

# IMPACT

KANSAS STATE UNIVERSITY

SPRING 2020

CARL R. ICE COLLEGE OF ENGINEERING



**CLASSROOMS MAY BE EMPTY  
BUT INSTRUCTION AND LEARNING  
GO ON**

Page 16

# FROM THE DEAN

Let's call this dean's message, "Who knew? vs. What we know now." Bear with me . . .

**Who knew** campus buildings would be locked and classrooms closed indefinitely after spring break in March due to a pandemic virus that would shut down campus and change everyday life as we know it?

**What we know now:** Classes and labs are still being taught — remotely. SAS tutors are still tutoring — via Zoom. Students without laptops and proper access to the internet were provided the equipment and help they needed. Faculty rose to the occasion as the pros they are. You'll learn about these success stories and more in pages 13 to 17 of this issue.

**Who knew** there would be no Engineering Open House, regular fall orientation and enrollment, or on-site campus visits for new students?

**What we know now:** Spring awards would still be announced — including online voting for St. Pat and St. Patricia — see page 7; orientation and enrollment would move forward, except in a virtual mode via the internet; and our prospective students now take virtual tours of our facilities thanks to the efforts and talent of the recruitment office team.

**Who knew** our Engineers Without Borders student group, scheduled to do the program for a local Manhattan Rotary Club in April, would have to cancel its presentation because of social distancing rules?

**What we know now:** The students rallied, presented the program in Zoom format, and it was a huge hit with the audience. We have amazing students!

**Who knew** Kansas State University commencement exercises would not take place in May 2020?

**What we know now:** They were not canceled but only postponed until December when spring 2020 graduates will join their fall classmates for combined ceremonies.

And despite all this change, we're still producing top-notch graduating seniors who are moving on to great careers, much as Macey Elkinton, EE '20, whose story you can read on page 4.



Also on these pages you'll learn of an alumni donor, NE '78, who spent a lifetime in the nuclear energy field; an MNE professor who is doing cutting-edge research in radiation detection using drones; and last but not least, you'll meet the next dean of the Carl R. Ice College of Engineering.

After all, **who knew** my final months in my second go-around as interim dean would find us in the midst of change and challenge we'd not seen the likes of before?

But, **what we know now:** We met this health-related crisis head on and have adapted with innovation, resiliency and an outstanding effort from an amazing team of faculty, staff, students, and university administrators and colleagues. All in all, not too bad a place from which to welcome Dean Matt O'Keefe, who will come on board in June. And me, I look forward to returning to my role as senior associate dean and continuing to contribute to our team.

I'll sign off with this quote from management expert, educator and author, Peter Drucker: "The leader of the past was a person who knew how to tell. The leader of the future will be a person who knows how to ask."

**Who knew?**

My best to all —

Gary A. Clark, Ph.D., P.E.  
Interim Dean

# IMPACT

KANSAS STATE UNIVERSITY

SPRING 2020

CARL R. ICE COLLEGE OF ENGINEERING



ABOVE: A DRONE USED FOR RADIATION DETECTION FLIES OVER A TESTING RANGE IN IDAHO — A PROJECT LED BY WALTER MCNEIL, MNE.

ON THE COVER: AS ONLINE-ONLY CLASSES CONTINUE THROUGH SUMMER 2020, A CLASSROOM IN ENGINEERING HALL AWAITS THE RETURN OF STUDENTS.

## IN THIS ISSUE



EDUCATION



EXCELLENCE



RESEARCH



INNOVATION

- 4 'I WANTED TO BE A WILDCAT'
- 7 2020 OPEN HOUSE AWARDS
- 8 BUILDING A CAREER IN THE NUCLEAR POWER ARENA
- 10 OUT OF THE LAB AND INTO THE FIELD
- 13 IN SUPPORT OF ONLINE LEARNING
- 16 INNOVATION TAKES CENTER STAGE
- 18 COLLEGE NEWS

## IMPACT

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# GRADUATING SENIOR KNEW FROM THE START 'I WANTED TO BE A WILDCAT'

by Mary Rankin

Soon to graduate, soon to be employed by the company where she interned and soon to depart from an involved and accomplished four years in the Carl R. Ice College of Engineering, Macey Elkinton, Gardner, never once doubted her choice of Kansas State University.

"I knew after my initial visit that I wanted to be a Wildcat," Elkinton said. "The atmosphere of the K-State campus and the city of Manhattan were both so vibrant — a wave of new possibilities continued to wash over me the longer I stayed.

"Everyone at K-State wants you to succeed and does what they can to help you do so. It is truly a spectacular environment to learn in."

Elkinton also knew she wanted the challenge of studying engineering. In high school she had taken "almost every math and science class available" and by her senior year was leaning heavily toward an engineering major. But deciding on just what kind of engineering would prove to take a little longer.

**"I'm so glad K-State had the many different options within engineering so I could find what I was truly passionate about..."**

"My dad has been a structural engineer with Burns & McDonnell in Kansas City, Missouri, for the past 25 years. He took me into work to talk to some chemical engineers around the office, and because I really liked chemistry in high school, I decided that I'd like to pursue chemical engineering," she said.

Within the first few weeks of classes, however, she made the decision to switch into the general engineering program to get a better understanding of what engineering actually was and what the different disciplines had to offer. Second semester of her freshman year she transferred into civil engineering because of her structural interest in bridges. Shortly after, she once again changed her mind and decided she was really interested in designing prosthetics and medical devices.

"At the time," Elkinton said, "there wasn't a biomedical engineering program, so I decided to double major in mechanical engineering and biological and agricultural engineering, hoping to learn about the mechanics portion of prosthetics from mechanical engineering and the medical side from biological and agricultural engineering.

"After talking with my adviser, it was suggested I should look into electrical engineering, because it had a bioengineering emphasis that was sensor- and device-related. I transferred into electrical engineering second semester of my sophomore year and quickly fell in love with the classes I was taking."

Throughout all these early changes, Elkinton said her advisers and classmates continued to encourage her to find her fit within K-State engineering.



MACEY ELKINTON WITH HER FATHER, JEFF, OUTSIDE OF BURNS & MCDONNELL HEADQUARTERS IN KANSAS CITY, MISSOURI, ON THE FIRST DAY OF HER SUMMER INTERNSHIP THERE IN 2019

"If I had to give one piece of advice to an incoming student, it would be to not be afraid to change your mind. You go to college to find your interest and to cultivate it," she said. "I'm so glad K-State had the many different options within engineering so I could find what I was truly passionate about and learn more about it."

Finding a lot of enjoyment in her circuit theory and electromagnetic theory classes, soon drove her interests to the power side of electrical engineering.

"What really solidified my interest in power systems," she said, "was my summer internship with Burns & McDonnell in the transmission and distribution department. After graduating in May, I will be working full time at Burns & McDonnell in the same group I did my internship for, the relay settings group in the



WORKING WITH THE RELAY SETTINGS GROUP, MACEY ELKINTON AT A SUBSTATION CONTROL PANEL IN STILLWELL THAT CONTAINS RELAYS FOR MONITORING TRANSMISSION LINES

protection applications section of transmission and distribution global practice.

"Something I could see myself doing in the future is getting involved with helping impoverished countries build, maintain and/or update transmission and distribution infrastructures, and updating technology within that field. I still have much to learn about the industry and am looking forward to doing that at Burns & McDonnell."

Along with her studies, Elkinton also found time to be a Scholars Assisting Scholars, or SAS, tutor; a member of Engineering Ambassadors; as well as serve as a mentor in the Women in Engineering, or WiE, organization.

CONTINUED ON PAGE 12 →

"I started as a SAS tutor second semester of my sophomore year and chose to tutor Chemistry I because of my passion for chemistry," she said. "Even though I was in electrical engineering, it was a way to stay connected with a subject I really enjoyed."

"Tutoring is one of the most rewarding things I have done. It is such a good feeling when you're explaining something to a student and a lightbulb goes off in his or her head, and everything clicks. It has helped me so much with soft skills that engineers need. I communicate with people one-on-one and in small groups, and sometimes speak in front of large groups of more than 100 students."

Elkinton said her main reason for joining Engineering Ambassadors was to give back to the College of Engineering for the many opportunities presented to her as a student. Meeting with high school students and volunteering for events such as Scholars Day and Engineering Day allowed her to tell high school and transfer students about all of the resources and opportunities at K-State.

"Another great thing about Ambassadors is getting to build relationships with students in other disciplines as well as administrators within the college," she said. "Through Ambassadors, I even got to meet and have lunch with Carl Ice, for whom the College of Engineering is now named."

In her involvement as a mentor in WiE, Elkinton was paired with freshman females majoring in engineering to assist them with feeling at home in the college and at K-State.

**"It is such a good feeling when you're explaining something to a student and a lightbulb goes off in his or her head, and everything clicks."**



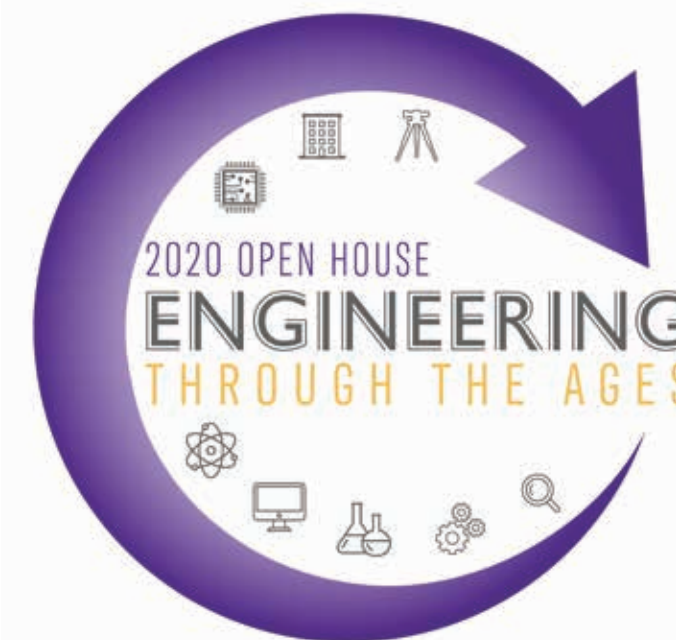
MACEY ELKINTON  
OUTSIDE THE  
SAS FACILITY IN  
ENGINEERING HALL IN  
FALL 2018

"I am so proud I was able to help young women in engineering with any questions they might have, and reassure them that they could succeed in this field," she said.

Elkinton said some of the best memories from her overall time at K-State include the 2018-19 K-State basketball season when K-State beat KU and then beat OU to win the Big 12 conference title. Also a K-State football fan, she was thrilled when K-State beat the undefeated Oklahoma Sooners during the 2019 season and the fans were allowed to go onto the field after the victory.

She has enjoyed living close to campus, being able to walk to and enjoy places around town, and taking advantage of outdoor areas at the Konza Prairie for hikes and runs, and Tuttle Creek Lake and Pillsbury Crossing.

"I will always remember the amazing people I've met and the memories I've made in Manhattan," Elkinton said. "I'll forever cherish my time at K-State and am truly blessed by the opportunities I've had here. EMAW!"



## SPRING HONOREES ANNOUNCED DESPITE CANCELLATION OF ASSOCIATED EVENTS

Even though both Engineering Open House and the Carl R. Ice College of Engineering leadership reception had to be canceled due to the COVID-19 virus, the selection of honorees for three annual spring awards coordinated by the Steel Ring Engineering Honor Society moved ahead as planned in the following categories: St. Patricia and St. Patrick, the Clair A. Mauch Steel Ring Advisor of the Year Award and the W. Leroy Culbertson Steel Ring Leadership Scholarship.

The honor of Saint Patricia and Saint Patrick is awarded annually to two outstanding graduating seniors in the College of Engineering, who have been nominated by their respective departments in recognition of their leadership and contributions within their department, impact on the college and K-State community, and strong record of academic excellence.

This year's winners, St. Patricia, **Macey Elkinton**, senior in electrical engineering; and St. Patrick, **Sam Fruth**, senior in computer engineering, were chosen by their peers in the college through online voting.

Recipients of the 2020 W. Leroy Culbertson Steel Ring Leadership Scholarship have also been announced and will be awarded to **Agustin Rodriguez**, junior in computer science, and **Mariana Cruz**, junior in civil engineering.

The W. Leroy Culbertson Steel Ring Leadership Scholarship was permanently endowed in 1985 by Culbertson's wife, Wanda Culbertson, along with additional donations from Steel Ring Engineering Honor Society alumni. Scholarship recipients are selected by the Steel Ring Scholarship Committee.

The Clair A. Mauch Steel Ring Advisor of the Year for 2020 is **Garrett Peterson**, an instructor in the Mike Wieggers Department of Electrical and Computer Engineering.

This award recognizes individual achievement in advising by a full-time faculty member. Members of Steel Ring make the selection based on demonstrated concern for students' academic progress; familiarity with administrative, university and departmental advising policies; and availability to students and recognized ability to positively impact their education.



# Building a Career in the Nuclear Power Arena

by Mary Rankin



MICHAEL MCEWAN, RIGHT, AND GRADUATE STUDENT, PATRICK ERVIN, AT THE TRIGA MARK II NUCLEAR REACTOR IN WARD HALL IN THE EARLY 1970S



MICHAEL MCEWAN, LEFT, AND WILLIAM WRIGHT, K-STATE NE '68, AT THE WALTER REED RESEARCH REACTOR IN WASHINGTON, D.C.

With his support of two nuclear engineering-related funds in the Alan Levin Department of Mechanical and Nuclear Engineering, K-State alumnus, Michael McEwan, NE '78, was making a statement:

“Nuclear power and nuclear reactors were the thing for me, and they were good to me.”

After a renter had moved out of property McEwan owned in Phoenix, he had come to the decision that instead of re-renting, he would gift the house to the KSU Foundation.

This process had begun in 2016 when Ken Shultis, professor of mechanical and nuclear engineering, invited McEwan back to campus to present a seminar on his career in the nuclear energy field for the K-State student chapter of the American Nuclear Society.

“It was after this three-day visit that I decided to make the gift to the department with the stipulation that Ken Shultis decide how to best spend the money,” McEwan said. “He picked the Nuclear Engineering Enhancement Fund and the Mechanical and Nuclear Engineering: Reactor Support Fund and that’s how we went.

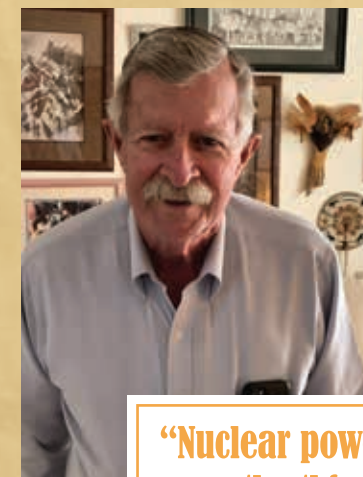
“Financially the rental property was a fantastic opportunity to make an endowment back to K-State — a place dear to my heart.”

McEwan’s connection to nuclear power and reactors began shortly after he enrolled in studies at the University of Maryland in 1964. He took a job working at the research nuclear reactor on campus and was paid 90 cents an hour. Two years later in 1966, he was licensed by the Atomic Energy Commission as a reactor operator.

Moving toward completing a bachelor’s degree in nuclear engineering, in the spring of 1968, McEwan said he “had taken too heavy a load of classes at the end of [his] junior year and

flunked out.” With the country in the thick of the Vietnam War, and no longer having a student deferment, he soon found himself drafted into the U.S. Army.

“But the Army noticed my reactor license in my paperwork, so instead of combat,” he said, “I was assigned to the research reactor project at Walter Reed Army Hospital in Bethesda, Maryland, for the next two years.”



While there he became a licensed operator on that reactor, and met and married his first wife, Marion, an Army nurse at Walter Reed.

The next stop for the couple turned out to be Manhattan, Kansas. Robert Will, one of McEwan’s former professors and radiation safety officer at the University of Maryland, had

**“Nuclear power and nuclear reactors were the thing for me, and they were good to me.”**

moved to Kansas to head the state’s Radiation Control Program. When he learned of the need for a reactor operator at Kansas State University, he thought of his former student and contacted him about the opportunity. McEwan interviewed for the position, was hired, and spent from 1970 to 1978 running the reactor. He also completed his bachelor’s degree in nuclear engineering and received his third operator’s license during this time at K-State. Marion, still in the Army, served as a pediatric nurse at the hospital on Fort Riley.

After graduation and deciding to move from research into the area of power company reactors, McEwan next interviewed with and was hired by the Public Power District of Omaha, Nebraska, where he spent four years maintaining a reactor and earned his fourth operator’s license.

In 1982 he moved to Phoenix where he helped manage three large reactors for the Arizona Public Service Co. at its Palo Verde Power Station 70 miles west of Phoenix. The company, he said, “supplied vans to transport the workers round trip for \$5 a day.”

He remained with Arizona Public Service until his retirement in 2008, holding numerous positions at both the plant and in the corporate offices.

“It’s enjoyable to be retired now and sleep in,” McEwan said, “but I also like to hunt and fish, and I have 23 dead animals in my house” — adding all were products of taxidermy. He has hunted caribou in Alaska, fished in Alaska and Florida, and still enjoys turkey and quail hunting.

“But I miss the pheasant hunting I did in Kansas,” he said, “and still have feathers saved from that experience.”

McEwan enjoys attending K-State alumni events in the Phoenix area and cited a highlight of those experiences was getting to meet K-State President Richard Myers. He said the former general “visited with me for several minutes and even autographed my copy of his book, ‘Eyes on the Horizon.’ ”

With all the positives from reconnecting with his alma mater and his experiences in the nuclear engineering program having such a major impact on his nuclear energy and reactor career, McEwan said he and his current wife, Helen, are currently “working with the Foundation to put something in our trust for K-State as well.”



# Radiation detection project — OUT OF THE LAB AND INTO THE FIELD

by Mary Rankin



Last summer Walter McNeil, assistant professor in the Alan Levin Department of Mechanical and Nuclear Engineering, and a K-State team of three graduate and three undergraduate students constructed a field-mobile laboratory and deployed it at the Idaho National Laboratory Radiological Response Test Range in support of field testing of radiation-detection systems under development for military deployment.

Working to develop high-performance, mobile radiation-detection systems as well as new systems that leverage emerging technologies in sensors, signal read-out and data processing, the effort is also designed to investigate improved measurement methods and techniques for military and emergency responders when addressing disaster scenarios.

An initial \$100,000 grant in 2018 from the U.S. Department of Defense Space and Naval Warfare Systems Command has since procured added funding of \$130,000 and \$175,000, and continues to support the research.

“We acquired and constructed nearly all of the equipment in a period of two months,” McNeil said, “and traveled to Idaho for test execution. Our team effort was supported by the electronics design lab at K-State who helped set up the mobile trailer laboratory computers and wireless systems.

“We detonated multiple dirty-bombs in a remote area of the desert and provided

**“We must push our research out of the labs and into field conditions as soon as possible...”**

a calibration standard for contamination mapping measurements for the MERLIN-A and MERLIN-I systems that are in the process of being approved for procurement by the Army to upgrade its nuclear-biological-chemical reconnaissance vehicle.”

In response to the U.S. government discouraging reliance on foreign assets, including unmanned aerial systems (UAS), the team acquired a U.S.-manufactured small, portable multi-rotor UAS and a large, multi-rotor UAS with a 22-pound payload capacity. The larger vehicles offer longer flight duration and larger area coverage for surveys, while the smaller UAS provide greater agility, portability and less disturbance to particulates on the ground.

“We experienced operations within the high-contamination area firsthand,” McNeil said, “using extensive protective equipment and procedures to shield us from high levels of radiological particulate contamination while we collected ground-based measurements.”

CONTINUED ON PAGE 12 →

The UAS were equipped with detectors and cameras to enable terrain-following and automatically mapped out radiation dispersion and contamination spread from the dirty-bomb detonations. Three of the students on the team are commercial unmanned aerial vehicle (UAV), or drone, pilots and operated the UAS on site in Idaho.

“Aerial measurements by UAS bypassed all requirements for human entry into the contamination area” he said, “and were able to produce similar exposure-rate surveys maps with the added benefit of augmentation with overhead imagery and 3D virtualization of the entire site.”

While many new technologies continue to emerge through research, the time and effort it takes to get these new innovations to the “boots-on-the-ground” stage remains a challenge. Success or failure often depends on rapid transition from the lab to field testing and user trials to demonstrate performance and support government procurement justifications.

“Technologies demonstrated for the first time out of the laboratory to sponsors and field users have a high risk of failure,” McNeil said. “This means we must push our research out of the labs and into field conditions as soon as possible in the development process. My laboratory has resources to take our technologies to the users and into the environments where they operate, as we were able to do in Idaho, before it goes to demo in front of sponsors.”



WALTER MCNEIL, RIGHT, AND GRADUATE STUDENT, NATHANAEL SIMERL, GEAR UP TO GO INTO A HIGH-CONTAMINATION AREA AT THE IDAHO NATIONAL LABORATORY RADIOLOGICAL RESPONSE TEST RANGE.

In the unfortunate event of radiological release into the environment, McNeil said, “We must provide emergency response personnel with the absolute best in technology to assess the risk to life and health rapidly while minimizing the danger to themselves.

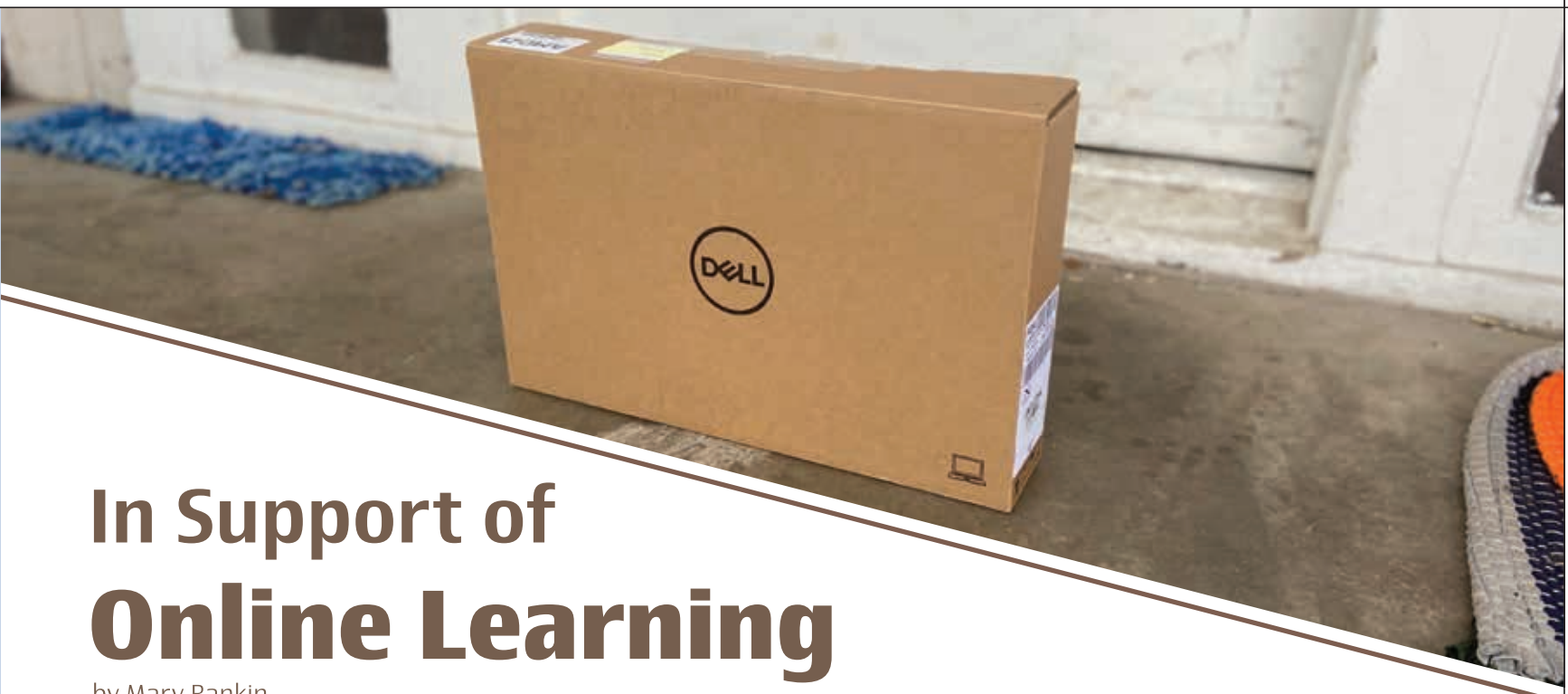
“Industrial accidents such as Fukushima, modern global tensions and the 2018 U.S. Nuclear Posture Review inform us to become more prepared for radiological incidents and to improve our capabilities to operate within and around radiological contamination from various causes. This includes consideration for tactical nuclear weapons — less lethal than high-yield fusion devices but perhaps more likely to be implemented.”

A large demand currently exists for reducing the size, weight and power of integrated radiological sensing systems. Another new development in McNeil’s research is to additively manufacture 3D electronic circuitry that can replace traditional, printed circuit board technology used in mobile instrumentation.

“This has the potential to reduce the size of electronics by many factors while still using industry-proven discrete electronic components,” he said. “This size-reduction effort, along with one of my other projects to reduce power consumption in spectroscopic gamma-ray systems, aims to increase the portability of spectroscopic nuclear instrumentation without sacrificing sensitivity.”



A U.S.-MANUFACTURED, LARGE MULTI-ROTOR UAS WITH A 22-POUND PAYLOAD CAPACITY



# In Support of Online Learning

by Mary Rankin

When the decision was made in mid-March to complete the semester with only online classes, Interim Dean Gary Clark knew immediately some of the students would have excellent access to a computer and the internet, some would have acceptable access and some would have no access.

University officials began working toward free or highly reduced-cost internet access for students, and the college began the process of getting basic fundamental laptops to students in need of those. A survey was emailed to students and faculty gathered names of those they knew needed equipment. Amy Betz, assistant dean for retention, diversity, and inclusion and associate professor, and Rod Howell, special assistant to the dean and associate professor, headed the effort.

“In total,” Betz said, “we received 28 requests from students for laptops. Seven were shipped, 20 delivered locally in Manhattan and one picked up on site by a student.”

The following four responses are from students who received a laptop:

*“Without the laptop provided, I would not have been able to run the software needed for my classes. It has worked great so far and I am very thankful K-State had this option available.”*

*“I am so grateful for the services that are available for students during this unfortunate time. When I was transitioning into virtual learning, my personal computer crashed. Since I am in design classes, having a laptop that can connect to all the software I need is essential for passing each class. By contacting the Fiedler Learning Commons, I was able to get a laptop from engineering.”*

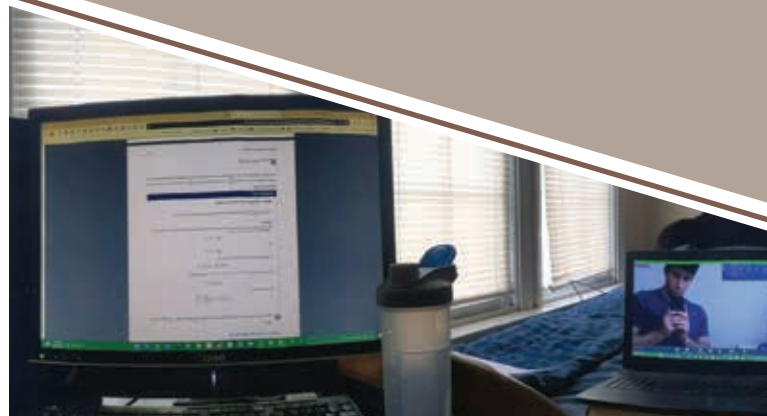
*“The laptop I received connects to the VPN system and Aspen, Polymath and Visio just fine. It is fast, reliable and gets the job done. Having this laptop motivates me to do more homework since it is a connection to the engineering complex.”*

*“Thank you so much for having this service available for students.”*

CONTINUED ON PAGE 14 →



ETHAN ECCLES AT HIS DESK, READY TO ASSIST STUDENTS



SAS TUTOR GETTING SET UP FOR ONLINE TUTORING

### SAS tutors continue services

Scholars Assisting Scholars, or SAS, is a free tutoring program offered by the college that employs students who attend a specific section of a course and then serve as a tutoring resource to everyone enrolled in that section. Tutors attend the lecture, provide assistance consistent with course instruction and lead review sessions before each exam. SAS supports student success and learning for those in first- and second-year core science, math and computer science courses.

"I don't think we even thought about not having SAS when the switch was made to online classes," Betz said. "The discussion was only ever about how we would have it. We chose to create individual Canvas courses for each SAS course so we could utilize the high-tech option of Zoom and low-tech options of chat rooms and discussion groups. This helped to guarantee asynchronous delivery of our tutoring services."

Jennifer Thornburg, retention coordinator for the SAS program, said the main concern was how students would handle the change in learning mode and how best to provide whatever help possible from the learning center.

"We were also concerned about our student tutoring staff and wanted to make sure they would be able to work remotely as well," she said,

In the weeks following spring break, 126 students requested tutoring for the nine different classes offered. This includes two levels of chemistry, economics, four levels of math and two levels of physics.

"Some students seeking tutoring are taking two or three of our classes offered," Thornburg said, "and we continue to get new requests nearly every day."

### How you can help

In these times of change and innovation the Carl R. Ice College of Engineering is moving forward with the number one goal of finishing the semester strong. And that effort is only possible with the help and support of many. Thank you for the part you have



played in the past and will play in the days ahead to ensure students and faculty have the technology and equipment to successfully transition to online learning, as well as transition through any further changes ahead.

If you feel led to help in this effort, please consider a gift to the K-State Strong Emergency Response Fund, established to bring immediate relief to K-State students who are facing unprecedented challenges at this time, including those in engineering. A gift to the Engineering Dean's Excellence Fund, where the college will have the discretion to meet various needs as they arise, would be greatly appreciated as well. Now more than ever, let's unite to keep #KStateStrong!

For further information, please contact Dana Hunter, senior director of development for engineering, at [danah@ksufoundation.org](mailto:danah@ksufoundation.org) or 785-775-2087, or visit [ksufoundation.org/kstatestrong](http://ksufoundation.org/kstatestrong).



"We have 16 tutors working, and four students who used to work at the help desk in SAS now monitor email for requests and handle questions regarding the new platform."

Ethan Eccles, senior in mechanical engineering, and a SAS tutor, shared his perspective on the change to remote tutoring.

"Six months ago if you had told me I would be spending the last nine weeks of my college career at home living with my parents and not going through graduation ceremonies in May, I'd have said you were crazy. But crazy seems to be the name of the game right now," he said.

"I thought taking all my classes online and tutoring students from home would be really chaotic, but after the first week, it wasn't too bad. It's been an adjustment for sure, but sometimes we have to do what we have to do."

Eccles initially resumed his tutoring duties in Engineering Physics employing only a "Q&A" online discussion, but has now

shifted to holding regular office hours in a Zoom format due to student feedback.

"I think this new method provides a unique opportunity for students," he said. "Something I notice a lot about engineering students is that collectively, we have a hard time orally communicating engineering ideas without using diagrams, models or other visual aids. Students often come to me with questions and show me their diagrams and equations. I then tutor using my own diagrams and equations."

"This alternative meeting style helps us practice our communication skills and prepares us to be better engineers in the real world. As SAS tutors, part of the job is to mentor students in preparation for life after college. In that sense, nothing has changed."





# INNOVATION TAKES CENTER STAGE

by Mary Rankin

## Even online, students still able to experience 3D-printing process for class projects

“Staying fully functional from home is definitely challenging — managing and balancing time for teaching, advising and research, mentoring graduate students and sharing life with little ones,” said Meng Zhang, assistant professor of industrial and manufacturing systems engineering and Steve Hsu Keystone Research Scholar, “but the technology is working well so far. And more importantly, the tremendous support and hard work from my colleagues, students and family make me feel optimistic.”

Zhang’s class, IMSE 664: Additive Manufacturing, which he moved to an online format in March, is a three-credit, upper-level undergraduate course with 50-minute lectures on Monday and Wednesday and a two-hour lab on Friday each week. It is funded by Zhang’s National Science Foundation grant, “Collaborative research: Creating an upper-division additive manufacturing course and laboratory for enhancing undergraduate research and innovation,” which involves intense hands-on learning and team-based projects enabled by 3D printers. Enrollment capacity for the course is 20 students and this semester there are currently 18.

For the lectures, Zhang makes two asynchronous recorded lectures with interactive quizzes available the night before the regular Monday and Wednesday classes. The Friday lab is live and employs the flipped-classroom concept — an instructional strategy and type of blended learning that reverses the traditional learning environment by delivering instructional content, often online, outside of the classroom. It moves activities, including those that may have traditionally been considered homework, into the classroom.

“The lab video is recorded and shared before Friday so students can work on their design offline,” Zhang said, “and to enable students to complete their projects using 3D printers, they next log in to the cloud-based 3D printing interface for direct access to one of the two printers I now have in my basement.”



MARKFORGED 3D PRINTERS IN ZHANG’S BASEMENT

On the cloud interface, students can see which printer is available, set all the printer parameters, and see the real-time printing progress, estimated printing cost, materials needed, etc.

“On Fridays,” he said, “I video chat with each of the five project teams for about 20 minutes from the five channels on Microsoft Teams software for better project management and communication. So far, everyone has shown up for the live labs and demonstrated good accountability for the tasks they are responsible for.

“I have mailed printed parts, and purchased and sent other parts needed to team members so they can still finish building a functional prototype for the final project topic that each team proposed at the beginning of the semester. Each project has design, simulation and prototype testing perspectives. Now everyone on a team of three or four has taken on more focused responsibilities.

“We meet weekly to talk about progress and challenges,” he said, “and none of the technical components in my learning objectives will be compromised with these adjustments. I was also able to give my mid-term exam for IMSE 664 on Canvas during a specific 75-minute submission window,” Zhang said, “and that went well.”

## Use of the latest software enhances online lecture and recitation course

“My goal was to recreate the person-to-person learning experiences as closely as possible to our learning environment before the lockdown,” said John Wu, associate professor of industrial and manufacturing systems engineering and Gisela and Warren Kennedy – Carl and Mary Ice Cornerstone Teaching Scholar.

Wu is incorporating Microsoft Teams software to meet this goal in his IMSE 685 – Manufacturing Information Systems class, a lecture and recitation format of 52 students who meet Tuesdays and Thursdays for a 75-minute session.

“The students frequently need person-to-person assistance during the program development processes for their homework assignments or exams,” Wu said.

“This became a challenge when the university transformed all classes into online formats. But by setting up virtual meetings with Microsoft Teams, I can still connect with students who have questions on homework and exams, as well as use the software’s remote desktop features to collaborate on program development and consultations.”

Wu said alumni from the IMSE department recommended use of Microsoft Teams as a well-adopted team-working tool in industry. Though a relatively new platform, its continuous improvements and new features fit well with teaching and remote work environments.

“The tremendous growth in adapting to this remote team-working environment, both within K-State and in the real world,” Wu said, “further prompted me to have my students learn to use this modern tool for their future careers. I would like them to have exposure to this widely adopted tool in industry so they can transition into the work environment more smoothly.”

Wu has created a discussion forum using Microsoft Teams to encourage students to express their comments, concerns,



SCREEN IMAGES OF STUDENTS INTERACTING DURING WU’S LECTURE

frustrations and emotions with current topics such as the impact of university lockdowns around the country and its resultant economic implications, job market perspectives, etc.

He encourages in-class small group connections and is planning assignments and group collaborative design projects that will require small teams of students to interact and collaborate with one another using Microsoft Teams.

“This way students can share their resources, files and design ideas all in one place,” Wu said, “and they can initiate group meetings on their own whenever needed.”

Since Microsoft Teams ensures a private discussion channel for instructors, teaching assistants and students, all meeting content is secure. This allows Wu to hold office hours using the software where he can invite specific students for one-on-one private meetings, or include the entire class for teaching sessions or review of class materials.

“Through the private-class channel,” Wu said, “we can share class materials and short tutorial videos, collaborate through Microsoft OneNote for class handouts, and produce example computer codes of the change-then-upload type of workflow on Canvas.

“I have been teaching online since 1995, so this type of lecture delivery may not be as challenging for me as it is for some of my colleagues. However, using the modern tools to recreate or maintain the face-to-face teaching/learning experience is my main goal in this teaching-from-home era.”

**“The students frequently need person-to-person assistance during the program development processes for their homework assignments or exams.”**

## O'KEEFE NAMED NEW DEAN OF ENGINEERING



An accomplished materials engineer and experienced administrator has been selected as the next dean of the Carl R. Ice College of Engineering at Kansas State University.

Matthew J. O'Keefe, executive director of the Haley Barbour Center for Manufacturing Excellence and professor of chemical engineering at the University of Mississippi, was appointed to the post by K-State Provost Charles Taber following a national search. O'Keefe will hold the

LeRoy C. and Aileen H. Paslay Chair in Engineering and will begin his new duties on June 15.

"Dr. O'Keefe is well prepared to become the next chief administrator of the Carl R. Ice College of Engineering," Taber said. "With his distinguished record in academia and industry, he understands the impact of engineering and computing on society, knows the challenges coming in these technology-based areas and has the leadership and innovative thinking skills to empower the faculty, staff, students and alumni of the engineering college to meet these challenges and lead it into the future."

As dean, O'Keefe will be responsible for the oversight and direction of the college's teaching, research, extension outreach, public engagement, fiscal stewardship and fundraising efforts. He will oversee the state's largest and most comprehensive engineering school with more than 3,400 undergraduates and 400 graduate students, as well as more than 160 faculty involved with the college's 12 degree programs housed in eight departments.

"I am honored to have been chosen as the dean of the Carl R. Ice College of Engineering and want to thank Provost Taber, Dean Gwinner and the search committee, Carl and Mary Ice, and everyone involved in the process for the opportunity to serve and lead the college," O'Keefe said. "Having collaborated with K-State engineering faculty and students on research projects, and working with K-State-educated engineers throughout my career, there was immediate interest in applying for the position. Knowing firsthand that K-State graduates and faculty are highly respected nationally and internationally, and having positive interactions with the professional staff and alumni on numerous occasions, it was a privilege to have been nominated as the next LeRoy C. and Aileen H. Paslay endowed chair and dean of engineering."

O'Keefe has served in his current position since 2017 and provides administrative oversight of the center's personnel, facilities, operations and academics. The center's honors program serves more than 200 undergraduate students in accounting, business and engineering pursuing a minor in manufacturing, developing them into leaders, innovators and entrepreneurs of modern manufacturing.

Before joining the University of Mississippi, O'Keefe was with the Missouri University of Science and Technology from 1999 to 2017 where he served as chair of the department of material science and engineering from 2016 to 2017. Under his leadership, he helped the department secure a \$3 million estate gift and oversaw annual research expenditures of approximately \$4 million.

O'Keefe earned his bachelor's degree in metallurgical engineering from the University of Missouri, Rolla — now Missouri S&T — and a doctorate in metallurgical engineering from the University of Illinois.

## ALUMNI NEWS

### RECOGNITIONS

#### 1985

Gretchen Williams Coleman (ARE), owner of Gretchen Coleman Commissioning Group LLC, Roanoke, Virginia, won her industry's top honor, The Benner Award, at the Building Commissioning Association's national conference in October, in recognition of her outstanding achievement in making building commissioning "business as usual." Additionally she was one of 20 women featured in an article in Engineered Systems, "2020's Top 20 to Watch: Women in HVAC," that can be seen online at [bit.ly/HVACwomen](http://bit.ly/HVACwomen).

#### 2008

Natasha Rosario Peebles (IE), is a space acquisitions engineer and major in the U.S. Air Force. She has spent the past 11 years leading and managing life cycles of satellites critical to U.S. national security. In celebration of Women's History Month, she was recently selected by the Air Force Recruiting office as one of three Air Force women to be recognized in a feature article in Bustle magazine. Read the story at [bit.ly/space-engineer](http://bit.ly/space-engineer).

## FACULTY PROMOTIONS AND TENURE

**The following faculty members have been tenured and/or promoted to associate professor:**

Dan Flippo, BAE; Trisha Moore, BAE; Jongchul Song, ARE/CNS

**The following faculty members have been promoted to full professor:**

Shing Chang, IMSE; Fred Hasler, ARE/CNS

### DEATHS

#### 1942

Marion Miller (AgE) died Oct. 20, 2019, in Anderson, Indiana. Through the ROTC program at K-State he was commissioned as a second lieutenant in the Army Corps of Engineers following graduation, and during WWII was assigned to Wright Airfield in Dayton, Ohio, where he worked on development of assault gliders. He joined the General Motors Aircraft Division in Kansas City in 1953, moving with the company to Indiana where he retired in 1985 as director of production engineering. He is survived by his wife of 77 years, Lois; two daughters, Jo Ann and Virginia; a son, Steven; and six grandchildren, 10 great-grandchildren and four great-great-grandchildren. He was preceded in death by a son, James.

#### 1949

John Lindholm (ME) died Jan. 10, 2020, in Manhattan, Kansas. He enlisted in the Army Air Corps in 1942 where he became a B-17 pilot decorated for wartime duty with the European Theater of Operation Bronze Medal with two Oakleaf Clusters, and the Distinguished Flying Cross. He was released from duty in 1945 but remained in the Air Force active reserves until 1972. After graduation he worked for General Electric and the Midwest Research Institute before beginning his graduate studies where he earned a bachelor's degree in mechanical engineering from K-State and a Ph.D. from Purdue University. He joined the faculty at K-State as a professor of mechanical engineering and was later head of the engineering technology department. Active in professional societies, Lindholm also spent two years with a team establishing an engineering program at the University of Assuit in Egypt. He had a Fulbright Fellowship to that university as well as to the University of the South Pacific, Fiji Islands. He was preceded in death by his wife, Mildred; and is survived by daughters Martha, Susan and Barbara; son, John; and four grandchildren and seven great-grandchildren.

#### 1952

Donald Millenbruch (CHE) died July 19, 2019, in Port Saint Lucie, Florida.

#### **NOTICE OF NONDISCRIMINATION**

Kansas State University prohibits discrimination on the basis of race, color, ethnicity, national origin, sex (including sexual harassment and sexual violence), sexual orientation, gender identity, religion, age, ancestry, disability, genetic information, military status, or veteran status, in the university's programs and activities as required by applicable laws and regulations. The person designated with responsibility for coordination of compliance efforts and receipt of inquiries concerning the nondiscrimination policy is the university's Title IX Coordinator: the Director of the Office of Institutional Equity, [equity@k-state.edu](mailto:equity@k-state.edu), 103 Edwards Hall, 1810 Kerr Drive, Kansas State University, Manhattan, Kansas 66506-4801. Telephone: 785-532-6220 | TTY or TRS: 711. The campus ADA Coordinator is the Director of Employee Relations and Engagement, who may be reached at [charlott@k-state.edu](mailto:charlott@k-state.edu) or 103 Edwards Hall, 1810 Kerr Drive, Kansas State University, Manhattan, Kansas 66506-4801, 785-532-6277 and TTY or TRS 711.

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#### **ENGINEERING CAREER FAIR**

REPRESENTATIVES FROM MORE THAN 100 BUSINESSES, AGENCIES AND ORGANIZATIONS CAME TO THE ENGINEERING COMPLEX FEB. 11-12 FOR THE 2020 ENGINEERING CAREER FAIR. THE TWO-DAY EVENT, HOSTED BY THE K-STATE CAREER CENTER, GAVE ALL STUDENTS INTERESTED IN AN ENGINEERING FIELD THE OPPORTUNITY TO SEEK OUT INTERNSHIPS, CO-OP EXPERIENCES AND FULL-TIME POSITIONS.

