



MESSAGE FROM THE CHAIR

This Spring 2022, we at UNM Civil, Construction, and Environmental Engineering are extremely privileged and honored to have one of our most successful alums, Doug Campbell, pledge \$5 million to support our dream and efforts to build a world-class program to teach the next generation of New Mexico civil, environmental, and construction engineers, and construction managers. We are very honored to have the department named after one of our legendary faculty, Dr. Jerald May, who also served as UNM School of Engineering dean, and UNM president. This incredibly generous gift makes us as close as ever to achieving our 12 in 12 campaign goal of raising \$12 million for UNM CCEE by 2030. We are now \$3.5 million from our goal, and we've inspired the School of Engineering to launch a comprehensive campaign called, *Our Time*. Together we're attempting to raise \$50 million by 2025. In this newsletter, you will see our faculty and students progress in all facets of civil, construction, and environmental engineering, solving community problems, learning from experience in the field, and leading national and international efforts to make a better tomorrow.

Mahmoud Taha, Distinguished Professor and Chair

\$5 MILLION PLEDGE FROM ALUMNUS DOUG CAMPBELL



A \$5 million cash pledge from Doug Campbell, an alumnus of the department and CEO and co-founder of Solid Power, a Colorado-based all-solid-state electric vehicle battery developer, will create the Gerald May Department of Civil, Construction and Environmental Engineering. The renaming of the department will honor Gerald May, a longtime professor in the department, School of Engineering dean and UNM president. The \$5 million pledge is

the largest cash gift pledge to the School of Engineering and the 12th largest for UNM. The Gerald May Department of Civil, Construction and Environmental Engineering will also be the first endowed department in UNM history. Campbell earned a bachelor's degree in civil engineering from UNM in 2001, and a master's degree the next year. Although his degrees are in engineering, he knew early on that his passions were in the area of entrepreneurship, and he credits his professor, Gerald May, with helping him with that realization. "I consulted with Dr. May, as I respected him immensely and considered him a mentor of sorts. He encouraged me to pursue a graduate degree as a means of exploring other career opportunities. By following that advice, I had placed myself on a much different career trajectory that ultimately positioned me to become a successful entrepreneur. That turned out to be very sage advice." Campbell is riding the tide of career success now, but he is humbled by his roots. He was heavily influenced by his mother, who earned a degree in civil engineering from UNM. He feels strongly about strengthening the city, UNM and his academic department, providing opportunities to students like himself who hold great potential but may lack the resources to pursue higher education. Ultimately, Campbell would love for Albuquerque to become a thriving business incubator, partnering with UNM in high-tech company development and keeping hometown kids like him in the city. "I look at solving problems, and I think you can solve the world's problems by educating people."

SMART SENSORS UNDERWATER TESTING

The Smart Management of Infrastructure Laboratory (SMILab) has developed marine and underwater smart sensing



using a high-performance, portable, remote-operated survey boat to monitor waterfronts, shoreline petrology, and under-water activity. With support from the NSF Natural Hazards Reconnaissance Facility and the Office of Naval Research, the project is led by Dr. Fernando Moreu, director of the SMILab and assistant professor in CCEE. Undergraduate and graduate students come from civil, mechanical, electrical and computer engineering, computer science, ROTC, and UNM's global and national security program. The students also developed an underwater testbed using wireless sensors to detect activities of underwater drone, human diving, and rock integrity.

UNM MAIN CAMPUS & HSC COLLABORATIONS



Dr. José Cerrato investigates biogeochemical processes at the interface of water, energy and environmental health that affect the cycle of metals and radionuclides in the environment. Affiliated with the Center for Water and the Environment, his recent work bridges collaborations between UNM

Main Campus and the Health Sciences Center. He is an investigator with the Center for Native Environmental Health Equity (supported by the National Institute on Minority Health and Health Disparities) and the UNM METALS Superfund Research Center (supported by the National Institute of Environmental Health Sciences). Partnerships with Native American communities affected by mining legacy have enabled the investigation of metal mixtures to inform the development of risk assessment and remediation strategies.

12 IN 12 FUNDRAISING CAMPAIGN

CCEE needs your leadership gift. For details, please contact:

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Learn more about the impact of alumni giving at ourtime.unm.edu

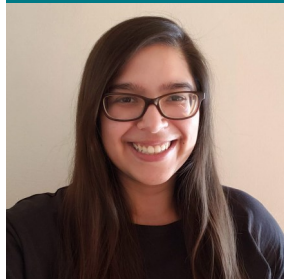
TEAM RECEIVES NSF AWARD FOR MACHINE LEARNING OF SOLUTE TRANSPORT



Dr. Ricardo González-Pinzón and colleagues will use machine learning and big data to update inconsistent solute transport modeling theory. González-Pinzón led the 2013 work *"Scaling and predicting solute transport processes in streams,"* which showed that current solute transport theory was inconsistent with experimental data collected in multiple rivers across the planet and suggested a revised theory of solute transport was needed. Recently, González-Pinzón and collaborators from Washington State University, University of Illinois at Urbana Champaign, and New Mexico State University received an NSF award to develop and test a novel, generalizable model of solute transport in river

corridors based on the use of big data and machine learning informed physics. The team led by González-Pinzón received the \$821,567 grant to fund a CCEE Ph.D. student to develop a database of global tracer tests, which can be readily used for machine learning of model properties.

ANJALI MULCHANDANI APPOINTED TO EPA COMMITTEE



Dr. Anjali Mulchandani, assistant professor at UNM CCEE, was recently appointed to a 3-year term on the Environmental Protection Agency (EPA) Board of Scientific Counselors (BOSC) Executive Committee. The BOSC is a federal advisory committee that provides advice and recommendations to the EPA's Office of Research and Development on technical and management issues of its research programs. Anjali joined the CCEE department in January 2021. She leads the Environmental Resource Sustainability Group and collaborates with the Center for Water and the Environment, the Grand Challenge for Sustainable Water Resources, and the METALS Superfund Research Center. Her

research studies harvesting valuable resources from the environment, such as water, energy, and metals. Anjali was awarded the School of Engineering Junior Faculty Teaching Excellence Award in Spring 2022.

TRAFFIC SAFETY OF ALBUQUERQUE'S CENTRAL CORRIDOR



CCEE students have been busy analyzing how installation of the Albuquerque Rapid Transit (ART) bus system impacted traffic safety outcomes on Central Avenue. The ART system runs 9 miles through Albuquerque along the historic Route 66 corridor. Esther Bia, a senior CCEE undergraduate student, performed initial research in Summer 2021 that was recently selected for publication in "Transportation Research Record." Students enrolled in Dr. Nick Ferenchak's Fall 2021 Urban Transportation course took the research a step further and are currently pursuing publication in the "Journal of Public Transportation." Findings suggest that after the ART installation, motor vehicle collision counts decreased by 8% on the ART corridor. Importantly, fatal and serious injury collision counts decreased by 64% on the ART corridor (compared to only a 5% decrease on

parts of Central Avenue that did see ART installation). Although vehicle volumes on Central Avenue decreased 28% after ART construction, per vehicle rates of fatal and serious collisions still decreased 57%. Fatal and serious pedestrian collisions decreased 27% on Central Avenue after ART installation, compared to a 14% increase in other parts of Albuquerque.

UNDERGRAD CONSTRUCTION PROGRAMS OFFER REAL-WORLD EXPERIENCE

CCEE's construction engineering (BSConE) and construction management (BSConM) programs provide graduates with relevant, real-world experience and exposure to construction applications in the field. By engaging our students in engineering and management concepts and experiences on-site, graduates have the foundation to succeed at the national level. CCEE students also participate in national competitions, workshops and events put on by the National Association of Homebuilders, Associated General Contractors, and American Society of Civil Engineers. This March, the UNM Hospital Tower Project construction manager gave ASCE members on-site tours of the \$522 million project. With completion scheduled for late 2024, the hospital expansion will house 96 ICU beds, 18 operating rooms, and a new adult emergency department. Students gained valuable knowledge of the complexity and logistics of such an expansive construction project. This real-world experience benefits our next generation of construction engineers and construction managers.



STUDENT NEWS

Derek Belka MSCE Candidate



Derek Belka, is a National Science Foundation Graduate Research Fellow, working with Dr. Andrew Schuler

on improving biological wastewater treatment processes to reduce the pollution of our natural waterways from municipal sources. Derek's research focuses on understanding the fundamental biochemistry of phosphorus removal and the effect of design decisions on the redundancy of microbial phenotypes to improve sustainability by increasing removal efficacy and stability. Derek loves the outdoors where he enjoys biking, climbing, skiing, and playing competitive ultimate frisbee.

Atlin Johnson BSCE Candidate



Atlin Johnson is a Regents' scholar graduating with his B.S. in civil engineering, with an emphasis in water resources.

He has helped with water resources research on campus for the past four years, including building a working model of the North Diversion Channel, as well as developing a system dynamics model for planting trees in Albuquerque using stormwater. He will continue to his Master's degree in civil engineering at UNM under Dr. Mark Stone, where he will work on water resources and modeling in the Santa Fe watershed.

CCEE Facts at a Glance

Number of Faculty	19
Number of Undergrads	207
Number of Grad Students	88
Number of Adjuncts	6

Annual Research Expenditures
FY 2022
\$6 Million

Department Scholarships
\$76,000 Awarded Annually to
Undergrad and Graduate Students