CU Next Awards boost intercampus teams pursuing academic innovation[1]
[2]

Five teams of faculty across the University of Colorado system are recipients of the CU Next Award[3], which supports faculty pedagogical innovation, especially with technology support. As described in the System 2021-2026 strategic plan, Innovating for the Future, CU Next aims to increase the efficacy and efficiency of student learning in courses and degree programs.

The CU System Office of Academic Affairs announced winners of the award, which is focused on bridging the support gap for individual faculty seeking additional resources to innovate their courses and programs. The award aims to reduce barriers to hardware, software, programming, vendor contracts and other resources to individual and small groups of faculty.

Faculty from at least two campuses are required to be collaborating on each project, which also must have some level of campus commitment.

Awards for the chosen proposals range from $100,000 to $300,000 and total $1.3 million.

The five selected proposals are:

Leveraging the Learning Assistant infrastructure to disseminate technologically rich educational environments across three campuses

This innovation is being led by Laurel Hartley, associate professor in the Department of Integrative Biology at CU Denver, with co-Principal Investigators Valerie Otero, professor in the Department of Education at CU Boulder, and David Weiss, associate professor in the Department of Chemistry and Biochemistry at UCCS. Team members include Robert Talbot, CU Denver; Raphael Sassower, UCCS; Cerian Gibbes, UCCS; Betsy McIntosh, CU Boulder; and Laurie Langdon, CU Boulder.

This project will build capacity among faculty to implement mindful uses of teaching and technology through the undergraduate Learning Assistant (LA) model. Learning Assistants are undergraduate students who are legitimate members of the instructional teams of multiple courses at over 150 universities throughout the world. By developing a cross-campus CU Teaching and Learning pedagogy course, undergraduate Learning Assistants and their faculty collaborators will experience and experiment with learner-centered pedagogies that leverage optimal uses of technology, as well as flexible decision-making about the how, when and why of using specific technologies, and their consequences. This reconfiguration of power structures in classrooms will have a lasting impact on gateway courses across disciplines at UCCS, CU Denver and CU Boulder, including the measurable improvement of learning outcomes and student retention. Originally built at the Boulder campus in 2001 to support student conceptual learning, the Learning Assistant model rose to the challenge of the COVID-19 pandemic by supporting courses at CU Boulder and CU Denver in ways that used technology while also helping students stay connected and engaged.

Creating CU Cyber Range to make UCCS and CU Denver a national leader in cybersecurity education and workforce development

This innovation is being led by Shouhuai Xu, professor of Engineering and Applied Science at UCCS; co-Principal Investigator is J. Haadi Jafarian, professor of Computer Science and Engineering at CU Denver. Team members include Joshua Alcorn, UCCS; Jugal Kalita, UCCS; Greg Williams, UCCS; Joseph Murdock, CU Denver; and Douglas Sicker, CU Denver.

The project will create two innovative cyber operations courses and the CU Cyber Range, an interactive simulation environment where students can experience realistic cyber attack scenarios. The two new courses – Introduction to Defensive Cyber Operations (for junior students) and Defensive Cyber Operations (cross-listed for senior/graduate students) – and CU Cyber Range will be jointly designed by faculty members at UCCS and CU Denver. By using on-the-job equipment and monitoring student performance, the CU Cyber Range will equip graduates with the skills and experience needed for direct hire into the cybersecurity workforce. The project will reinforce and strengthen CU's

position as a national leader in cybersecurity education and workforce development.

Data Advocacy for All: An open access digital repository for innovative data-driven curricula

This innovation is being led by Laurie Gries, associate professor with a joint appointment in the Department of Communication and the Program of Writing and Rhetoric at CU Boulder; co-Principal Investigator is John Tinnell, assistant professor in the English Department at CU Denver. Team members include Cameron Blevins, CU Denver; David Glimp, CU Boulder; Thea Lindquist, CU Boulder; Nathan Pieplow, CU Boulder; Virginia Iglesias, CU Boulder; Nickoal Eichmann-Kalwara, CU Boulder; Jordan Wrigley, CU Boulder; and Aditya Ranganath, CU Boulder.

Data Advocacy for All aims to extend data humanities education and to invigorate diversity, equity and inclusion (DEI) initiatives at CU Boulder and CU Denver. Data advocacy is an integrative, ethical practice of analysis, design and communication in which insights from a dataset are effectively conveyed to raise public awareness and drive social change. The Data Advocacy for All project will design, build, teach and assess a civically engaged, experiential curricular approach that leverages minimal computing and open-source tools. An eight-module sequence of data advocacy curricula will be taught and assessed at CU Boulder and CU Denver. As a case study, these modules will be taught in relation to a single data-advocacy project investigating how natural hazards driven by climate change may affect Colorado communities susceptible to socio-economic vulnerability. With its humanities focus, the project will enhance the abilities of students to ethically and effectively inquire with data, communicate with data, and deploy data with a goal of creating more just futures.

Merging engineering and medicine by integrating technology into immersive, hands-on human spaceflight courses

This innovation is being led by Benjamin Easter, assistant professor of Emergency Medicine at the CU Anschutz Medical Campus; co-Principal Investigator is Allison Anderson, assistant professor of Aerospace Engineering Sciences at CU Boulder. The team also includes Arian Anderson, CU Anschutz.

The project will amplify student learning outcomes in human spaceflight medicine by integrating technology into three hands-on engineering and medicine courses, which form the core of a recently approved joint M.D.-M.S. degree between the CU Anschutz Department of Emergency Medicine and the CU Boulder Smead Department of Aerospace Engineering Sciences.

The focal point of this proposal is the innovative Medicine in Space and Surface Environments course, a joint product of CU Anschutz and CU Boulder faculty to teach students about providing medical care in space. The course is a hybrid of traditional lectures on medical care in austere environments, patient interview and exam skills, and a seven-day immersive field simulation in a Mars analog habitat. By innovating on this existing course, developing two supporting courses and expanding the M.D.-M.S. curriculum, the team will create an educational program that develops physician-engineers poised to lead in human spaceflight. The University of Colorado is uniquely positioned to serve the rapidly growing industry of human spaceflight and this proposal will enable a robust educational program to train future leaders in the field.

Interactive simulations based on neural networks to teach undergraduate fluid mechanics

This innovation is being led by Ankur Gupta, assistant professor of Chemical and Biological Engineering at CU Boulder; co-Principal Investigator is Kannan N. Premnath, associate professor of Mechanical Engineering at CU Denver.

Studies suggest that teaching fluid mechanics is challenging because the concepts are overly mathematical and abstract, and students often find it difficult to develop an intuitive understanding of concepts. This innovation focuses on this core subject for many STEM disciplines, acknowledging that the anxiety related to mathematics often has a greater impact on diverse students, thereby increasing inequity in learning with respect to gender, race and financial background. This team will develop interactive simulations to teach key concepts of undergraduate fluid mechanics, inspired by the use of modern computer engines to transform the teaching and learning of chess strategies. Making these fluid mechanics simulations rapid and web-based will improve access to resources and reduce mathematics

anxiety among students.

Tech-minded teams honored with CU Innovation & Efficiency Awards[4]

Patches and transcripts and rats – oh, my!

No flying monkeys just yet – however, someone, somewhere at CU is probably working on it!

This year's CU Innovation & Efficiency Awards program on May 11 hosted an impressive group of semifinalists at its Viewing and Voting Event, where the voting panel was treated to videos and Q&A sessions featuring our eight semifinalists.

Once again, the field leaned heavily toward technology, featuring 1) a team from the CU Denver Bursar's Office who identified and implemented a fix to address a recurring problem in processing third-party payments for students, and 2) a team from University Information Services (UIS) who acquired a special server and licensing to provide a cost-effective means for CU employees to create reports using Tableau visualization software. Another team from CU Innovations (Tech Transfer on the CU Anschutz Medical Campus) combined members' expertise to streamline the process by which CU-created innovations are evaluated, patented and marketed.

With competition like this, it was a challenge for the voting panel to select this year's five prizewinners, but the results are in:

A team led by Kelly Fleming from CU System Administration and Christa Bryan-Duffus of the CU Anschutz Medical Campus combined forces to automate the processing of POIs (persons of interest) in HCM, earning a $1,000 prize.

Sage Bonomo and Grant Garceau, employees in the research and grants offices at CU Anschutz, will share a $1,000 prize for implementing a new, improved process for submitting grant applications using existing REDCap software.

In another example of cross-campus collaboration, a team from UIS and CU Boulder created a custom process to consume XML transcripts sent from other institutions for transferring students, transforming what had been a largely manual data-entry task into a faster, more accurate automated process. Kudos and a shared $1,000 prize to Darlene Crow, Siva Jaligama, Joseph Ciecior, Brian Schaeffer and Kimberly Diawara for this extraordinary effort.

The Office of Laboratory Animal Resources (OLAR) at CU Anschutz has been an ongoing force in the CU Innovation & Efficiency program, with employees who are laser-focused on innovation. This year was no exception, and a team from OLAR will share a $1,000 prize for using PCR testing to monitor the presence of infectious diseases in their rodent colonies, rather than relying on sentinel animals (animals who are exposed to soiled bedding from the laboratory colony, tested, then euthanized).

By eliminating the need for these sentinel rodents through the use of PCR testing, OLAR has saved staff time and money (estimated at $41,500 annually), and rescued approximately 2,200 sentinel rodents per year from euthanasia. Congratulations to Lauren Habenicht, Chris Manuel and Gemma Nault for their efforts.

The $1, 500 grand prize for the 2022 CU Innovation & Efficiency Awards program will be shared by a nine-member team, led by Sridevi Bankupalli from UIS. This team was challenged by UIS management to reduce the amount of time required to deploy critical patch updates, which are released by Oracle to protect our PeopleSoft systems from vulnerabilities and cyber threats.

By carefully balancing time and resources, the team was able to get the patch time down from 11-13 days to four-seven days (in production). This time frame bests that of some other major universities by approximately five days. It is an extraordinary accomplishment considering the amount of testing required and because the system must be

available to other CU employees during regular work hours. Their dedication to keeping our systems secured is greatly appreciated.

Finally, we thank our voting panel, led by Bob Kuehler, the University Controller, for its time and careful consideration in awarding these prizes.

We represent only a small portion of the innovative work being done at CU, but we're excited to help promote these innovations and share them with the larger community. We thank all of our contributors and we hope you'll share your work with us, too: Read all about us at CU Innovation & Efficiency Awards | University of Colorado[5].

- Submitted by the Office of University Controller

Creating an inclusive curriculum at Centaurus High and beyond[6]

Photo Feature: Marcy and Bruce Benson Atrium dedication[7]

Race day in photos: CU Denver sponsors iconic Colfax Marathon[8]

Doctor duo helps lift women peers from depths of burnout[9]

CU Connections shifts to summer publication schedule in June[10]

CU Connections begins its summer schedule after today's issue, shifting to biweekly publication.

New issues are scheduled to appear on the following dates (subject to change):
June 9 June 24 July 7 July 21 Aug. 4
Weekly publication will resume with the Aug. 18 issue.

Throughout the season, the site will be updated with news should events warrant.

If you have a news item or story suggestion you'd like to pass along, please send submissions to newsletter@cu.edu[11]. To be considered for publication, submissions are due by noon Friday prior to the following week's issue.

Tate accelerates community-building research with support from CU Cancer Center[12]

Rodriguez wins top award for research on complex models[13]

Ford named chair of Pharmacology at CU School of Medicine[14]

New CU president focused on affordability[15]

The Pentagon investigates what are now called UAPs or Unexplained Aerial Phenomena.[16]

Sun Bus Helps Bust Melanoma Misconceptions, Provide Screenings[17]

Links
[1] https://connections.cu.edu/spotlights/cu-next-awards-boost-intercampus-teams-pursuing-academic-innovation[2] https://connections.cu.edu/sites/default/files/cu-next_top.jpg[3] https://www.cu.edu/oaa/academic-innovation-programs/cu-next-award[4] https://connections.cu.edu/stories/tech-minded-teams-honored-cu-innovation-efficiency-awards[5] https://www.cu.edu/controller/innovation-efficiency-awards[6] https://connections.cu.edu/stories/creating-inclusive-curriculum-centaurus-high-and-beyond[7] https://connections.cu.edu/stories/photo-feature-marcy-and-bruce-benson-atrium-dedication[8] https://connections.cu.edu/stories/race-day-photos-cu-denver-sponsors-iconic-colfax-marathon[9] https://connections.cu.edu/stories/doctor-duo-helps-lift-women-peers-depths-burnout[10] https://connections.cu.edu/stories/cu-connections-shifts-summer-publication-schedule-june-0[11] mailto:newsletter@cu.edu[12] https://connections.cu.edu/people/tate-accelerates-community-building-research-support-cu-cancer-center[13] https://connections.cu.edu/people/rodriguez-wins-top-award-research-complex-models[14] https://connections.cu.edu/people/ford-named-chair-pharmacology-cu-school-medicine[15] https://connections.cu.edu/itn/new-cu-president-focused-affordability[16] https://connections.cu.edu/itn/pentagon-investigates-what-are-now-called-uaps-or-unexplained-aerial-phenomena[17] https://connections.cu.edu/itn/sun-bus-helps-bust-melanoma-misconceptions-provide-screenings