WALTER SCOTT, JR. GIFT

IMPACT REPORT

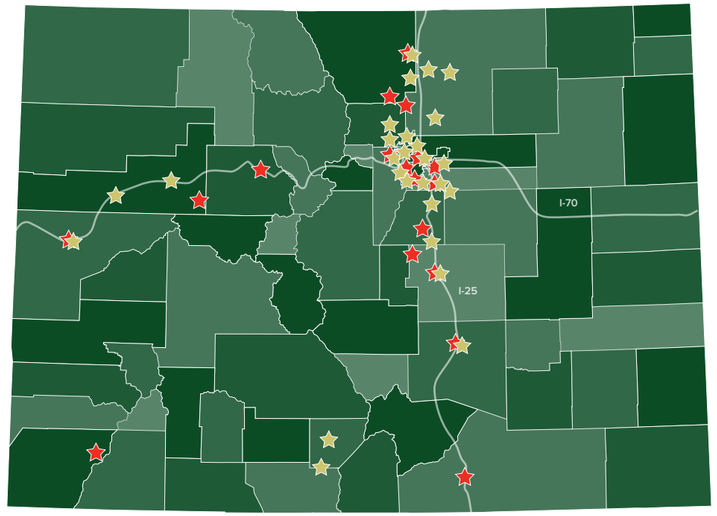
2022

WALTER SCOTT, JR.
COLLEGE OF ENGINEERING
COLORADO STATE UNIVERSITY

WALTER SCOTT, JR.

UNDERGRADUATE SCHOLARS

2022 marks the second year of graduating Scott Scholars and the sixth incoming class of Scott Scholars. They are 25 of the most outstanding students from all Colorado regions who will help the college continue to build a reputation of excellence in our engineering programs and benefit from a world-class education.



★ **Fall 2022 Cohort**

Aurora
Carbondale
Centennial (2)
Colorado Springs (3)
Denver (2)
Edwards
Fort Collins (3)
Golden
Grand Junction
Greeley
Lakewood
Larkspur
Littleton
Longmont
Lyons
Mancos
Pueblo
Trinidad
Woodland Park

★ **2017-2021 Cohorts**

Alamosa
Arvada
Aurora
Broomfield
Boulder
Castle Rock
Centennial
Colorado Springs
Denver
Eldorado Springs
Englewood
Fort Collins
Fort Lupton
Golden
Grand Junction
Greeley
Highlands Ranch
La Jara
Lakewood
Littleton
Loveland
Monument
New Castle
Parachute
Parker
Pueblo
Westminster
Windsor

"Walter Scott, Jr.'s generous gift has made it possible for me to pursue five years of education in a field I'm passionate about without going into debt. I am so grateful for this opportunity and will strive to use my education to improve lives."

– SIERRA CURDTS, Chemical and Biological Engineering/Biomedical Engineering

"I'm so grateful for the Scott Scholarship. It has opened doors to an amazing education and provided opportunity for experiences that would have otherwise been impossible. Thank you so much!"

– ELLIOT MCCORMICK, Electrical and Computer Engineering

"When I first received the Scott Scholarship, I was incredibly grateful for the financial support, but had no idea that being a Scott Scholar meant so much more. Through this program, I have been pushed to be the best I can possibly be, motivated by peers and mentors who see the possibilities in me that I cannot always see in myself."

– CARINA MORRONI, Mechanical Engineering

ENRICHMENT ACTIVITIES

A critical piece of the Scott Scholars program is enrichment, which allows Colorado State University students to participate in educational and professional development programs that ensure their success. These activities are things students otherwise could not do outside the classroom without financial assistance and the support of the Scott Scholars program. Students have told us this has been hugely valuable as part of their overall educational experience.

Scott Scholars have enjoyed a wide variety of activities with these funds including, but not limited to:

- Prosthetic innovation in Ecuador to learn about prosthetic design and delivery working with difficult-to-reach populations.
- Traveling to Thailand to explore architecture and spiritual practices for a greater sense of cultural diversity.
- Engaging in independent study
- Obtaining certifications (CPR, drone flights, etc.).
- Attending professional conferences.

Enrichment activities for Scott Scholars include Study Abroad programs.

FALL 2017-FALL 2022 COHORTS

SCOTT SCHOLARS BY MAJOR

- Biomedical Engineering with CBE (16)
- Biomedical Engineering with ECE (1)
- Biomedical Engineering with ME (9)
- Chemical and Biological Engineering (10)
- Civil Engineering (8)
- Computer Engineering (4)
- Electrical Engineering (6)
- Engineering Open Option (3)
- Environmental Engineering (9)
- Mechanical Engineering (17)

SCOTT SCHOLARS — Academic Profiles

	FALL 2022 COHORT	INCOMING ENGINEERING AVERAGE
HIGH SCHOOL GPA	4.29	3.89
SAT AVERAGE*	1324	1264
ACT AVERAGE*	28.6	27
GENDER	36% identify as women	28% identify as women
RACIALLY MINORITIZED	32%	24%
FIRST GENERATION	32%	19%
HONORS PROGRAM	44%	14%**

*Average of the students who submitted test scores, which are no longer required
**Reflects all engineering students

FALL 2017–2021 COHORTS

58/65
RENEWED IN FALL 2022

AVG. CSU GPA
3.697

Laura Miller, Suzanne and Walter Scott Foundation education director, holds a gear made and gifted by the students, listing names of the graduating CSU Scott Scholars, May 2022.

RESEARCH THEME BY AREA OF EXCELLENCE

WATER

- Artificial intelligence and data science for radar and satellite remote sensing of the environment.
- Increase the understanding of urban intensification for energy use, carbon cycles, and water cycles to inform decision-making and investment.

HEALTH

- Medical imaging, biosensors, and materials.
- Drug delivery, protein engineering, and biosensors.
- Modeling cell metabolism using complex nonlinear models that require methods for nonlinear and non-convex optimization.

ENERGY

- Decarbonizing energy systems, especially at the food, water, and energy nexus.
- Increase the understanding of urban intensification for energy use, carbon cycles, and water cycles to inform decision-making and investment.

ENVIRONMENT

- Physical fluid processes in the context of climate change.
- Studying the impacts of anthropogenic emissions on biogeochemical cycling through the lens of chemistry.
- Drug delivery, protein engineering, and biosensors.
- Modeling cell metabolism using complex nonlinear models that require methods for nonlinear and non-convex optimization.
- Artificial intelligence and data science for radar and satellite remote sensing of the environment.
- Increase the understanding of urban intensification for energy use, carbon cycles, and water cycles to inform decision-making and investment.

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GRADUATE RESEARCH ASSISTANTS

The Scott Research Assistantship program attracts talented graduate students to assist faculty with groundbreaking research and to train the next generation of innovators. In 2021, the program, formerly known as the Scott Fellows, was renamed the Scott Graduate Research Assistantships.

"The program helped facilitate recruitment of top Ph.D. student Jiate Li to work on adaptive design of civil infrastructure systems in a changing climate. Even more importantly, it enables exploratory investigation of such topics that are high risk but ultimately very high reward and will have broad societal impacts."

– JOHN VAN DE LINDT, Harold H. Short Endowed Chair Professor, Civil and Environmental Engineering

"The Scott Graduate Research Assistantship program has played an instrumental role in helping me take care of my finances, as I focused on my research. Furthermore, it has helped me to complete a good portion of my required course work toward my Ph.D."

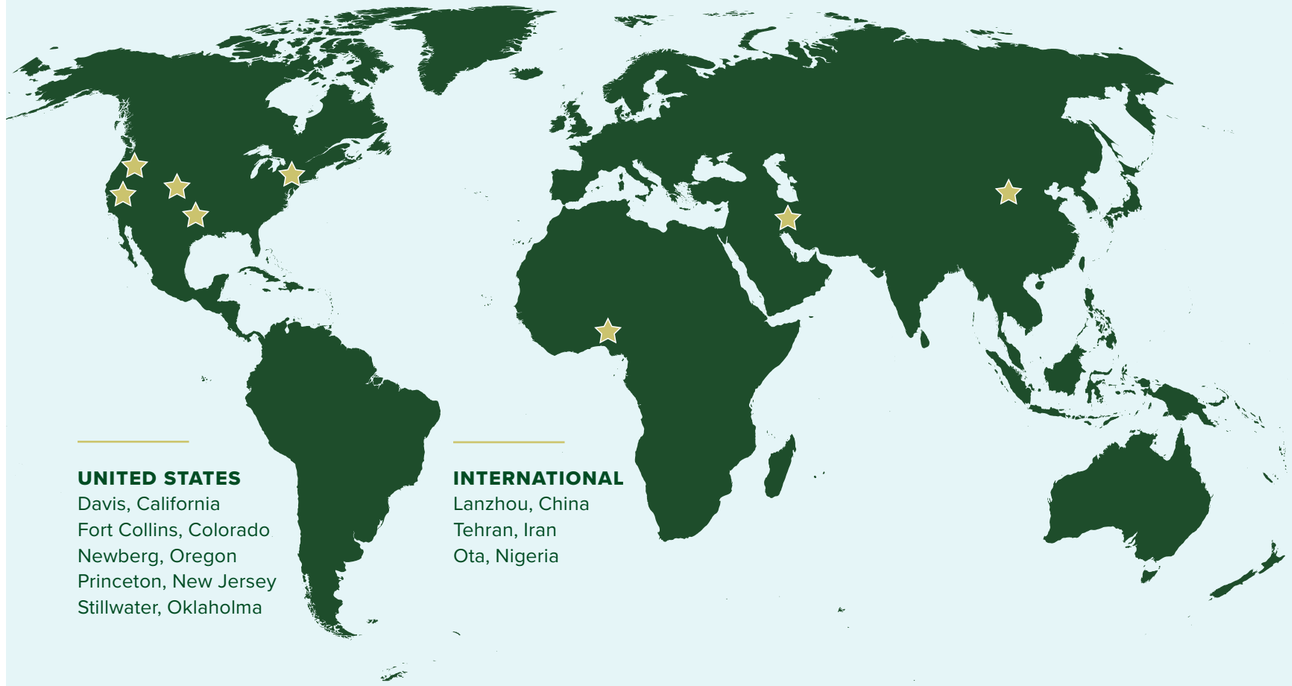
– RASHADUL KABIR, Graduate Research Assistant, Electrical and Computer Engineering

"The Scott Graduate Research Assistantship program is a great opportunity to attract talents around the world to join Ph.D. programs in our college. It helped me recruit an excellent Ph.D. student to join my research group and start a new research project."

– MAHDI NIKDAST, Assistant Professor, Electrical and Computer Engineering

Civil and environmental engineering Professor John van de Lindt works in his office with graduate research assistant Jiate Li to develop a research dissertation plan.

2022 SCOTT GRADUATE RESEARCH ASSISTANTS
come from across the U.S. and around the world



UNITED STATES
Davis, California
Fort Collins, Colorado
Newberg, Oregon
Princeton, New Jersey
Stillwater, Oklaholma

INTERNATIONAL
Lanzhou, China
Tehran, Iran
Ota, Nigeria

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DISCRETIONARY FUND

The Scott Discretionary Fund allows the dean flexibility to invest in areas that advance college excellence.

Examples include student scholarships, additional funding for Scott Scholar enrichment activities, unique laboratory research experiences and paid internships through the Scott Undergraduate Research Experience, and facilitation of student internship placement and access to professional development programs.

As in past years, the Scott Discretionary Fund has also supported the Colorado Science and Engineering Policy Fellowship, which seeks to develop the next generation of policy and science leaders in Colorado. Students attended an eight-week intensive internship on the legislative process, which included developing model laws and policies, collaborating with policymakers in the state Legislature, and visiting corporate and research sites throughout Colorado.

2021-2022

USE OF SCOTT DISCRETIONARY FUND

- Scott Scholars program: **$130,000**
- Scott Undergraduate Research Experience program: **$24,000**
- Innovation and leadership initiatives: **$22,000**
- Research initiatives and proposal development: **$43,000**
- Support for student programs, scholarships, and emergency financial assistance: **$31,000**

SCOTT UNDERGRADUATE RESEARCH EXPERIENCE

Engaging research opportunities help undergraduate students persist to graduation. Analysis by Scott Scholar program director Susan Benzel demonstrates that students who participate in SURE persist at a higher rate:

ABOUT 35 STUDENTS on average for the past four years have participated in SURE.

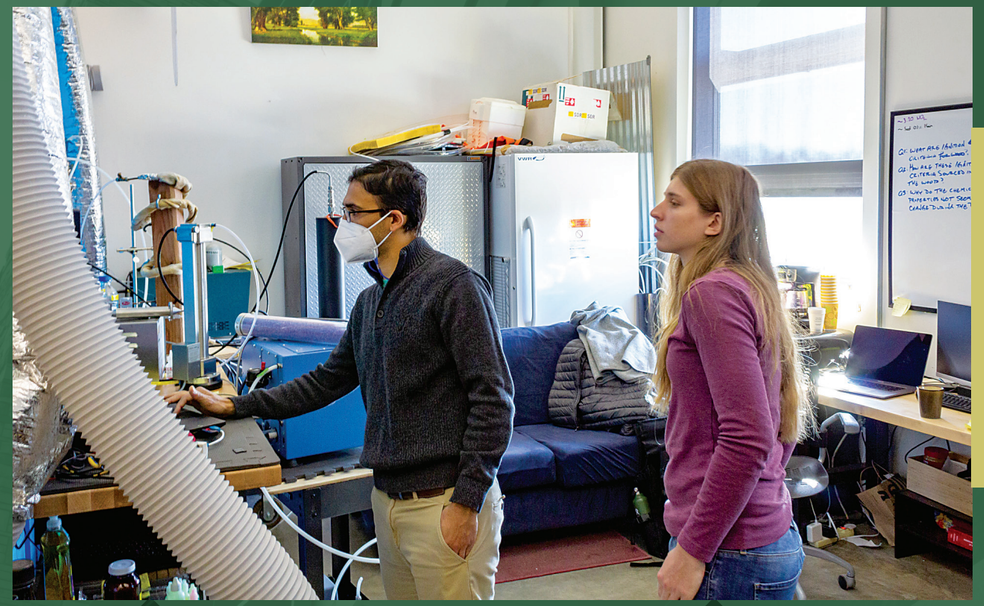
MORE THAN 93 PERCENT of students participating in SURE stay in the college.

MORE THAN 99 PERCENT of students stay at CSU.

ABOUT 54 PERCENT of the SURE students identified as first in their family to attend university.

The SURE program, a prime example of the impact of the Scott Discretionary Fund, promotes student success by providing a path for undergraduates to learn about applications, scientific methods, collaborations, and social impacts of being an engineer. Impact of the SURE program was especially meaningful during the pandemic with some students assisting faculty to create and test masks and other personal protective equipment. Other donors have contributed to this fund to enable more of our first-generation students to participate in the SURE program at no cost to the faculty supervisor.

SURE student Lindsay Dietz at the Powerhouse Energy Campus, featuring a state-of-the-art 100,000-square-foot green building that is a model for sustainable building practices and innovative architectural design.



Shantanu Jathar, associate professor of mechanical engineering, and SURE student Lindsay Dietz prepare environmental chemistry experiments in his lab at the Powerhouse campus.

Mahdi Nikdast, assistant professor of electrical and computer engineering, works with SURE student Joseph Thompson on development and improvement of an automated testing station in his electronic-photonic system design laboratory.

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PRESIDENTIAL CHAIRS

Scott Presidential Chairs Tami Bond and Jim Hurrell continue to work on the most pressing challenges facing the globe today, working across CSU and the nation to collaborate on climate change and sustainability research. They also co-led the college's strategic planning process, which steers the college for the next five years and beyond.

Tami Bond

Jim Hurrell

Bond, Scott Presidential Chair for Energy, Environment and Health, obtained a coveted three-year NSF grant for Research Experiences for Undergraduates, which is designed to build excitement for research with societal impact, particularly among undergraduate students with underrepresented or nontraditional backgrounds. Eleven students joined the program this summer, each working with a different adviser on an aspect of energy use or human activity that affects the atmosphere. Although each project had a particular focus, the students formed a cohort that integrated perspectives of several tools and disciplines. Bond's research focuses on the exchange between humans, energy use, climate, and human health. She intends for the continuing summer undergraduate program to integrate the interests of faculty across the college and the University, as well as diversify the pool of applicants interested in graduate study at CSU.

Students attending Tami Bond's first Research Experiences for Undergraduates program at CSU this summer.

Hurrell, the Scott Presidential Chair in Environmental Science and Engineering, continues to work toward establishing CSU as a world leader in two emerging areas of climate science: climate intervention and Earth system prediction.

Hurrell is investigating approaches to potentially reduce the impacts of future climate change on natural and human systems through a concept called "Climate Intervention."

Attempts to moderate anthropogenic warming by slightly increasing the amount of sunlight that clouds and particles in the atmosphere reflect back to space is a specific type of CI, sometimes referred to as Solar Radiation Modification. Interest in SRM as an option to reduce climate impacts is growing in the U.S. and other parts of the world. However, little is known about the effectiveness and risks of SRM approaches. After recently co-authoring new reports on SRM for the U.S. National Academy of Sciences and the United Nations Environment Programme, Hurrell is working to position CSU to lead a transdisciplinary effort on the impacts of proposed SRM strategies. As part of this effort, he is developing an SRM lab at CSU with support from a recent philanthropic gift and competitive grant funding.

Hurrell also continues work on Earth system prediction by integrating existing atmospheric, ecological, and agricultural expertise across campus. In partnership with the National Center for Atmospheric Research, the overarching goal is to develop new capabilities to skillfully predict changes in global, terrestrial ecosystems, including natural forest and grassland systems and managed croplands, rangelands, and forests; the consequences for food, fiber, energy, and water resources; and land management strategies for climate change mitigation and socioeconomic security.