail crane to move heavy materials and will allow students and faculty members alike to conduct research.

Harvell credited his career success to the education he received and said he made the gift to support the future generations of engineers.

"I've had a successful career because of my engineering degree," he said. "I got my degree through the efforts of people who were engineers decades before me. I had a scholarship from a gentleman in the College of Engineering Hall of Fame who graduated in 1910 – the Sam and Mary Blair Scholarship. I'm trying to give back to the organization that helped me realize the success I've had."

Harvell said the space will improve faculty research capabilities and will prove attractive for future students and faculty as well as industries and organizations supporting research projects.

"This will allow our excellent professors – people like Micah Hale and Gary Prinz and all our faculty throughout the department – to excel," he said. "We want to do our part to make sure they aren't left out in the competition to attract good students, faculty and research opportunities."

Harvell said that as the state's steel industry has grown so has the need for a facility like this one.

"When I was at the U of A in the late '60s and early '70s, in the structures field, the program we looked up to was Lehigh University in Pennsylvania," he said "It's my hope that, with the professors we have and the facilities we're able to give them, our civil engineering program will be considered one of the elites so people will want to come here to get their bachelor's, master's and doctoral degrees."

Harvell said Arkansas has come to play a major role in the nation's steel industry.

"In the 1960s Pennsylvania provided much of the nation's steel," he said. "Today, Arkansas provides a major portion of the nation's steel product. According to the American Iron and Steel Institute, the steel industry in Arkansas directly employs 8,741 workers who earn more than $955 million in wages and salaries annually, while generating $6.55 billion in output. Including supplier and induced impacts, the economic engine of this industry is responsible for 46,452 jobs in Arkansas paying a total of $2.85 billion in wages and salaries annually, while generating $13.36 billion in output and $1.37 billion in federal, state, and local taxes. CEREC will support research for this vital industry in our state.

Harvell has been engaged with the University of Arkansas through the Arkansas Academy of Civil Engineering since the 1990s, and he said CEREC has long been a goal for that organization. Harvell praised John English, who was dean of engineering from 2013 to November of 2020, for his commitment to the project.

"I've had a lot of good friends join me in this pursuit, not the least of which is John English as dean of engineering," he said. "Had he not been engaged, it wouldn't have happened."

Harvell recalled his time on campus and the importance of hands-on learning in a civil engineering curriculum.

"Structural engineering has always been a passion of mine," he said. "When I was in school, we had a very basic testing lab down in the basement of what's now John A. White Jr. Engineering Hall. I did elementary lab tests there to get my B.S. degree. I've recognized the need for a modern structures lab since the mid-'90s when I reengaged with the University — this is phase one of the civil engineering research facility we envision. Civil engineers design and build our infrastructure and these research facilities will provide the means to enhance the education of our future generations of designers and builders."

He said seeing the project finally under construction is a special feeling.

"It's extremely rewarding – it's kind of hard to put into words," he said. "Frankly, there were times when we had given up on it ever coming to fruition. It's very rewarding to see us able to create this facility for students and professors who are going to be trained inside its walls for decades to come."

Construction Management

UNIVERSITY OF ARKANSAS ALUMNUS SAM ALLEY AND HIS WIFE, JANET, ARE CONTRIBUTING $2 MILLION to create the Sam and Janet Alley Master of Science in Construction Management Program Endowment. The Little Rock couple's gift will establish an interdisciplinary master of science in construction management program that will be housed in the College of Engineering. Their gift will also count in Campaign Arkansas, the university's $1.25 billion capital campaign to advance academic opportunity at the university.

"When I think about how important the University of Arkansas has been to me and my family, this gift is just a small manifestation of that gratitude," Sam Alley said. "There is no denying how critical the role my education from the U of A and the relationships I built there played in our lives. I'm excited to help create a program where future leaders in our state can learn about the great work we do in construction and find their place to add value. Being able to give back and establish a Master's in Construction Management Program is an honor and a dream come true."

"The Alleys are a hardworking, entrepreneurial family, and their passion for the University of Arkansas and the state has always left an impression on me," said Chancellor Joe Steinmetz. "As a fellow first-generation college graduate, I recognize the struggles and successes Sam has felt during his career, and I applaud his family's decision to pave the way for the future of construction management. This interdisciplinary effort will help the university offer a new graduate degree to students who aspire to be leaders – like Sam – in the construction industry."

The connection between the Alleys and this new program is natural, given Sam Alley's extensive career in construction. Alley found a passion for engineering – particularly civil engineering – in high school and began working for Pickens Bond Construction Company while he was a student at the University of Arkansas. He earned a Bachelor of Science in Civil Engineering from the College of Engineering in 1979 and immediately went to work as a project manager with the company. Inspired by his father, who was an entrepreneur, Alley co-founded VCC in 1987.

The company is a leader in the construction industry and recognized as the largest retail contractor in the United States, and Alley serves as chairman and chief executive officer.

"We strongly believe that some of the greatest work opportunities for the next generation will exist in the construction industry," Sam Alley said. "And, as an industry, we have a perception problem where those opportunities are not being seized at a high enough rate. Nationally, there is a severe shortage of young professionals entering the field. It is critical that we all do our part to educate talented people in the field of construction, and I believe the state of Arkansas can lead the charge in that regard. We have an unbelievably strong pool of students at the University of Arkansas. I hope this program will inspire some of them to recognize that, in construction, they can be entrepreneurs, harvest great financial opportunities and have a significant impact on the built world in their communities."

The Sam and Janet Alley Master of Science in Construction Management Program will be interdisciplinary in nature and involve the College of Engineering, Sam M. Walton College of Business, Fay Jones School of Architecture and Design, and the School of Law. The endowment will support the creation of the Master of Science in Construction Management, including the costs associated with instructor salary, course development, advertising and online support and speaker seminars.

The new program has been approved by the U of A Board of Trustees and is pending approval by the Arkansas Department of Higher Education on July 31.

"We're so grateful to Sam and Janet for their investment in this brand new online program for students from varied technical backgrounds," said John English, former dean of the College of Engineering and Irma F. and Raymond F. Giffels Endowed Chair in Engineering. "This interdisciplinary program will give students the chance to learn from faculty experts across the university, granting graduates the well-rounded education they need to be successful in today's construction management industry. The Alleys' longtime support of the College of Engineering has made a tremendous impact on the lives of engineering students and faculty members, and we can't thank them enough."

Sam and Janet alley gave $2 million to establish a new master's program in construction management. The new program will be housed in the College of Engineering.

"This kind of interdisciplinary program is exactly what students today need and what industry demands," said Matt Waller, dean of the Walton College who holds the Sam M. Walton Leadership Chair in Business. "The generous gift by the Alleys to create it will ensure that we are training and graduating the leaders of tomorrow in construction management for Arkansas and for all of the United States."

Sam Alley is a member of the Arkansas Academy of Civil Engineering, was named a distinguished alumnus of the College of Engineering in 2015 and received the Citation of Distinguished Alumni from the Arkansas Alumni Association in 2018. He and Janet are life members of the Arkansas Alumni Association and served as co-chairs of the Campaign Arkansas committee for Central Arkansas. They are also both members of the Campaign Arkansas Steering Committee.

In 2010, the Alleys established the Sam and Janet Alley Family Foundation Civil Engineering Access Arkansas Scholarship at the university. They are members of the Chancellor's Society and are counted as Thoroughreds for their consecutive years of giving back to the U of A.

The Alleys have three children – Jessica, Derek and Adrianna. Jessica Alley Haddad is a 2007 graduate of the School of Law and serves as chief legal officer for VCC and the family businesses. Both Derek Alley and Adrianna Alley Sapra hold leadership positions with the company as well.

"Being the first in my family to graduate from college, the university represented a generational shift for educational and financial freedom for my family," Sam Alley said. "It opened doors of opportunities that, before we moved to America, we could only dream about. That impact can never be overstated. Just as importantly, the university represents lifelong relationships that have nourished our lives with fun and fellowship. The Razorback community is one that we are infinitely proud to be a part of, and we are excited to be a small part of the next generation taking us all to new heights."

NSF Funding to Support Innovation Studies for Low-Income Students

AN INTERDISCIPLINARY TEAM at the University of Arkansas has been awarded nearly $1 million from the National Science Foundation to support low-income students interested in studying innovation in the STEM fields.

Faculty and staff from the College of Engineering, the Fulbright College of Arts and Sciences, the Honors College and the Sam M. Walton College of Business will serve as investigators on the grant, which totals $941,348. Approximately $600,000 of the funds will be dedicated to scholarship funds for STEM students in the Honors College Path Program, which prepares exceptional students from underrepresented populations to excel.

The program, known as Closing America's STEM Innovation Gap through Collaboration with Industry, will provide scholarship funding for two cohorts of 16 students in majors related to science, technology, engineering and mathematics, as well as supporting cutting-edge innovation courses that include collaboration with industry partners. Students will receive up to $5,500 in annually renewable scholarships, plus a one-time $2,950 award.

The project is led by Karl Schubert, a professor of practice who is the associate director of the university's new data science program and holds a joint appointment in the colleges of business, arts and sciences, and engineering.

Co-principal investigators include Jennie Popp, associate dean of the Honors College; Carol Gattis, associate dean emeritus of the Honors College and adjunct associate professor of industrial engineering; Thomas Carter III, assistant dean for academics and student affairs in the College of Engineering; and Xochitl Delgado Solorzano, director of the Honors College Path program.

The program is designed to remove barriers that low-income students often face because of the unique nature of innovation courses, such as unpaid internships with start-up organizations, shadowing innovation professionals or obtaining an additional business degree that covers innovation principles, Schubert said.

These pursuits often require financial means or connections in the field — both of which are often unavailable to low-income students. The STEM innovation program will embed innovation training into the academic coursework, allowing students to learn those skills while obtaining a degree. In addition to the innovation training, students will participate in Path Program activities that will support their academic and professional development, contributing to their success at the university.

Schubert said, "Our industry partners not only want graduates who can solve problems, they need graduates who can think out of the box, innovate and provide disruptive solutions, and even solve problems they did not realize existed. Our STEM innovation students will become innovators with real-world experience, and opportunities to work on problems needing innovative solutions under the mentorship of industry partners."

Schubert said it's critical to broaden the pipeline of students entering the innovation workforce, both for students and the industries where they will ultimately work.

The program was built with input from the Arkansas business community, and industry partners will collaborate to help students throughout the program.

"We are excited to collaborate with the STEM innovation team at the University of Arkansas to create programs that encourage innovation and enhance and expand the entrepreneurship ecosystem for our state and region," said Nelson Peacock, president and CEO of the Northwest Arkansas Council. "Through this effort, the council will assist in securing industry mentors, internships and industry examples of innovation to build a pipeline of a diverse, innovation-minded workforce for companies of all sizes."

Schubert said those industry experiences will provide students valuable preparation to begin their careers.

"Classroom projects are important, including learning how to work in teams, but real-world industry projects are an eye-opening experience that will give these students a head start on their careers," he said. "This is vitally important to our students, to our industry partners who are actively engaged, and to the future and to the health and competitiveness of our state and the nation."

New programs aim to improve diversity and inclusion in the College of Engineering

AN INTERDISCIPLINARY TEAM OF RESEARCHERS and administrators was awarded $1,075,000 through the Arkansas Louis Stokes Alliance for Minority Participation (ARK-LSAMP) program, the state's subset of a national program that assists universities and colleges in diversifying the science, technology, engineering and mathematics workforce for the nation.

The National Science Foundation identifies underrepresented groups as: African Americans, Hispanic Americans, American Indians, Alaska Natives, Native Hawaiians and Native Pacific Islanders.

The grant will provide a $32,000 stipend, plus additional support costs, to a cohort of 12 students pursuing doctoral degrees in the NSF's "Ten Big Ideas" priority areas, such as Harnessing the Data Revolution, at the U of A.

"As we build a more diverse, equitable and inclusive University of Arkansas, we are grateful for this significant award supporting our efforts and, most importantly, our students," said Yvette Murphy-Erby, vice chancellor for diversity and inclusion. "The remarkable Ph.D. students who will benefit from this grant will take their place among the leaders in STEM fields and will inspire generations of future leaders from underrepresented populations."

The full alliance will support the cohort in activities such as the ARK-LSAMP annual research symposium and other graduate seminars that emphasize preparation and competitiveness for other graduate student support, including NSF's graduate fellowship. It will also support intercultural training for faculty to address institutional culture and incorporate a suite of "champions" to mentor the participants.

Researchers for the program include: Jorge Almodovar, assistant professor and Ray C. Adam Chair in chemical engineering; Anissa Buckner, chair of the Department of Biology at the University of Arkansas-Pine Bluff; Yvette Murphy-Erby, vice chancellor for diversity and inclusion; Kim LaScola Needy, former dean of the graduate school and international education and currect dean of the College; Joseph Steinmetz, chancellor. Almodovar will serve as site director for the project and will oversee the program's implementation.

The program will provide funding, training and a support network for doctoral students, all of which are critical to growing the pipeline of STEM leaders from historically underrepresented backgrounds.

"There is a lack of professionals from these underrepresented groups in academia, industry and the public sector, and there's a need to train that future workforce," Almodovar said.

The Arkansas Bridge to the Doctorate LSAMP program will be implemented in an NSF-designated Established Program to Stimulate Competitive Research (EPSCoR) jurisdiction to further enhance research and education capability in the region. The project is jointly supported by the Louis Stokes Alliances for Minority Participation and NSF EPSCoR.

Data Science Begins

DATA SCIENCE PROGRAM FIRST OF ITS KIND AT U OF A

The University of Arkansas is launching a first-of-its kind undergraduate degree in data science in fall 2020. The program will provide students the chance to study with faculty from three colleges — the College of Engineering, the Fulbright College of Arts and Sciences, and the Sam M. Walton College of Business.

Students will take a common set of introductory courses to build the foundations of a data science education and will choose one of 10 specialty concentrations during their junior year. The concentrations include:

- Accounting Analytics
- Bioinformatics
- Biomedical and Healthcare Informatics
- Business Data Analytics
- Computational Analytics
- Data Science Statistics
- Geospatial Data Analytics
- Operations Analytics
- Social Data Analytics
- Supply Chain Analytics

In addition to being the first of its kind at the University of Arkansas, the program is unique among data science programs nationwide for its interdisciplinary curriculum. The coursework was designed using best practices from existing programs and feedback from an advisory council of executives from industry.

The data science degree came about in response to a growing need for organizations of all sizes to make sense of complex data sets.

Scott Spradley, chief technology officer for Tyson Foods and a member of the university's Data Science Advisory Council, said the program would benefit businesses across the state.

"With zettabytes of data being created every day in the world today, the need to learn from that data — what that data can tell us and how it can shape us has never been more important," he said. "Using that data to identify trends, patterns and clusters as a means for forward-thinking direction and prediction is critical for any business. The University of Arkansas' decision to evolve a high-performing data science program confirms their commitment to leading our state forward."

Scott Hambuchen, chief information officer at global communications platform First Orion, agreed and said growing data science talent is critical for the state of Arkansas. Hambuchen also serves on the university's Data Science Advisory Council.

"For First Orion, cultivating Arkansas talent in data sciences has been invaluable," he said. "We applaud the leadership, innovation and cross-college cooperation to create a world-class data science degree program. We're committed to growing the data science industry in Arkansas and are thrilled to benefit from the exceptional students the university turns out. First Orion is looking forward to continuing our engagement to grow and improve the program beyond just employment — such as supplying guest speakers, judges for competitions, ideas for projects and capstones, and even some datasets for analysis."

The program is also an embodiment of Chancellor Joe Steinmetz's 2020: Focus on the Future priorities (https://chancellor.uark.edu/focus-on-the-future/).

"Three U of A colleges — Fulbright, Engineering, and Walton — came together in consultation with industry, philanthropic and government partners to create this pioneering, multidisciplinary, multi-pathway degree that will serve our students and private sector partners well," he said. "The establishment of this degree provides a great template for future collaboration and coordination between our academic colleges and industry partners."

University Professor of Industrial Engineering Manuel Rossetti is the program's inaugural director. Professor of Practice Karl Schubert has been named associate director.

Visit datascience.uark.edu to learn more about the program, including resources for students looking to apply, and information for businesses interested in partnering with the program for projects or internships.

datascience.uark.edu

SCAN ME

Nicholas Broadbent achieved a lifelong dream when he interned at Mercedes-Benz in Germany.

A Lifelong Dream

A MECHANICAL ENGINEERING STUDENT'S LIFELONG PASSION for automotive manufacturing led to a dream internship at Mercedes-Benz in Germany, thanks to his research experience and the International Engineering Program at the University of Arkansas.

Honors student Nicholas Broadbent is a senior double degree mechanical engineering and German student who plans to graduate in May. Broadbent studied engineering at TU Darmstadt in Darmstadt, Germany, in the fall of 2018 and worked at the Mercedes-Benz world headquarters in Stuttgart the following spring and summer.

He said he discovered the program as a first-year student.

"To earn experience alongside powertrain engineers at Mercedes-Benz in Stuttgart has always been a pipe dream of mine — something of a "best or nothing" mentality. Through the visionary work of Dr. [Bryan] Hill and Dr. [Kathleen] Condray in establishing the German IEP during my freshman year, I was given the opportunity to realize this dream," he said.

Broadbent said he was especially interested in the program as a means of becoming an engineer capable of making an impact on an international scale, working collaboratively with a diverse group of colleagues from around the world.

"I worked with colleagues from Venezuela, India, Turkey, South Korea, and, of course, Germany. Communicating outside this nuclear team required an effective use of the German language and cultural standards," he said. Broadbent studied German for three years at the University of Arkansas prior to his internship, ultimately completing the Goethe B1 professional certification, an internationally-recognized certificate of proficiency in the language.

The Mercedes-Benz internship gave Broadbent a look into several different areas of the company's "Powertrain Technology and Business Development" department, with projects in computational fluid dynamics, finite element analysis, mesh-free alternatives to finite element analysis (SPG/SPH), and computer-aided design and manufacturing.

Broadbent said his background as an undergraduate researcher in computational fluid dynamics and materials science at the University of Arkansas helped him make a profound impact on his team at Mercedes-Benz.

"Without the opportunities and guidance given to me by my academic and research mentors Dr. [Uche] Wejinya, Dr. [Ryan] Tian, Dr. [James] Leylek, and Dr. [Paul] Millett, I would not have been able to make such an immediate and lasting impact on my team, which was entirely comprised of doctoral and master's students engaged in related research," he said.

Broadbent plans to finish his undergraduate degree in May and hopes to pursue a Ph.D. in mechanical engineering.

Broadbent has also spread his passion for automotive engineering to his fellow students — he took a leading role in re-founding the Society of Automotive Engineers chapter at the University of Arkansas and is working to establish Projekt Future, a program designed to engage students in research relevant to the automotive industry in order to give them an edge in achieving their own dreams.

Dean of Engineering Kim Needy and Chancellor Joe Steinmetz lead a discussion during a leadership course in the fall of 2020.

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