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How is your college positioned to innovate in the field of engineering, and what are your strengths?

Our college provides a hands-on, industry-supported student experience. We also offer a conducive environment for our faculty to innovate with cutting-edge research and to push boundaries in multiple fields. We are designing cloud computing systems enabling drones to perform complex calculations in the air, and bringing futuristic flying taxis closer to reality. We have worked on extraterrestrial manufacturing for NASA missions. We have brought advances to cancer bioengineering research. Our researchers developed sensors that can be embedded in the brain, and others that test water quality. We have developed field-assisted 3D printing of complex components. We are also introducing new programs, such as construction management, where our students will attend classes in the College of Engineering and the Fowler College of Business. We have developed new partnerships with the Department of Transportation and the Naval Information Warfare Center. Our state-of-the-art Engineering and Interdisciplinary Sciences Complex, opened in 2018, hosts some of our most innovative research labs. Our strengths lie in the strong partnerships we have forged with industry and government agencies, which enable our faculty and students to collaborate on defense projects, renewable energy, bioengineering, water quality and advanced manufacturing.

Could you share some examples of creativity and innovation in research, and how your faculty have pivoted during COVID-19?

Early on during the COVID-19 pandemic, our researchers and students responded with solutions. Mechanical engineering researchers and graduate students answered the call to create a low-cost assisted breathing device that could help the sickest patients who need help breathing. Civil, construction and environmental engineering professors are measuring SARS-CoV-2 in wastewater and evaluating its persistence in water. And we were so pleased by the recent news that drone researcher Junfei Xie, biosensors researcher Sean Park, construction engineer Reza Akhavian and water resources engineer Alicia Kinoshita each received the prestigious National Science Foundation (NSF) CAREER award, which is given to promising early career researchers to further advance their research. Xie is leading research to help develop a drone that can perform complex calculations while airborne. Park will expand the use of rooftop solar energy to develop more sustainable buildings. Akhavian will work on improving construction worker safety and productivity with robot assistance. Kinoshita's research focuses on soil and vegetation analysis after wildfires. Akhavian will work on improving construction worker safety and productivity with robot assistance. Their



**SAN DIEGO STATE UNIVERSITY
SCHOOL OF ENGINEERING**



EUGENE OLEVSKY
DEAN OF THE COLLEGE OF ENGINEERING



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grants will directly support graduate student research and innovative education and outreach activities, such as summer camps and virtual lab modules. We have so many exciting examples of faculty-led research benefiting our students and, by extension, communities beyond our campus. People want to have meaningful experiences and careers that make a tangible and positive difference in the lives of people. That is the bedrock principle of

engineering and what we do at SDSU: create solutions and developments that improve the quality of life. Our faculty are sought out by partners at other research institutions for the niche expertise they have developed, in areas such as sensor technology, nanomanufacturing and battery research. Research funding has tripled over the last 10 years, and nearly all College of Engineering faculty have a research focus.

As job markets and economies evolve around the world, how are you training your students to be ready to enter the job market? What impact do your alumni have in the industry?

We offer a strong level of support and opportunities for our students to see the direct impact of their work before graduating. For example, in 2020, the college's Rocket Project achieved an altitude world record for a student-designed dual cryogenic liquid bi-propellant rocket. Our strong industry partnerships also allow our students to get resume-building experience with summer internships and research exposure. This leads to excellent job placement. In fact, the American Society of Engineering Education (ASEE) ranks SDSU College of Engineering programs among the top 25 engineering departments in the U.S. in terms of contribution to the engineering workforce. SDSU engineering alumni work with major local, national and international organizations and corporations, including Raytheon, the Northrop Grumman Corporation, SDG&E, Qualcomm, Boeing, Solar Turbines, Clark Construction Group, and NASA Jet Propulsion Laboratory (JPL). A moment of tremendous pride came on Feb. 18 when the Perseverance rover landed successfully on Mars. SDSU alumna Anachristina Morino ('17), a JPL system engineer, was on console at mission control making sure the spacecraft was ready for the Entry, Descent, and Landing (EDL) team, as well as in the control room until touchdown was confirmed. Two SDSU mechanical engineering students interning at JPL were also part of the mission's team and many other SDSU alumni work at the agency.

What are your plans for attracting, engaging and retaining students and faculty who are women and those from diverse backgrounds?

SDSU now exceeds national averages for women in graduate engineering programs and Latinx engineers, according to the American Society of Engineering

Education. About 30% of our graduate students are women, and 20% are Latinx. We have quadrupled the number of women faculty over the past seven years. Our three newest faculty who joined the college last fall are women with strong research backgrounds. We also have strong programs in place to support underrepresented high school students and offer them exposure to careers in STEM. Through the Femineer Program, our women students offer mentoring and project-based learning opportunities for female middle school students. We are one of only three universities with this program that supports a future pipeline of women engineers. Our Troops to Engineers program supports military veterans with scholarships, mentoring and industry internships and has seen 100% graduation and job placement success. Recruitment alone is never enough, however. Within the field of engineering, we need to create a conducive environment in which individuals are able to see themselves reflected and where their contributions are deemed valuable and meaningful. In 2019, the ASEE recognized our college for its efforts in diversity and inclusion. We remain dedicated to this work.

How has the college evolved over time, and what are your goals going forward?

When our college was founded 60 years ago, in 1961, it was a different era with different priorities. We have evolved over time, and especially in recent years, into a top choice for engineering students and researchers nationally and from other parts of the world given our broad-spectrum engineering education, which prioritizes practical experience and focuses on research. Our college has about 4,000 students, double the number from 10 years ago. Today, our college is strongly focused on improved student support and enhancing our research and philanthropy. Research productivity among College of Engineering faculty has more than tripled during the last eight years, and much of this growth can be attributed to many of our junior faculty members. We are also fortunate to have strong donor support and are prioritizing the growth of our college's endowment and other endowed funds, which directly support our students and faculty. Ultimately, our achievements reside with our students and graduates. They are making meaningful, positive industry and organizational impacts, and giving back to our college and university in ways that strongly contribute to student and faculty achievement. The most important outcome of all of this work is to ensure that our graduates are well trained and hold a strong and lasting commitment to inventing a better future and more sustainable solutions for communities around the world. SDSU plans to develop cross-border collaborations, and capitalize on our position as a border university. We will continue to forge strong collaborations with our industry partners, both here in San Diego and nationally, and continue to strive towards inclusive academic excellence.

Let's chart your future together

Learn about SDSU graduate degree programs online: grad.sdsu.edu

\$148.5 million
Generated for research activities and scholarship

\$102,800+
Average salary for mid-career graduates with bachelor's degrees

No. 30
Rank in Forbes America's Best Value Colleges

No. 65
Rank among public universities nationwide by U.S. News & World Report



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