CONTENTS

DEAN'S MESSAGE

IT GIVES ME GREAT PLEASURE to share with you the 2020-21 Annual Report for the College of Engineering and Technology (CET) at Utah Valley University (UVU).

In 2021, our colleagues in the engineering and computer science departments received a $1.5 million National Science Foundation grant, and once again, CET saw growth in the number of graduates and saw students participating in regional and national competitions and receiving numerous honors. The year also brought new programs approved by the Accreditation Board for Engineering and Technology (ABET). CET now offers five ABET programs in civil engineering, comput-

er engineering (re-accredited), electrical engineering, mechanical engineering, and software engineering. Our construction management program also received accreditation by the Applied and Natural Science Accreditation Commission (ANSAC) of ABET, and the computer science, information systems, and information technology programs were re-accredited by the Computing Accreditation Commission (CAC) of ABET. In total, UVU now offers nine ABET-accredited programs. Moreover, during October 24–26, 2021, our surveying and mapping program was also reviewed by a team from ANSAC of ABET, and the exit report was positive.

Here at UVU, we have many students who want to major in engineering or computer science and a new engineering building will allow us to increase capacity to accommodate this student demand and produce additional qualified graduates to enter the workforce. On October 23, 2021, Qualtrics co-founder Scott M. Smith and his wife, Karen Smith, announced a $25 million gift to help fund UVU's planned engineering building. The new building will be named the Scott M. Smith Engineering and Technology Building, and the name of the college will be changed to the Smith College of Engineering and Technology.

As I have stated in years past, what sets CET apart from other engineering and technology programs is our hands-on, real-world approach to engineering and technology education and our focus on encouraging our students to apply and test their practical knowledge against others in professional settings and competitions. We believe another reason for our students' success is our fostering of the close relationships that must exist among engineering and technology faculty as well as government and industry partners to prepare graduates who are job-ready to make immediate positive impact upon employment.

I hope you enjoy reading this year's annual report and look forward to hearing from you!

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WHAT SETS CET APART FROM OTHER ENGINEERING AND TECHNOLOGY PROGRAMS IS OUR HANDS-ON, REAL-WORLD APPROACH."
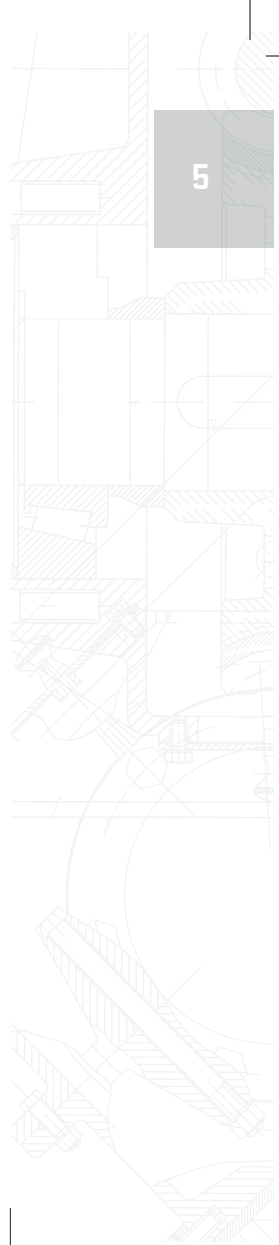
CET BY THE NUMBERS: 2020–21

CET STUDENTS

6,068
enrolled students
with a major
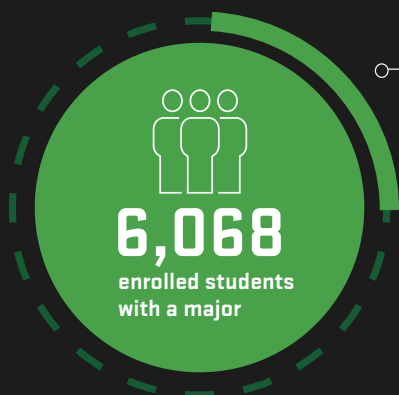
1,045
associate degrees earned

5,023
bachelor's degrees earned

2,239
of CET students are
nontraditional students

16%
women (993)

84%
men (5,172)
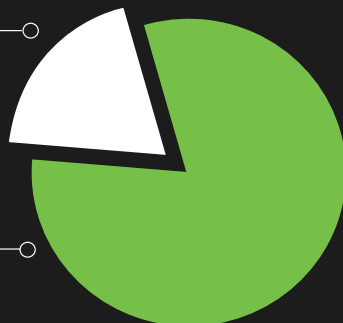
5.6%
increase in student population
from 2020 (3rd-highest growth
among colleges and schools at
UVU last year)

ALUMNI SATISFACTION

80.4%
of CET work
full time

12.9%
of CET work
part time

94%
of CET alumni rated their college experience as
"excellent" or "very good" for overall satisfaction

HIGHEST GROWTH IN DEPARTMENTS DURING 2017–2021

ARCHITECTURE AND ENGINEERING DESIGN:

39.5%

AVIATION SCIENCES:

41.4%

ENGINEERING:

95%

DIGITAL MEDIA:

10.1%

ENGINEERING OUR FUTURE TOGETHER

SMITH COLLEGE OF ENGINEERING AND TECHNOLOGY

"

THEIR GENEROSITY WILL BENEFIT THOUSANDS OF STUDENTS — MANY YET TO BE BORN."

—Dr. Astrid S. Tuminez
President, UVU

QUALTRICS co-founder Scott M. Smith and his wife Karen Smith announced a $25 million gift to help fund Utah Valley University's planned engineering building. The building is part of UVU's response to the state's need for higher education to increase the number of engineers and computer scientists in Utah's workforce.

The new building will be named the Scott M. Smith Engineering and Technology Building, and the name of the college will be changed to the Smith College of Engineering and Technology.

Scott Smith began developing survey and statistical analysis software in the 1980s and online software in the 1990s and founded Qualtrics in 2002 with the goal of making sophisticated research simple, accessible, and more cost-effective. He is an industry expert in marketing research, having authored six books and more than 100 referred publications, many appearing in the top journals in his field.

"Karen and I are delighted to support UVU and its students in this way," Scott Smith said. "Utah County is a special place for us. Our families settled Utah County in pioneer days, our children were raised here, and we started Qualtrics in our home in Provo. We want to give back in a way that will make an impact, honor my profession, and make Utah County a better place to live. We found the perfect match with UVU."

The Smiths' grant will jump-start the private fund-raising campaign to raise the $40 million needed to start construction on the 180,000 square-foot, five-story building that will be located on UVU's Orem Campus. UVU will also be seeking additional support from the state legislature for this transformational building.

"Utah Valley University is celebrating its 80th anniversary this year," President Tuminez said. "We honor those who sacrificed and worked hard to bring us to this

point. We now celebrate Scott and Karen Smith and their visionary gift, which will lay the foundation for UVU's next 80 years. Their generosity will benefit thousands of students — many yet to be born. They will change people's lives and help fill a critical need to increase the number of engineers in Utah now and in the future."

ADDRESSING WORKFORCE NEEDS WITH UVU ENGINEERING GRADUATES

The Smiths' announcement comes at a critical time when there is an urgent demand for more engineers and computer scientists in the state. Last year, Utah universities together produced more than 3,000 engineers and computer scientists, but there remained approximately 4,000 unfulfilled positions across Utah's workforce.

Engineering and computer science graduates from UVU are particularly valuable in filling the demand created by technology companies in Utah County's Silicon Slopes. According to UVU's Department of Institutional Research, UVU graduates stay and work locally. Around 84% of graduates remain in Utah after graduation for at least one year, and 76% are still in Utah 10 years after graduation.

EXPANDING UVU'S COLLEGE OF ENGINEERING AND TECHNOLOGY

There are over 6,000 students in UVU's College of Engineering and Technology, and that number continues to increase. Space is at a premium as hallways have been converted to student and faculty meeting places. "Here at UVU, we have many students who want to major in engineering or computer science, and the new Engineering Building will allow us to increase capacity to accommodate this student demand and produce additional qualified graduates to enter the workforce," Dean Moaveni said. The new building will solve the critical need for more lab and office space, classrooms, and conference rooms and will align technical infrastructure with existing and emerging technologies as the number of students grows.

ABET | Computing Accreditation Commission

ABET | Applied and Natural Science Accreditation Commission

ABET | Engineering Accreditation Commission

ABET ACCREDITATION

UTAH VALLEY UNIVERSITY offers five engineering programs — civil, computer, electrical, mechanical, and software engineering — that are accredited by the Engineering Accreditation Commission (EAC) of ABET.

UVU's construction management program also received accreditation by the Applied and Natural Science Accreditation Commission (ANSAC) of ABET. The computer science, information systems, and information technology programs were re-accredited by the Computing Accreditation Commission (CAC) of ABET. In total, UVU now offers nine ABET-accredited programs.

The announcement of the accreditations comes at a critical time when there is an acute demand for more engineers, computer scientists, and construction managers in Utah. Last year, Utah universities together produced more than 3,000 engineers and computer scientists, but there remained approximately 4,000 unfulfilled positions across Utah's workforce. Construction companies are also struggling to find employees to keep up with the ever-increasing need for qualified managers to oversee Utah's continued building expansion.

"One of UVU's long-term strategies is to educate and prepare graduates to meet Utah's workforce needs," said Astrid S. Tuminez, president of Utah Valley University. "From now until 2028, experts project that Utah will need more than 3,600 new engineers per year. UVU's new engineering and computer science programs were designed to help support that need. Since introducing our newest engineering programs (civil, mechanical, and electrical) in 2018, we've seen a 144.33% increase in engineering graduates at UVU."

According to a recent study (see QR CODE to the right) by the Kem C. Gardner Institute, Utah County's population is projected to reach 1.6 million by 2065 and will almost mirror Salt Lake County's population. Around 28% of the state's population will live in Utah County.

The study projects 576,000 jobs will be added in Utah County and increase its share of total state employment from 17% to 24% of all state jobs. One-third of the state's new jobs are projected to be in Utah County.

Scan the QR code above to see a study by the Kem C. Gardner Institute on population growth in Utah.

NEW DEGREE OFFERINGS

1 New Master's in Engineering and Technology Management

2 New Bachelor of Science in Computational Data Science

3 New Bachelor of Applied Science in Transportation Technologies

1

NEW MASTER'S IN ENGINEERING AND TECHNOLOGY MANAGEMENT

UVU's new Master of Science in Engineering and Technology Management (MS-ETM) officially accepted its first cohort of graduate students in fall 2021. This new degree is the only degree of its kind in Utah and will provide the link between engineering, science, and management. The goal is to prepare engineers and technologists for management positions within their industries.

The Master of Science in Engineering and Technology Management is designed to teach business and management skills, including product and project management, engineering management, quality and safety management, and statistical analysis. With these skills, technical knowledge, strong communication skills, and years of related work experience, we expect that our graduates will likely be in the best position to become managers in technical fields.

Kyle Merrill, a professional in residence in the Department of Technology Management, is the program coordinator for the MS-ETM. "Kyle has served as an engineering manager for 10 years for different divisions of Hewlett-Packard (HP) in the U.S. and abroad, leading project and program managers with a combined staff of more than 80 engineers and contractors. Kyle, who is also the recipient of two U.S. Patents, is an ideal person to lead the new MS degree in Engineering and Technology Management," Dean Moaveni said.

"I am thrilled to serve as the director of the Master of Science in Engineering and Technology Management at Utah Valley University," Merrill said. "This new degree is perfectly suited for working professionals with an undergraduate degree and experience in engineering, computing, or other technology. The MS-ETM teaches management skills for technical professionals to become senior leaders in their fields."

The MS-ETM will meet industry needs and demand. According to the Utah Department of Workforce Services, the architectural and engineering manager occupation is expected to experience above-average employment growth with a high volume of annual job openings. The need for replacements, rather than business expansion, is projected to make up most job openings in the coming decade.

"This degree is an excellent addition to the engineering and technical offerings at UVU and supports career growth of the skilled employee base on which Utah's high-tech businesses depend," Merrill said.

Along with meeting industry demand, alumni and students will benefit from this new degree. Many of our alumni who have worked in the industry for numerous years report that they would have valued learning more about people management and business skills, particularly as they pursue rank advancement within engineering and technology companies. This new degree will bridge the gap between technical and managerial skills that are both needed for industry professionals to advance and take the next step in their careers. The program is catered specifically to working professionals in the fields of engineering and technology.

2 NEW BACHELOR OF SCIENCE IN COMPUTATIONAL DATA SCIENCE

> **"The pragmatic curriculum will prepare graduates to make immediate contributions within their chosen careers."**

UVU has a new program in computational data science. This undergraduate degree is offered by the Department of Computer Science within CET. This program is designed to produce power users of machine learning and artificial intelligence technology. Feedback from local industry has emphasized the importance of training students to support all aspects of a data science pipeline. A data science pipeline is the set of processes that convert raw data into actionable answers to business questions. Students of Computational Data Science at UVU will build a foundation of knowledge by studying mathematics, statistics, and computer science. With that foundation in place students will then study modern data base theory, methods for causal inference, data visualization techniques, machine learning algorithms, and how artificial intelligence can solve real-world problems. There will be engaging projects inspired by problems in industry, and opportunities to collaborate with local businesses. Graduates of the program will possess up-to-date skills. The pragmatic curriculum will prepare graduates to make immediate contributions within their chosen careers.

3

NEW BACHELOR OF APPLIED SCIENCE IN TRANSPORTATION TECHNOLOGIES

The Department of Transportation Technologies (TT) has received final approval for a new Bachelor of Applied Science (BAS) in Transportation Technologies. This degree will assist students with a greater depth of study regarding the systems found in modern transportation systems. The bachelor's will prepare graduates to step into positions to organize, repair, and service the new systems emerging in the automotive and diesel, collision repair, and power sports areas. The TT department is currently collaborating with Aviation Sciences toward a common emphasis of the emerging aero-mobility market of transportation. With the electric and hybrid-electric vehicles, which will be both air and land based, CET will be positioned to be on the leading edge of this emerging market.

photo: Master's in Engineering and Technology Management

NOTEWORTHY NEWS

CET FACULTY RECEIVE $1.5 MILLION NATIONAL SCIENCE FOUNDATION AWARD

In July 2021, the College of Engineering and Technology at Utah Valley University received a $1.5 million National Science Foundation (NSF) grant. The Building Exceptional Talent in Engineering and Computing (BE-TEC) NSF scholarship program will build on the success of a previous S-STEM Track 1 program by promoting student success and degree completion through scholarships to low-income, academically promising students beginning in their freshman year. The project will also implement evidence-based activities to support scholars, including intentional faculty mentoring, high-impact practices, and professional preparation.

"In addition, the grant will advance knowledge about evidence-based, context-specific interventions for STEM programs at primarily undergraduate institutions," said Dr. Afsaneh Minaie, the principal investigator (PI) for the grant.

BE-TEC will increase support of financially needy students with an interest and aptitude for engineering and computing degree programs by offering an average of 23 scholarships per year over a six-year period to at least 43 unique students. The Co-PIs for the project are Dr. Ehsan Rohani, from the electrical and computer engineering programs, and Dr. Reza Sanati-Mehrizy of the computer science program.

UTAH SYSTEM OF
HIGHER EDUCATION

CET FACULTY RECEIVE OVER $800,000 GRANT IN "DEEP TECHNOLOGY TALENT INITIATIVE"

In October 2021, the College of Engineering and Technology received more than $800,000 through a Deep Technology Talent Initiative grant from the Utah System of Higher Education. The objective of this grant is to facilitate collaborations that create expanded, multidisciplinary programs in both undergraduate and graduate studies that prepare students to be workforce participants in jobs requiring deep technology skills.

The funded project develops an automated system for inspection, fault diagnosis, analysis, and reliability prediction of wind turbine blades. "This project involves signal and image processing, artificial intelligence and machine learning, remote sensing via drone, path planning, software development, wind turbine prototyping, blade stress analysis, and many more. The students will learn or boost their knowledge in these areas and get a chance to work on a real-world problem related to renewable energy, which is proliferating. Generating electricity via wind turbines is one of the cheapest energies, and Utah is planning to increase the number of wind turbines to have 20% electricity generation by the end of this decade. As a result, there will be a higher demand from industry to hire experts in this area in Utah as well as other states in the near future. Furthermore, remote sensing and artificial intelligence applications have gone up to the moon. The involved students in this project will gain a lot of experience in these areas. The obtained results and experiments of these projects will also be used in some of the electrical, computer, and mechanical courses. Thus, all the students in these programs will benefit from it," said Dr. Mohammad Shekaramiz, the PI for this grant.

The grant will involve 22 to 44 undergraduate students from electrical, computer, and mechanical engineering programs from UVU, two to three master's students from the computer science and computer engineering programs from UVU and other universities in Utah, and three postdoctoral researchers. "I'm glad to have Dr. Mohammad Masoum from electrical and computer engineering and Dr. Abdennour Seibi from the mechanical engineering program on board as Co-PIs in this project," Dr. Shekaramiz said.

UVU, USU, AND FACEBOOK BRING SEEDPODS TO LOCAL SCHOOLS

Forbes Elementary School looked like Christmas morning recently when sixth graders unloaded and opened a trailer full of fun and engaging STEM teaching tools, games, and books donated to the school as part of a new K-6 STEM curriculum that was created and funded by UVU, Facebook, Utah State University, and the Alpine School District.

Teaching tools in the trailer included a 3D printer, a VR system, an earthquake simulator, plastic animals, volcano kits, golf balls, solar car kits, percussion drums, tuning forks, and working wind, solar, and hydro-powered models, among others.

Teachers, professors, and Forbes sixth graders helped explain and demonstrate what they found in the trailer and how the items will help the students learn about STEM-based subjects, including engineering and technology.

The SEEdPOD project began in early 2019 and involved pilot studies in Provo and Orem elementary schools, where teachers were able to complete trainings and a few lessons before the COVID-19 pandemic halted the activities in 2020. The project picked up momentum again, toward the end of year. The acronym "SEEdPOD" comes from Utah's Science and Engineering Education (SEEd) standards, which combine principles of engineering with science subjects. The lesson plans and materials are stored in trailers called "pods."

Teachers in the Provo and Alpine school districts helped review the lessons, and UVU and Facebook provided funding. USU is providing research support. Other SEEd-POD trailers are scheduled to be delivered to elementary schools in Blanding, Utah, and Utah County soon.
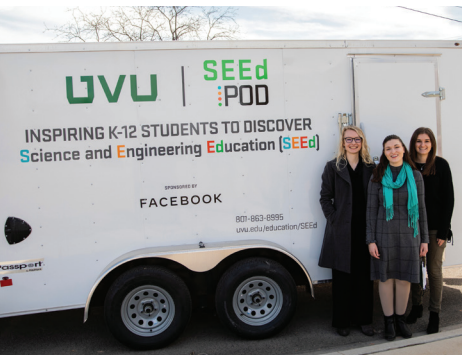
The SEEdPOD program was the brainchild of CET's Dean Saeed Moaveni, who originally set out to create mobile learning systems called "technology pods" to get K-12 students interested in pursuing engineering and technology education and to provide specific training modules for corporate employees. He shared the idea with then-Dean Parker Fawson and now-Dean Vessela Ilieva from the UVU School of Education, and Moaveni's idea morphed into SEEdPODs with further input from Dr. Krista Ruggles, also from the UVU School of Education.

Fawson, now the USU Emma Eccles Jones endowed chair in early education and director of the Center for the School of the Future, says the undertaking will "help refine our understanding of the perceptions of local teachers and students regarding STEM in general, and engineering in particular."

Students from UVU's elementary education and secondary education programs significantly shaped the project, including designing the curriculum, gathering materials, and teaching lessons.

Kate Elliott, the head UVU student assistant, said the students particularly appreciated the hands-on learning opportunities. "It has definitely been rewarding to go into the classrooms," she said. "The kids are really excited, so it's really fun to watch them. It has been fun to teach something they don't always get to do."

The key researchers involved with the project include Krista Ruggles and Dean Vessela Ilieva from the UVU School of Education; Dean Saeed Moaveni and Kazem Sohra-

by from the UVU College of Engineering and Technology; Parker Fawson and Kimberly Lott from the USU Emma Eccles Jones College of Education and Human Services; and Ning Fang from the USU College of Engineering.

Faculty members from UVU and USU have also worked closely with local school districts to ensure that the resources will be as helpful as possible for teachers and students. According to Ruggles, many teachers have not received training on teaching Utah's new SEEd standards due to COVID-19. This project aims to address these gaps and support local teachers in mastering the curriculum.

"It's about learning through phenomenon-based experiences and designing solutions to a problem, which is very different from what teachers have been exposed to in the past," Ruggles said. To assist teachers, UVU students and faculty will provide trainings and lead classroom lessons when needed.

Facebook's support of the SEEdPOD program is a continuation of the company's commitment to the Alpine School District and to increasing access to STEM resources in Utah. Facebook has been a part of the Utah County community since breaking ground on its Eagle Mountain data center in 2018.

"STEM curriculum and hands-on educational opportunities are incredibly important for students of today to be career- and college-ready, and we're proud to partner with Utah Valley University and the Alpine School District to support this new marquee technology," said William Marks, community development regional manager at Facebook.

Dr. Kazem Sohraby, associate dean of student affairs in CET, suggests that the opportunity for young students to gain hands-on experience with engineering and technology equipment will strengthen the next generation of employees and combat gaps and inequities in Utah's STEM fields.

"When we offer this opportunity to school children from elementary all the way to high school, it will have a positive impact upon them. It will allow them to understand what engineering and technology means and determine whether this is something that is of interest to them as a career."

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HANDS-ON EDUCATIONAL OPPORTUNITIES ARE INCREDIBLY IMPORTANT FOR STUDENTS OF TODAY."

— WILLIAM MARKS
Community Development Regional Manager, Facebook

UVU'S FIRST VIRTUAL REALITY "ENGINEERING AND TECHNOLOGY WEEK" EVENT

UVU hosted its first virtual reality (VR) event during Engineering and Technology Week in 2021. The event was designed for local high schools, middle schools, and elementary schools to experience the fast-growing world of engineering and technology, explore potential career opportunities, and experience the ways in which these industries are changing the world around them.

The event was furnished with Oculus VR headsets that were distributed to local schools. The event featured a self-guided tour of UVU's engineering and technology labs, faculty interviews, and interactive content to help students learn about specialized equipment. The event also highlighted a project competition for middle school and high school students.

The event was part of the global Engineers Week created by the National Society of Professional Engineers (NSPE). The purpose of the event is to encourage the next generation of engineers by providing opportunities for them to learn more and find their interest in engineering and technology at an early age. Dean Saeed Moaveni launched UVU's event in 2017, which was initially held in-person until COVID-19 restrictions were implemented, and the event moved online.

The response to this event was significant, with more than 500 unique visitors to the virtual event website when it launched on February 23 and an additional 200 visitors in March. Of those visitors, 47% were female.

"Our kids loved UVU's Engineering Week!" said Dillon Durrant, a teacher at Mountain View High School. "The road from high school to university can be tough, but programs like UVU's Engineering and Technology Week make that road incredibly easy to navigate."

Local schools such as Skyridge High School, Vista Heights Middle School, and Salem Junior High borrowed a VR headset to use for the event. The original plan was to loan the headsets to schools for one week, but most requested additional time to use the headsets because of the overwhelmingly positive response from students and teachers.

"This would give students an opportunity to explore technology that they don't ordinarily have access to and help them decide if this is a good career choice for

> ## "
> ### THE ROAD FROM HIGH SCHOOL TO UNIVERSITY CAN BE TOUGH, BUT PROGRAMS LIKE UVU'S ENGINEERING AND TECHNOLOGY WEEK MAKE THAT ROAD INCREDIBLY EASY TO NAVIGATE."
>
> *— Dillon Durrant*
> *Teacher, Mountain View High School*

them," said Cinda Morgan, a counselor at Timpview High School.

Toni Davis, a teacher at Skyridge High School also noticed the potential that VR had in his classroom. "It's amazing to have students experience viewing things through a VR headset," he said. "Maybe it will give them ideas for projects they can do in the future."

Teri Newell, deputy director of planning and investment at the Utah Department of Transportation (UDOT), gave the keynote address. Newell leads UDOT's program development, technology and innovation, and employee learning and safety programs. She facilitated Utah's Transportation Vision, gaining agreement with 25 partnering organizations that transportation has a role in enhancing Utahns' quality of life statewide.

Her speech, filmed ahead of time and available on our website, focused on encouraging students to explore career opportunities in engineering and technology, discussing her career path, and explaining how important it is to consider the impact engineers, especially women technologists and engineers, have on their communities.

Another feature of the event was the annual project competition. This year, 11 projects were submitted and posted online, with 20 students participating from local middle and high schools. Participants identified solutions to everyday problems using engineering and technology principles.

2021 GIRLS' ENGINEERING AND TECHNOLOGY DAY

Too many women and girls don't realize that the STEM field needs them and their unique perspectives and insights.

Nationwide, only 10% of people in STEM careers are women, and women make up 16% of engineering and technology majors at UVU. To address this gender gap and encourage female students to explore STEM, UVU hosted the Girls' Engineering and Technology Day on Friday, November 11, 2021. The event empowered hundreds of elementary and junior high school girls to know they can pursue careers in STEM if they so choose.

"Having diversity in anything is important," said Kazem Sohraby, associate dean of the College of Engineering and Technology (CET). "Ingenuity is not limited to men or women, and we have to find ways to offer opportunities to women so they can express their ingenuity."

UVU is committed to preparing students to serve the Utah community. One way to help girls prepare to make large strides in STEM in Utah or elsewhere and tap into their ingenuity: a fun field trip to the UVU campus for a STEM fair. Sponsored by Big-D Construction and in partnership with She-Tech, the largest industry-led STEM engagement platform for high school girls, the three-hour event was a big hit with the students.

"A lot of these girls might not know much about STEM or college yet," said Doug Radunich, UVU STEM outreach coordinator. "But when they come to see all these different fields and branches, they can become interested."

The event featured Cydni Tetro, CEO of Brandless, as the keynote speaker. She shared about the prevalence of technology in every field. UVU faculty and student volunteers took girls on tours of science and technology labs on campus, gave out free swag, and ran booths for each CET program

to share information and technological projects. Many girls were most interested in playing with the virtual reality headset stationed at one booth.

The UVU Creative Learning Studio, which aims to teach future and current K-12 teachers how to integrate STEM across the curriculum in their classrooms, hosted another booth. Dr. Krista Ruggles, assistant professor in the elementary education program, ran it. "Girls need to build their growth mindset and feel like they can be scientists or engineers," she said. "That message isn't always so clear."

UVU was out to make this message clear on Friday. As the girls eagerly explored each booth, they became much more aware of career possibilities, the wonders of technology, and their own potential.

"I really like engineering, and I want to learn more about it," said attendee Molly Duncan, a junior high school student in the area. "My favorite part of the fair was the holographic fan since I think holographics will really improve technology we have today. I want to be a robotic engineer when I grow up."

Her dad, Steve Duncan, was an engaged, supportive attendee for his daughter. "Introducing my daughter to the science fields is important because I want her to know what kind of options she has," he said. "I want her to feel like she has the potential to do anything that she's interested in. If she has big STEM-related dreams, I want her to be able to follow those dreams and not be limited."

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UVU IS COMMITTED TO

PREPARING STUDENTS TO

SERVE THE UTAH COMMUNITY."

ENGINEERING PROFESSOR RESEARCHING UNIQUE CONCRETE IN SALT LAKE CITY AIRPORT PARKING STRUCTURE

Utah Valley University Civil Engineering Professor Amanda Bordelon is part of a research initiative to investigate the unique concrete material utilized in the former Salt Lake Airport parking garage. With the opening of the new Salt Lake Airport in September 2020, this unique original parking structure was scheduled to be demolished. Before the demolition began, however, Bordelon and a team of civil engineers were funded by the ACI (American Concrete Institute) International Foundation and Utah Department of Transportation to conduct research. The intent of the research is to determine the effectiveness of a micro-silica mixed within the concrete to prevent it from corroding over time.

Designed in 1989, the parking structure was originally intended to last 75 years and featured epoxy-coated reinforcing bars, post-tensioned cables, and a concrete mixture using micro-silica. The silica powder was a new technology at the time of the construction, and is well-documented to form a harder, stronger, denser concrete that is less permeable by water or other corrosive elements over time. The drawbacks to using this mixture is that it is more expensive to produce and creates a stickier concrete mixture that is more difficult to finish.

"If silica fume is found to substantially improve the service life of a structure, however, these additional upfront costs may be worthwhile," Bordelon said.

The research team began their work onsite by visually mapping the cracks and taking samples of the concrete for testing. One sampling method is to strategically drill into the concrete about an inch at a time. With each one-inch lift, the team collects samples of the dust from the drilling. The dust powder is then taken to a lab and chemically tested to determine the amount of chloride ions present. Chloride ions are introduced into the concrete from the salting of the roadways leading around and ramping up to the parking garage. Chloride is one of the most aggressive corrosion elements to the steel reinforcement.

Once the research is complete, it will be used as a guide for future engineering design. The results will also be used to inform Life-365 software, which predicts the lifespan, corrosion patterns, and anticipated repair date of future newly constructed concrete structures.

This is a collaborative project among several UVU civil engineering and Brigham Young University (BYU) civil and electrical engineering research team members. Much of material testing is conducted at BYU.

# STUDENTS SOLVING REAL-WORLD PROBLEMS: CAPSTONE PROJECTS

SR-121 CULVERT SIZING AND REPLACEMENT

Students: Hailey Seegmiller, Josh Staples, and Cade Merica
Advisors: Khaled Shaaban, PhD, PE, Associate Professor, Civil Engineering, UVU, and
Andrew Jordan, P.E., Pre-construction Engineer, UDOT Region 3

Roadway overtopping due to insufficient drainage occurs along a 10-mile stretch of SR-121 near Vernal, Utah. Maintenance crews reported overtopping near MP 28.5. This report describes and evaluates the culverts along this stretch. The culverts along the road were evaluated and analyzed using WMS and HY8 software to determine culvert remedies or replacement options. Of the 46 culverts found, 25 culverts needed maintenance or replacement due to issues including overtopping, excess sediment, rust, and deformations. Culverts were grouped into five phases. Phase one included the culverts that had the greatest impact on the drainage issue and phase five included the culverts that had the least impact. A preliminary cost analysis and concept recommendations were done for all phases.

Phase one culverts were selected and taken to a 60% design progress set. This progress set included another site observation to obtain accurate measurements of the existing culverts. These measurements were put into the HY-8 software and solutions for these culverts were determined. The design has public health, public safety, social factors, environmental factors, and economic factors that impact the project. These were weighed out when determining the construction suggestions along the SR-121 route. A final cost analysis was done for the priority one culverts following UDOT standards. These costs were more accurate because of the updated prices received from UDOT. Accounting for inflation for the year 2022, the total cost for the priority one culverts came out to be $1,611,000.
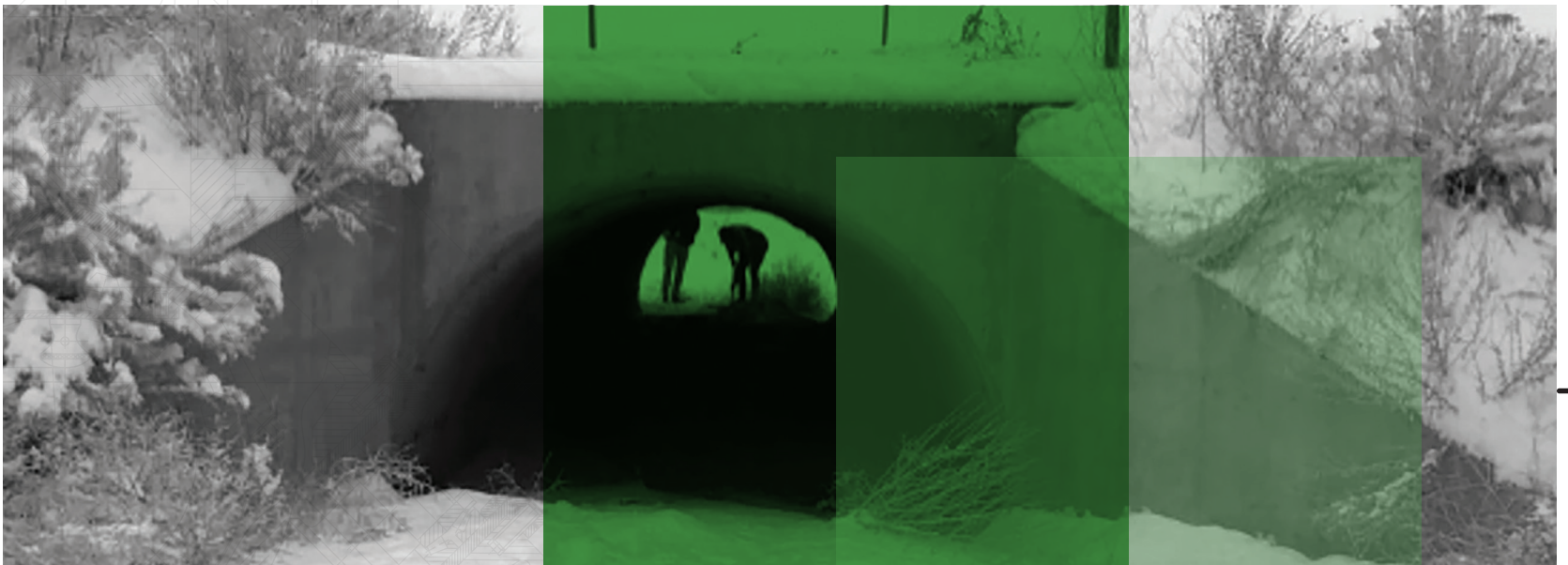
A MASK TO CHANGE A PANDEMIC

Students: Cassandra Chase, Spencer Fischback, Chase Williamson, and Peter Larsen
Faculty Advisor: Sean Tolman, PhD

This team was tasked with designing a better face mask. The focus of this project was to create a mask for elementary-aged children, who are often in close contact for extended periods of time without effective Personal Protective Equipment (PPE). Due to the scope, budget, team experience, and billable time, it was decided to create a new mask based on the best of existing technologies and materials. After creating specifications based on customer needs, the engineering process was followed to generate concepts, filter designs, prototype, test, and iterate. The final tested prototype exceeded specifications and many customer expectations. The prototype was light, tested and approved for comfort and appearance by kids, had better than N95 filtration, more breathable, and dampened sound less than a standard cloth mask.
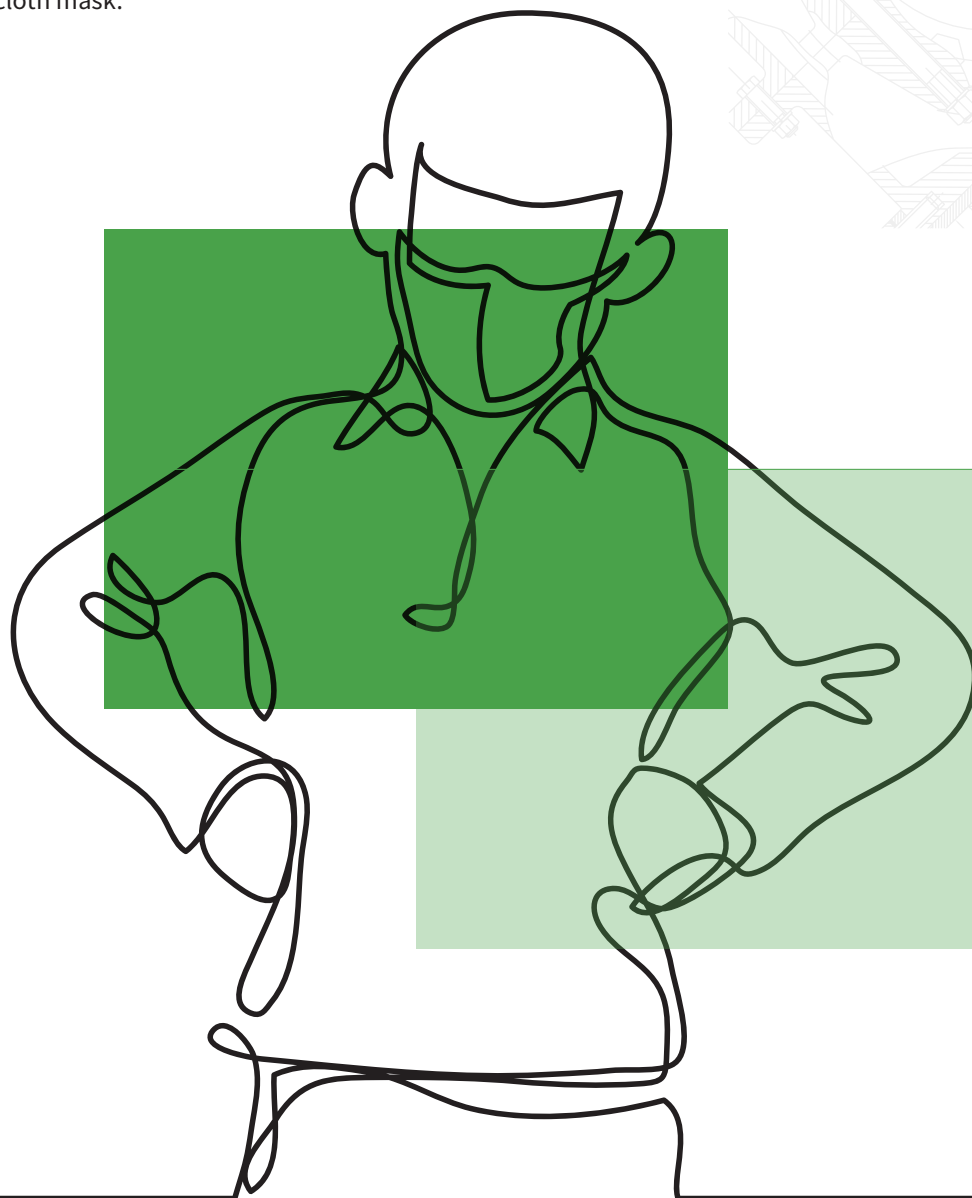
UNIVERSAL SMART CAR KIT

Students: Bridger Miles and Chance Cochrane
*Faculty Advisor: Afsaneh Minaie, PhD*

In 2019, a study by the National Highway Traffic Safety Administration (NHTSA) concluded that 94% of serious vehicle accidents in 2018 were due to human error. They believe that with the incorporation of autonomous vehicles in American society, we could save the lives of nearly 36,560 people — the amount of people that died in 2018. They support this claim with the evidence that lane-assist, blind-spot monitoring, and brake assist have helped decrease the deaths per 100,000 people from approximately 23 in 1980 to 11 in 2018. With these new components in technology, vehicles can avoid accidents caused by drowsy or distracted drivers. NHTSA also believes that with fully autonomous vehicles, we can cut down on roughly $190 billion every year just in healthcare costs. They admit that with enough advancement in autonomous vehicles, cars can become completely driverless, which would minimize accidents, speed up travel time, and increase efficiency in traffic flow. Adding a level of automation to the driving experience could drastically reduce these fatality statistics and improve the life of the general public in multiple ways.

In this project, a universal smart car kit was developed to give older cars with less technology modern features. This kit is compatible with any car manufactured after 1996, as long as the car supports On-Board Diagnostics II (OBD II). It includes a backup camera, a blind-spot monitoring system, and a live engine monitoring system. The kit was prototyped using a 2002 Lexus Is300, which has very limited technology for its time, and was accomplished using a Raspberry Pi 4, Raspberry Pi Pico, Elm327 Microcontroller, USB camera, and some HC-SR04 ultrasonic sensors. These features are all output to an interactive touchscreen for the driver. The kit will be sold for under $200 and will be available to purchase online. It is an easy DIY install and will take under 20 minutes for the average consumer to install and set up, requiring no vehicle modifications. To install the kit, the user will simply

plug the ELM327 microcontroller into the car's OBD II port. Then they will mount the screen to the dash using the provided Velcro strips. Next, they'll supply power to the system by plugging it into the car's cigarette lighter, then plug in the fuse for the reverse lights. They'll mount the backup camera to the rear of the vehicle as well as the two ultrasonic sensors. Last, the user will start the car, and the device will automatically connect and initialize all the systems.

The purpose of this project was to show that as we wait for autonomous cars to become prevalent in our society, we can build and install kits in our own cars for a safer, more efficient transportation experience.
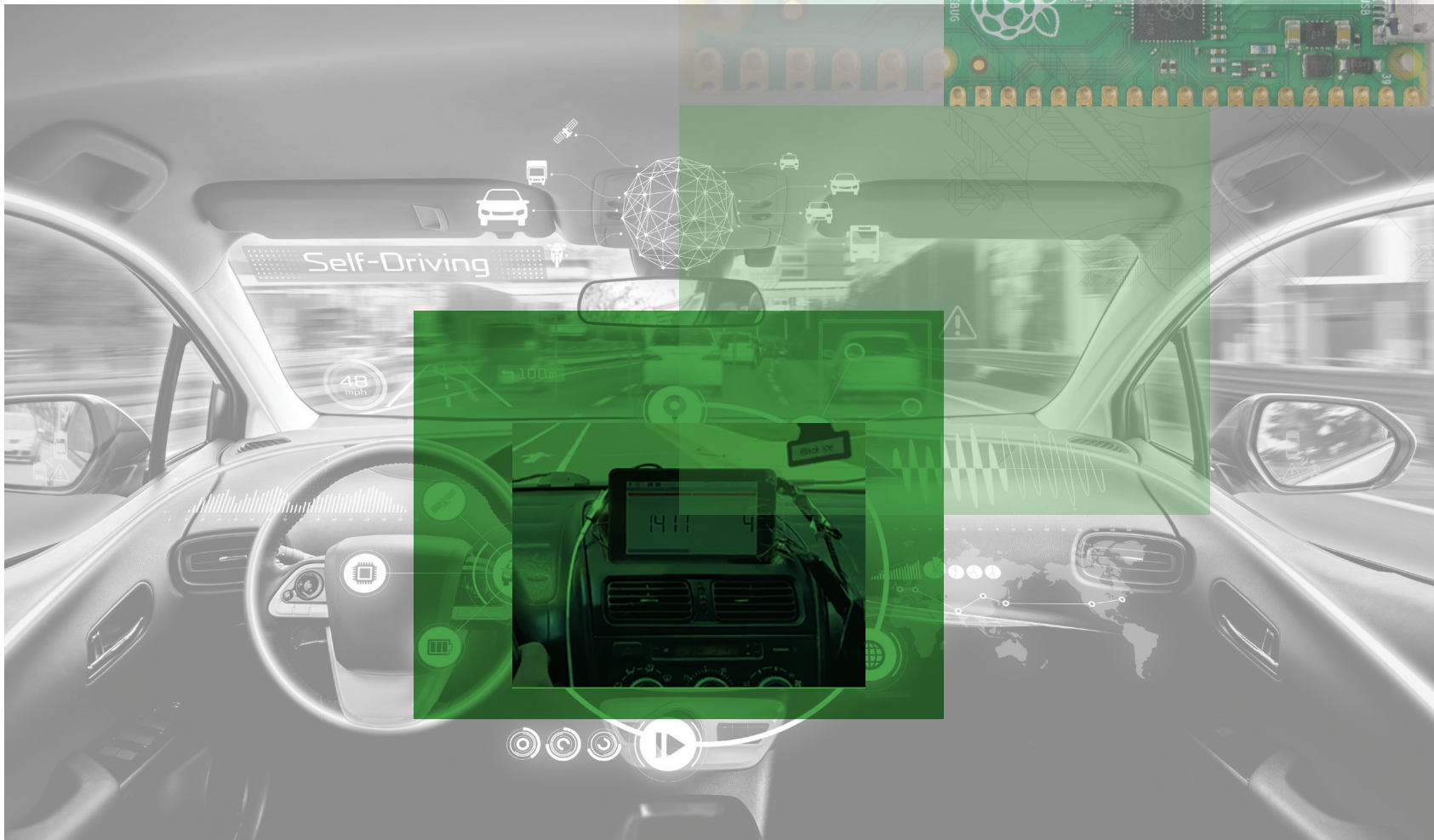
STUDENT COMPETITIONS AND AWARDS

The College of Engineering and Technology students did very well again at the 57th annual SkillsUSA National Championships, which was held virtually on June 14–24, 2021. When held live, the competition floor covers nearly 20 football fields of space. Represented at the nationals were the first-place winners from each state in the nation in their respective areas of study. Thousands of students displayed their very best technical and leadership talent as they competed in 107 different contest categories. Over the last 20 years, UVU has consistently been ranked among the top five in the nation.

• Utah Valley University won three gold medals. This ranked UVU as fourth in the nation for most gold medals won.

• Based upon individual contest category medal count, UVU won medals in five different contest categories (three gold, two silver). Based on this outcome, UVU was ranked fifth in the United States for all colleges and universities for total contest categories won.

GOLD MEDAL WINNERS

Audio/Radio Production (Team)	Will Ingram	Digital Media Technology
	Joseph Meacham	Digital Media Technology
Engineering Technology (Team)	Curtis Burgess	Architecture & Engineering Design
	Oakley Call	Architecture & Engineering Design
	Trent Peterson	Architecture & Engineering Design
Firefighting	Cheyenne Peckham	Emergency Service

SILVER MEDAL WINNERS

Criminal Justice	Joshua Coombs	Criminal Justice/Law Enforcement
Robotics & Automation Technology (Team)	Gregory Jessen	Emergency Services
	Tyler Mecham	Automation Engineering Technology

UVU DRONE FLIES INTO FIRST PLACE AT INTERNATIONAL COMPETITION

For the second straight year, a team of UVU students won the ASME IAM3D Unmanned Aerial Racing Cargo International Competition.

CM CHALLENGE

UVU students participated in the Regional Construction Management competition hosted by BYU. UVU teams placed first and second in the Layton competition, fourth in the Okland competition, first and second in the Jacobsen competition, and first in the WW Clyde competition.

NATIONAL ASSOCIATION OF HOME BUILDERS (NAHB) STUDENT COMPETITION

UVU competed in the two-year and four-year competitions (against 30 other teams around the nation).

ASSOCIATED SCHOOLS OF CONSTRUCTION (ASC) STUDENT COMPETITION

UVU competed in the heavy civil competition, mixed use competition, and the commercial competition. We competed against 15 other regional schools in each of these competitions.

NATIONAL INFORMATION ASSURANCE AND EDUCATION CENTER'S INVITATION COLLEGIATE CYBER DEFENSE COMPETITION

IS&T department supported a team from the UVU Cybersecurity Club that participated on November 19–20 at this competition, hosted by NIATEC (National Information Assurance Training and Education Center) at Idaho State University.

The IS&T Department also recently supported individuals and a team organized by the UVU Cybersecurity Club that participated in the National Cyber League 2021 Fall Season. The individual game was held October 22–24, and the team game was November 5–7.

FY 2021 MOLL/BETTS STUDENT EXCELLENCE

Congratulations to AED student Blake Gneiting on his second place FY2021 Moll/Betts Student Excellence Award from the CSI (Crime Scene Investigation) Foundation. This award was established to promote greater awareness of the CSI to students completing studies in construction-related educational programs.

"Earning this award after studying for the CDT test has helped me to do better in my career and to earn promotions at work. I feel that this award will continue to set me apart throughout my career. The award demonstrates the knowledge I gained while studying for the exam, my dedication to my work and desire to learn, and my ability to effectively execute difficult tasks."

— Blake Gneiting

CET VALEDICTORIAN (BS) 2021

HUNTER BROWN

Hunter Brown is graduating with a BS in construction management with an emphasis in heavy civil. He hopes to gain industry experience and then pursue a master's degree — the first in his family to do so. "UVU has helped me to lay the foundation, construction pun intended, to my life's success. Wonderful teachers have helped me in applying the theoretics of education to the stumbling blocks of reality."

CET VALEDICTORIAN (AS/AAS) 2021

JAMES SPACKMAN

James Spackman is graduating with an AAS in Automotive Technology. His career goals include becoming an ASE-certified Master Technician and eventually owning his own automotive shop that specializes in high performing modifications and tuning. "UVU's automotive technology program has helped me gain valuable knowledge that I have already been able to use in my work and that I will continue to use to help me to launch my career in the automotive industry."

MAEGAN TINGY
CET Student Excellence Award
Architecture and Engineering Design

HALLEY RENCHER
CET Student Excellence Award
Engineering Technology

CAMERON CLAY
CET Student Excellence Award
Computer Science

JOSEPH JACOB LATTUGA
CET Student Excellence Award
Information Systems and Technology

CARLOS GARCIA GUIRADO
CET Student Excellence Award
Construction Technologies

MALLORY NICOLE DUDA
CET Student Excellence Award
Technology Management

LAURIE LYTHGOE
CET Student Excellence Award
Culinary Arts Institute

DOHOUN KIM
CET Student Excellence Award
Transportation Technologies

SKYE SLADE
CET Student Excellence Award
Digital Media

SHAWN WEEKS
CET Student Excellence Award
Engineering

FACULTY AND STAFF EXCELLENCE AWARDS

Congratulations to the recipients of this year's Excellence Awards!

UVU FACULTY EXCELLENCE AWARD 2021

Mohammad Masoum

Dr. Mohammad Masoum is a professor and the program coordinator for electrical engineering at UVU. He served as the general chair of i-ETC 2020 Conference at UVU. He was an associate professor with Iran University of Science and Technology, a professor with Curtin University, Australia, the editor in chief of *American Journal of Engineering & Science* (2012–2014), and an editor of *Australian Electrical & Electronics Engineering Journal* (2012–2018). He is currently an editor of *IEEE Transactions on Smart Grid* and *IEEE Power Engineering Letters* and a senior member of IEEE.

UVU FACULTY EXCELLENCE AWARD 2021

William Otto

Professor William Otto is a set lighting technician and cinematographer. He spent two years serving on the board of the Motion Picture Association of Utah. His films have premiered at several world-renowned film festivals such as AFI Fest, South by Southwest Film Festival, and Sundance Film Festival, with subsequent worldwide distribution deals. He currently serves as a professor of digital cinema production at UVU.

UVU OUTSTANDING EDUCATOR AWARD 2021

Ben Willardson

Dr. Ben Willardson has 18 years of professional experience in water resources and stormwater management. He also worked for two years as a graduate student at the Utah Water Research Laboratory in Logan, Utah, testing meters, valves, pump sumps, and other hydraulic structures. The projects he worked on include hydrology and hydraulics, hydrologic methods and software development, scour and sedimentation, dam analysis, operations and maintenance, river restoration and fish passage, coastal analysis, and legal and expert witness. He currently serves as an assistant professor of civil engineering at UVU.

UVU ADJUNCT EXCELLENCE AWARD 2021

Seth McCulloch

Seth McCulloch currently serves as an adjunct web and app instructor. He earned a BS degree in management information systems from Utah State University and an Executive Master of Public Administration from Brigham Young University.

CET FACULTY TEACHING AWARD/UVU FACULTY EXCELLENCE AWARD 2021

Jonathan Allred

Professor Jonathan Allred earned a MEd in instructional technology and learning sciences from Utah State University. He is currently an assistant professor in the Department of Architecture and Engineering Design. "I think the greatest aspect of working at UVU is working with my students and peers who are enthusiastic about learning. I am grateful to be a part of this process and always excited to get to work!"

CET FACULTY TEACHING AWARD 2021

Daniel McDonald

Dr. Daniel McDonald has a PhD in management information systems from the University of Arizona and has taught at UVU for the past 10 years. He is currently an associate professor in the Department of Information Systems and Technology. "The greatest aspect of working at UVU is working with our great students and interacting with great faculty that inspire me in their commitment to their craft."

CET SCHOLAR EXCELLENCE AWARD 2021

Kodey Crandell

Dr. Kodey Crandell received his PhD in information systems from Dakota State University in 2020. He is currently an assistant professor in the Department of Information Systems and Technology. "UVU has the best students! They are eager and willing to learn. They want to succeed and want to help others succeed. They are leaders, who aren't afraid to be different and make a difference."

CET STAFF EXCELLENCE AWARDS 2021

Terry Hill

Terry Hill is the recipient of the 2021 Full-Time Staff Excellence Award. She has a BBA in business administration and is the administrative assistant in the Department of Computer Science. "I enjoy the closeness of the community experience at UVU. It is like a small town with everyone working toward the same common goals: to support one another, the community, and all that visit for a time or longer."

CET SERVICE EXCELLENCE AWARD 2021

Matt North

Dr. Matt North earned a PhD in technology education from West Virginia University. He received the UVU Wolverine Achievement of the Year Award in 2020 and the UVU Alumni Outstanding Professor of the Year Award in 2018. He currently serves as an associate professor in the Department of Information Systems and Technology.

CET STAFF EXCELLENCE AWARDS 2021

Megan Stanley

Megan Stanley is the recipient of the 2021 Part-Time Staff Excellence Award. She has an Associate of General Science from Dixie State University, Bachelor of Science in human development and family studies from the University of Utah, and a certificate in applied positive psychology from the University of Utah. "In my position, I get the amazing opportunity to work with students all over the state of Utah almost every day. I get to see the passion that they have for STEM and the excitement that they have to go to college. I love the values that UVU has and their commitment to making every experience at UVU the best it can be." Effective April 16, Megan assumed full-time responsibility as the CET outreach coordinator.

NEW EMPLOYEES 2020–21
The College of Engineering and Technology welcomed 10 new faculty and staff.

DEPARTMENT OF ARCHITECTURE AND ENGINEERING DESIGN
Christopher Lobas was born and raised in Cleveland, Ohio. While at the University of Detroit-Mercy, Chris studied architecture, history, fine arts, and philosophy. He has 25 years of experience in the profession, with 17 of these as a licensed and registered professional architect. Chris continues to share the practical and theoretical knowledge he gained as a seasoned designer with more than 800 university students and nearly 30 design apprentices. He has taught classes in architectural design, history, and practice to students at universities in the American West, Midwest, New York, and the Bahamas. He holds national registration with the National Council of Architectural Registration Boards (NCARB) and in six states and is a LEED-accredited professional. Chris is an avid outdoorsman and hiker.

DEPARTMENT OF ARCHITECTURE AND ENGINEERING DESIGN
Aliki Milioti received a PhD and a Master of Architecture degree in restoration of monuments, as well as a Master of Architecture and Engineering degree from the National University of Athens, Greece. For the last 25 years she has lived, trained, and worked as a licensed and registered professional architect and academic educator specialized on the study, research, and restoration of monuments and contemporary building architecture technology. She has performed in this capacity at the National Technical University of Athens (School of Architecture), Democritus University of Thrace (School of Architecture), the Ephorate of Prehistoric and Classical Antiquities (Ministry of Culture, Greece), several national and international research projects, at Brigham Young University, and at the Architecture Program of UVU. She holds an AIA (American Institue of Architects) and a TEE-TCG (Technical Chamber of Greece) membership. Her professional and academic career attests to her passion for architecture and reflect the view that architecture is an intellectual discipline, both an art and a science.

DEPARTMENT OF ARCHITECTURE AND ENGINEERING DESIGN
Paul Monson received a Master of Architecture degree from the University of Notre Dame and a Bachelor of Arts from Brigham Young University. Prior to joining the architecture program at UVU as a full-time faculty member, he worked for a decade with The Church of Jesus Christ of Latter-day Saints as an architect on temples. Since 2018, he has helped as an advisor in the development of the architecture program and curriculum at UVU, organizing lectures, fundraising, and establishing connections between the school and outside organizations. As president of the Institute of Classical Architecture and Art's Utah Chapter, Paul helped secure the recent donation to the school of a 5,000-volume library from renowned architect Allan Greenberg, including several rare and valuable historic books, which will become the intellectual heart of the architecture program at UVU. Paul lives in Salt Lake City with his wife and five children.

DEPARTMENT OF COMPUTER SCIENCE

Frank Jones is a native of the West; raised among the farmlands of Southeastern Idaho. He graduated from the University of Idaho with a BS and MS in computer science; after which he completed a PhD in computer science at the University of Colorado in Boulder with an emphasis on wearable computing and assistive technologies. He comes to UVU from Brigham Young University, where he served as an assistant professor of computer science for the past five years.

DEPARTMENT OF ENGINEERING

Alaa Abdullah received his BASc degree in electrical and communications engineering from University of Technology, Baghdad, Iraq, in 1989 and MASc and PhD degrees in electrical, computer, and biomedical engineering from Ryerson University, Toronto-Canada, in 2010 and 2014 respectively. In 2015, he worked as a postdoctoral research associate and part-time instructor in electrical, computer, and biomedical engineering at Ryerson University. He joined the Department of Electronics Engineering at Australian University of Kuwait in 2016 as an assistant professor, and in 2018, he joined the Department of Electrical and Computer Engineering at Georgia Southern University as a regular, limited-term assistant professor. He is joining the Department of Electrical and Computer Engineering at Utah Valley University as a visiting assistant professor. His research interests include VLSI and Circuits Design and Interconnect and Wireline Communications. Dr. Abdullah is a member of IEEE and a registered professional engineer in the province of Ontario, Canada.

DEPARTMENT OF DIGITAL MEDIA

Jerell Rosales is a feature film writer and director whose feature-length directorial debut, *High School Lover*, stars Academy Award nominee James Franco (*127 Hours*), Lana Condor (Netflix's *To All the Boys I've Loved Before*), and Francois Arnaud (Showtime's *The Borgias*). The film was broadcast on Lifetime/A+E Networks (USA), TF1 (France), HBO (Romania, Hungary and Poland), and was released on DVD with Lionsgate Home Video. Rosales is a Humanitas Prize award-winning screenwriter, a directing fellow alum of Film Independent's signature artist program, "Project Involve," and an alumnus of UCLA's MFA Directing program. His latest, *The Terrorist*, garnered a Jury Award at the 2020 Austin Film Festival.

DEPARTMENT OF TECHNOLOGY MANAGEMENT

Dr. Ahmed Alsharif is an assistant professor in the Department of Technology Management. He previously taught at Kennesaw State University and the American University of RAK. He has extensive industry experience in areas including quality management, project evaluation, and performance evaluation. He has a mechanical engineering background, holds an MBA degree, and received his MS and PhD in engineering management from Missouri University of Science and Technology.

DIRECTOR OF MARKETING AND COMMUNICATIONS

Josh Berndt is CET's director of Marketing and Communications. Prior to joining UVU full time, he was the director of communications for Thanksgiving Point, a nonprofit in Lehi, Utah. In addition to his CET duties, Josh is an adjunct communications and public relations professor at UVU. He earned a master's in communication from Southern New Hampshire University and a bachelor's in broadcast journalism from Arizona State University. His office is CS 720a.

INTERNSHIP COORDINATOR

Stacie Brown is the CET internship coordinator. Prior to her new role, she was the admin in Internship Services for nearly seven years. Stacie graduated from Utah Valley Community College (now UVU) in 1988 and immediately began working full time at the college. She has more than 16 years of total service at UVU (with a break in the middle to raise her two children and then work at their elementary school). Stacie believes internships are a win-win opportunity for the student and employer and is eager to assist students in finding and registering for internships. Her office is in CS 636B.

STEM OUTREACH COORDINATOR

Doug Radunich is the STEM outreach coordinator for UVU's College of Engineering and Technology. Prior to joining CET, he worked with the Department of Financial Aid and Scholarships on campus. A California native, Doug earned a master's degree in management and leadership from Western Governors University and a bachelor's degree in journalism from Southern Utah University. His office located in CS 636f.

THANK YOU TO OUR ADVISORY BOARD MEMBERS

CET is extremely fortunate to have an amazing advisory board comprised of industry leaders from a variety of companies across the state and nation. We are thankful for their service on behalf of UVU and CET students.
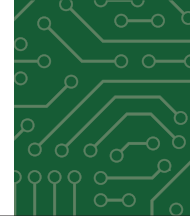
NAME	AFFILIATION	POSITION	
KC SHAW	*Central Utah Water Conservancy District*	*Chief Engineer*	
TERI NEWELL	*Utah Department of Transportation*	*Deputy Director*	
NATHAN SCHELLENBERG	*Geneva Rock*	*Vice President*	
JOHN DORNY	*Horrocks Engineers*	*Principal*	
THOMAS LOCKHART	*Hill Air Force Base*	*Director of Engineering*	
ERIC MAIER	*Northrop Grumman*	*Chief Engineer*	

NAME	AFFILIATION	POSITION	
TRAVIS BALL	*Provo Power*	*Energy Director*	
DOUGLAS MARX	*PacifiCorp*	*Director of Grid Solutions*	
SHAWN HOUSTON	*Boeing*	*Chief Engineer*	
KEN BEATTY	*Flowserve Corp.*	*Director of Product Management, Controls*	
DR. DAN BELNAP	*Schlumberger*	*Engineering Manager*	
DR. DANIEL MAYNES	*Brigham Young University*	*Former Chair of the Department of Mechanical Engineering*	

"Dean Moaveni has accomplished many outstanding results during his five-year tenure with us, and I express my sincere gratitude for the work that he has accomplished at UVU. We will use all his insights and learnings to strengthen CET to make sure that new leaders serve our students as effectively as he did."

— *Dr. Astrid S. Tuminez*
President, UVU

"I consider myself fortunate and am grateful for the opportunities that I have been granted in my career to serve students, faculty, staff, and other colleagues. I am also very appreciative of the support of past and current administrations. Thank you to Associate Dean Sohraby and all the department chairs, faculty, and staff for all you do for our students to realize their goals and dreams and address our societal needs at the same time. The future of CET is bright! It has been an honor and a privilege serving you during these past wonderful five years. I now look forward to some downtime to recharge my batteries before I look for other ways to serve."

— *Dr. Saeed Moaveni*
Dean, CET

" THE FUTURE OF CET IS BRIGHT!"

AFTER more than 35 years of service in engineering and higher education, including five years at UVU, Dr. Saeed Moaveni announced his retirement as dean of the College of Engineering and Technology (CET), effective December 31, 2021.

Under Dean Moaveni's leadership, CET enrollment has grown by 7.3% during the past five years. The college has hired 48 new faculty and staff and undergone a dramatic transformation, including the addition of three new engineering programs (civil, electrical, and mechanical), a new Bachelor of Architecture, a new Master of Science in Engineering and Technology Management, a new Bachelor of Applied Science in Transportation Technologies and expansion of the computer science department program offerings in computational data science and software development. CET now offers nine ABET-accredited programs (civil engineering, computer engineering, electrical engineering, mechanical engineering, software engineering, computer science, information systems, information technology, and construction management), five of which are newly accredited. In October 2021, the Bachelor of Science in Surveying and Mapping (Geomatics) also underwent ABET review with no weaknesses and is expected to receive accreditation. This addition will bring the total number of ABET-accredited programs offered by the college to 10. A new engineering building soon will become a reality on campus as well, thanks to a $25 million gift by the Qualtrics co-founder Scott M. Smith and his wife, Karen Smith.

Dean Moaveni worked closely with the engineering community in the state of Utah to understand their workforce demands and to develop relevant new programs that are critical to the needs of the region.

Dr. Moaveni is a strong advocate of experiential learning to connect students' academic preparation with their professional and civic duties. He is the author of three popular textbooks — (1) *Finite Element Analysis, Theory, and Application with ANSYS*; (2) *Engineering Fundamentals: An Introduction to Engineering; and* (3) *Energy, Environment,* and *Sustainability* — which have been translated into other

languages, including traditional Chinese, simplified Chinese, Portuguese, Korean, and Farsi.

As a well-known educator, researcher, and servant leader, Moaveni has received numerous awards throughout his career, including the Southwestern Award of Merit, the Jack Cermak Distinguished Professor Fellowship, the American Society for Engineering Education Outstanding Young Faculty Award, the Inter Faculty Organization (representing approximately 4,000 faculty members at seven Minnesota State Universities) Award for Outstanding Contributions to Women's Advancement in Minnesota State Universities, the International Network for Engineering Education and Research (representing engineering educators and researchers from 98 countries) Recognition Award, and the 2015 Global Citizen Award, recognizing his contributions to globalization efforts at Minnesota State University. Dr. Moaveni has also served as a consultant to several companies and universities and conducted federal- and state-funded workshops related to the economics of large-scale engineering systems and renewable energy technology. He has been a licensed Professional Engineer (PE) in the state of New York since 1991 and continues to serve as a reviewer and a panelist for the National Science Foundation since 1996.

Dr. Moaveni was appointed as dean of the College of Engineering and Technology at Utah Valley University on December 12, 2016, and made frequent visits to UVU during the spring of 2017 before he moved to Utah in May 2017. He is the former

"It is very sad that Dean Moaveni is retiring from UVU. It may be good news for him and his family to keep away from the stress, but not for most of us at UVU. I have worked with many managers and leaders throughout my career and found Dean Moaveni to be truly dedicated to his team with a great vision and sincere passion. He is also very brave in making hard decisions! Dean Moaveni has done so much for UVU, CET, and particularly for the newly established engineering department. I wish him and his family good health, peace, and happiness."

— *Dr. Mohammad Masoum*
  Chair, CET Department of Engineering

"Dr. Moaveni has been a marvel. His latest accomplishment, the successful accreditation of the engineering programs, was completed in record time and will benefit UVU engineering students for decades to come. His hard work and vision have made the expansion of the UVU College of Engineering and Technology a tremendous success. Hats off to Dr. Moaveni for all he has done to develop the UVU College of Engineering and Technology into what is today — the first choice for many engineering students in Utah."

— *KC Shaw*
  Chair, Engineering Advisory Board
  Chief Engineer, Central Utah Water Conservancy District

"For the last four years, I have had the pleasure of working closely with Dean Moaveni. I have always been impressed with his vision, drive, and can-do attitude. He led the college in not only the creation of new engineering programs at UVU but their accreditations as well. While we will miss him, his positive impact will be felt for many years."

— Dr. Neil Harrison
Chair, CET Department of Computer Science

dean of the David Crawford School of Engineering at Norwich University — one of the oldest engineering schools in the country (founded in 1819) — and past chair of the Department of Mechanical and Civil Engineering at Minnesota State University. Moaveni has also held faculty positions at different public and private institutions, including Syracuse University, and his collaborative scholarly activities have been funded by federal and state agencies such as NSF, EPA, NASA, ONR, and Minnesota Department of Energy Security. He has been invited abroad as a visiting scholar at numerous universities, including Kyushu University (Japan), National Chiao Tung University (Taiwan), National Cheng Kung University (Taiwan), the Institute of Theoretical and Applied Mechanics at National Taiwan University, American University of Armenia, Shanghai University, Shanghai University of Engineering Science, and Kwame Nkrumah University of Science and Technology (Ghana).

Utah Valley University has appointed Dr. Afsaneh Minaie as the interim dean while a national search for a new dean is underway.