



CALIFORNIA STATE UNIVERSITY
BAKERSFIELD
School of Natural Sciences,
Mathematics and Engineering

C S U B A K E R S F I E L D

NSME **IMPACT**

FALL 2023





Contents

- Geologic storage 4
- Interdisciplinary ag research 9
- Valley fever 10
- First public health graduate 12
- Math Field Day at 50 14
- Nursing students go to Peru 16
- Other campus updates 18

Connect with us!

We're @CSUBNSME on these social networks:



Find the latest at csub.edu/nsme

DEAN'S ADVISORY BOARD

KYLE ATKIN

Director of STEAM,
Kern County Superintendent of Schools

AIMEE BLAINE

Senior VP Technical,
Aera Energy

JAVIER BUSTAMANTE

Physician and Entrepreneur,
Valley Integrated Provider Network

BRYNN CARRIGAN

Director,
Kern County Public Health

RICHARD CHAPMAN

President and CEO,
Kern Economic Development Corporation

TERRI CHURCH

VP and COO,
Dignity Health

DANIELLE COLAYCO

Executive Director,
Komoto Family Foundation

ALLISON ELLEDGE SLIDER

Asset Development Supervisor,
Chevron

STAN ELLIS

President,
Sierra Process System Inc.

KENT HALLEY

Founder,
Cornerstone Engineering

OMAR HAYAT

Senior VP of Operations, California
Resources Corporation

TERRI LINDSEY

School Health Coordinator,
Bakersfield City School District

ANGELO L. MAZZEI

Founder and CEO,
Mazzei Injector Corporation

TED NYE

Director of Spacecraft Technology
(retired), Northrop Grumman

SHEM D. OESCH

VP of Engineering,
Grimmway

MELINDA PALMER

VP of Regulatory & Public Affairs,
Kern Energy

BLAIR PRUETT

CEO & Founder,
Cal Microgrids

TIM REID

General Manager & CEO,
Mojave Air & Space Port/Rutan Field

MICHELLE ROY

Science Coordinator,
Kern County Superintendent of Schools

ISABEL SILVA

Director of Health Education,
Kern Health Systems

A MESSAGE FROM THE DEAN

It is with great pleasure that I welcome you to this very first edition of NSME Impact, shining a spotlight on the extraordinary endeavors of our faculty, staff, students and alumni. California State University, Bakersfield's School of Natural Sciences, Mathematics and Engineering proudly serves the local community by providing unique educational pathways to develop students into professionals in STEM and health care careers. In the year 2022-2023, 357 NSME students successfully completed their degree and walked the stage during commencement. Many of our graduates have started contributing to local industries, hospitals, schools and organizations, and some are moving forward to pursue advanced degrees. We cannot wait to see the impact that our graduates will make in the years to come!

The stories presented in this edition highlight our core values: a commitment to education, a passion for discovery and innovation and a profound sense of responsibility to nurture the next generation. What truly sets us apart is our deep-rooted connection to the communities we serve. We take immense pride in the work conducted by our faculty, students and alumni, as well as our partnerships within Kern County. In this ever-evolving world, NSME remains steadfast in its commitment to shaping a brighter, more sustainable future.

In the upcoming year, we continue to expand our partnership with industry in local areas and beyond, as well as national labs and organizations so more students can benefit from internships, field practice and summer research programs. In addition, the NSME Strategic Planning process will be launched to reimagine the future of our beloved school with our students, faculty, staff, administrators, alumni and community partners. We invite all of our stakeholders to engage in this exciting process to co-create a collective vision for NSME!

NSME, the future starts here.

Dr. Jianyu (Jane) Dong

Dean of the School of Natural Sciences, Mathematics and Engineering



Dr. Song examines a thin section of a caprock sample (shale), which serves as the seal that blocks the injected gas from leaking.

Geologic storage and the fight against climate change

Dr. Liaosha Song researches carbon and hydrogen storage

A problem as big and complex as climate change doesn't have one easy solution to fix it. Mitigating its effects on the world requires a full toolbox of practical, scientific methods. At California State University, Bakersfield, Dr. Liaosha Song is researching two of them.

An associate professor in CSUB's Department of Geological Sciences, Dr. Song's work in geologic storage presents two promising tools to fight climate change: carbon (CO₂) sequestration to remove the greenhouse gas from the earth's atmosphere and hydrogen (H₂) storage to save and reuse hydrogen to help power renewable energies.

"Number one, the purpose is to mitigate one of the things that is impacting everybody's livelihood — that is the severe climate change over the past decades," Dr. Song said, mentioning extreme heat waves, floods, wildfires and storms. "And particularly for Bakersfield and Kern County, geologic storage also makes a lot of sense in terms of generating new jobs and fueling new power to the local industry."

Geologic storage for both carbon and hydrogen involves injecting the gas into subsurface rocks, though the duration of storage is different for each. For carbon, the purpose is long-term storage for tens of thousands of years, putting the gas underground and lowering the CO₂ concentration in the atmosphere. Hydrogen, however, is temporarily

stored and can be retrieved to support intermittent clean energies, like wind and solar, that do not continuously generate energy depending on time of day and weather.

While as a student Dr. Song was initially drawn to geology's broader, "big picture" processes of how the earth works, his professional work on geologic storage focuses on much smaller processes on the nano- and micrometer scales. He and the students in his lab evaluate the subsurface rocks in California, focusing on the "caprocks" that block the injected carbon dioxide and hydrogen from leaking. Understanding the porosity and chemical makeup of the caprocks plays an important role in determining if it is suitable for storage.

"When we are researching this, it's different from a traditional geology study where you go to the field and put a hammer on a rock," said Dr. Song, explaining that his team studies rock samples called cores taken from well sites drilled by oil and gas companies or from CSUB's California Well Sample Repository. "We take these subsurface rock samples, and we analyze them in the labs."

In the lab, Dr. Song and his student researchers study three main areas related to geologic storage. First is the chemical composition of rocks, which they must understand because in the subsurface condition, carbon dioxide and hydrogen react to certain types of minerals and these reactions may create leakage pathways and thus jeopardize the integrity of the caprock.

The second set of research is the pore system in the caprocks, where Dr. Song's team analyzes the rock samples with scanning electron microscopy. Carbon or hydrogen leaking from the rocks would trigger new problems, so assessing the caprock's ability to retain them is essential.



Dr. Song studies the internal structure of caprock sample on the scanning electron microscope.

"The pores inside the caprocks must be small enough to generate a high enough capillary force, which is basically a resisting force that's keeping gas and liquid underneath and ensures the CO2 and hydrogen have very little chance of penetrating the cap," Dr. Song explained.

This specific area of his research was recently sponsored by a National Science Foundation Major Research Instrumentation grant of \$520,050, which allowed Dr. Song to purchase a field emission scanning electron microscope. This equipment offers an ultra-high-resolution and

allows the research team see the finest features of the rock, Dr. Song said.

The final area of his lab's research uses a nano-tomography scanner, which Dr. Song said has a fundamental function similar to a medical CT scanner but with much higher resolution.

"This can give us a 3D distribution of the interior of the rock to help us further understand the mineralogy, the pore space and how they are connected," Dr. Song said. "This 3D fashion essentially

decides how well the CO2 or hydrogen reacts in transporting or migrating through the rock."

On this aspect of his research, Dr. Song and his team is collaborating with Lawrence Berkeley National Laboratory, which houses a synchrotron CT that is the best of its kind in the world, he said. This summer, five of his undergraduate students interned at Berkeley Lab to work on geologic storage research as part of that partnership.

Jennifer Rubalcaba, a senior geology student at CSUB, and her fellow interns are analyzing micro and nano CT images to evaluate the pore structure of reservoir rocks and caprocks to find potential storage sites in the Central Valley. Living in Bakersfield, where oil and agriculture are major industries, has given Rubalcaba a greater perspective on this research.

"Growing up in a city so heavily influenced by the oil industry has surrounded me in the ongoing debate over fossil fuels and air pollutants," Rubalcaba said. "Likewise, growing up around agriculture has made me more keenly aware of the impacts of air pollution on the land, and how it affects food production and public health. For these reasons, contributing to research that could result in the safe and effective geologic sequestration of carbon and storage of hydrogen is important."

"Being able to get this kind of firsthand experience doing research under my mentors has been an enriching experience,"

-Jennifer Rubalcaba,
Senior geology student at CSUB



Jennifer Rubalcaba, a senior geology student at CSUB, stands in front of Lawrence Berkeley National Laboratory's Advanced Light Source building.

Working on carbon and hydrogen storage research with Dr. Song and at Berkeley Lab has been “an eye-opening” experience for Rubalcaba, one she said has exposed her to many more fields within the earth sciences than she previously knew existed. Her internship has confirmed that she wants to pursue a career in energy geosciences, she said.

“Being able to get this kind of firsthand experience doing research under my mentors has been an enriching experience,” she said. “Using breakthrough technology such as the NanoCT scans, learning and utilizing new software and having the opportunity to analyze datasets which have never been seen before has been exciting.”

The research Dr. Song, his collaborators at Berkeley Lab and CSUB students are doing is truly cutting edge. While carbon sequestration has gained steam as a promising tool against climate change in recent years, hydrogen storage is rather new and Dr. Song himself has only been studying it since early 2022.

Though the methods of carbon dioxide and hydrogen storage share similarities, hydrogen’s smaller molecule size means an appropriately impenetrable caprock for carbon might not work for hydrogen.

“Hydrogen molecules are much smaller than carbon dioxide, and we need to do a lot of extra research to ensure the security and the integrity of the seal that’s blocking hydrogen from leakage,” Dr. Song explained. “So, this is my new research interest, to ensure that our caprock in the subsurface that has successfully blocked CO₂ is also capable — or not — of blocking hydrogen from leaking.”

Dr. Song’s research could impact worldwide efforts to reduce the effects of climate change, but here in Kern County it could also impact local industry. Per a report by Lawrence Livermore National Laboratory, Kern County is one of the two most promising candidates for geologic storage of CO₂. The area’s oil industry lends itself well to geologic storage.

“We have so many oil and gas wells, we have the experts, and we have some preexisting data base for the subsurface,” Dr. Song said. “All of these contribute to a good understanding of the subsurface, which also contributes to this large pool that’s sitting underneath us, and if we use it properly it can be repurposed as a safe box for CO₂, and this could trigger a lot of new development in terms of economy.”



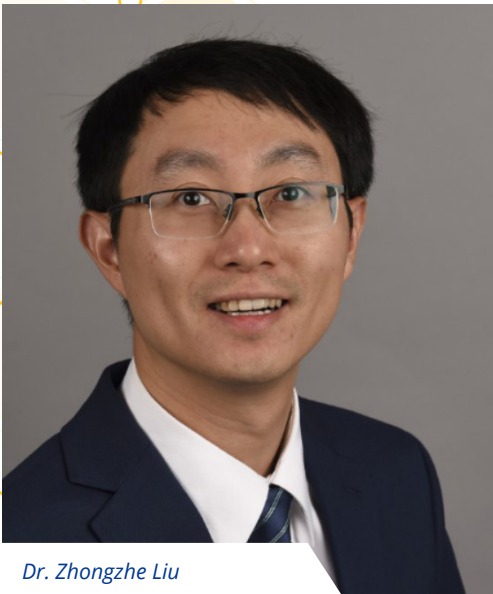
Dr. Song holds a sandstone core sample in California Well Sample Repository, which is one of the most promising rock formations for CO₂ or H₂ underground storage in California



**CALIFORNIA ENERGY
RESEARCH CENTER**
CSU BAKERSFIELD™

The California Energy Research Center (CERC) facilitates the engagement of CSUB faculty and students in collaborative research efforts with our local energy-related industry and agencies for the benefit of the local community, the region and the state of California.

Visit the website at [csu.edu/cerc](https://www.csu.edu/cerc)



Dr. Zhongzhe Liu

Engineering faculty win USDA grant for interdisciplinary research

Three professors at California State University, Bakersfield were awarded nearly \$300,000 from the United States Department of Agriculture for a collaborative project they are working on along with faculty from the University of California, Riverside.



Dr. Luis Cabrales

CSUB engineering professors Drs. Zhongzhe Liu and Luis Cabrales, both from the School of Natural Sciences, Mathematics and Engineering, have joined forces with Dr. Jeremy Woods, from CSUB's School of Business and Public Administration, for a project on sustainable waste treatment. While Drs. Liu and Cabrales' work focuses on researching energy and resource recovery from agriculture-derived waste streams, Dr. Woods focuses on outreach to the region's agriculture communities and entrepreneurship training.

"This collaborative project is aimed to build the capacity for students in investigating sustainable waste treatment methods and to develop sustainable entrepreneurship and leadership to address the challenges of handling agriculture-derived wastes in the nation's leading agriculture region, California's Central Valley," Dr. Liu said.

Dr. Liu's research is focused on energy recovery to assess an advanced thermochemical conversion technology that simultaneously treats dairy wastewater and crop residues. This technology ultimately turns waste stream mixture to renewable energy, such as synthetic natural gas. From there, a UC Riverside team led by Dr. Chan Seung Park takes the experimental data resulting from Dr. Liu's research to model the waste-to-energy process and assess its feasibility.

In Dr. Liu's lab, the agricultural wastes that are derived from major commodities in the Central Valley — like orchard pruning, wheat straw, cow manure and corn stover — are converted to syngas via steam hydrogasification reactor, or SHR, for synthetic fuel production. Dairy wastewater is used as the steam source.

Dr. Cabrales, meanwhile, focuses on resource recovery to characterize the physical properties of pistachio shells that are important to the fabrication of composite materials and determine the optimal treatment method. Dr. Cabrales explained that in



Dr. Jeremy Woods

recent years, there has been an increased commercial interest in producing materials from renewable resources.

“The utilization of materials derived from a renewable resource could help reduce our carbon footprint, and some of them present good biodegradability,” Dr. Cabrales said. “The research project involves the use of pistachio shells to produce materials with enhanced mechanical properties. By creating composite materials from pistachio shells, there will be a reduction of waste heading toward landfills.”

On the entrepreneurship side, Dr. Woods’ work includes three initiatives: a sustainable entrepreneurship training program, internship generation with industry partners and at least two new startups with the intern teams. Two training sessions held earlier this year focused on how STEM students could improve their innovation skills in the realm of agriculture.

In all, the grant intends to create a postdoctoral research position and 30 paid student research assistant positions, develop 50 service-learning internships, build two new start-up ventures and deliver related classes and workshops to more than 470 students.

The grant is from the USDA Capacity Building Grants for Non-Land Grant Colleges of Agriculture Program (NLGCA) and is part of a total \$7 million that the USDA is investing in 24 programs nationwide for research, education and outreach related to



Dr. Liu's students tour a nearby orchard.

food, agriculture, natural resources and human sciences.

Since the grant period began in July 2021, students have been involved with the research at every level — in labs, on tours and in conferences. Dr. Liu took students to a regional almond orchard to learn about how it treats and disposes of almond tree pruning, as well as the Tulare wastewater treatment plant. Dr. Cabrales and his students visited a pistachio processing plant in Lost Hills to learn about its various processes, with a special focus on the area where pistachio shell waste is handled.

Students have also had the opportunity to share their work with the larger scientific community. Members of Dr. Liu’s lab shared the preliminary results of their research on the performance of steam hydrogasification of blended agricultural waste streams at the 2022 American Institute of Chemical Engineers meeting, the 2022 Southern California Conference for Undergraduate Research and

at the third Competitive Energy Systems Symposium.

In Kern County, the real-world implications of the professors’ and students’ research could be huge.

“The Central Valley is a top producer of agricultural products in the U.S. and is home to the largest concentration of dairies in California,” Dr. Liu said. “Accordingly, the Central Valley has the highest concentration of agriculture-derived wastes such as dairy wastewater and crop residues. This project will investigate sustainable waste treatment methods and develop sustainable entrepreneurship and leadership to address the challenges of handling agriculture-derived waste streams in the Valley.”

“The utilization of materials derived from a renewable resource could help reduce our carbon footprint, and some of them present good biodegradability,”

-Dr. Luis Cabrales



Dr. Antje Lauer works with several students in her lab studying Valley fever.

Leading the way on Valley fever

It isn't a terribly warm welcome to the community, but newcomers to Bakersfield often are presented with a warning: Stay indoors on windy days or risk catching Valley fever, a serious medical condition contracted by breathing in spores that live in Kern County's soil. But when microbiologist Dr. Antje Lauer heard the precaution, it piqued her interest.

Dr. Lauer started at CSU Bakersfield in the fall of 2007, and within a year she started studying *Coccidioides*, the fungus responsible for Valley fever. Found in the soil in certain areas, the fungus is dangerous, and sometimes even deadly, for those who breathe it.

Though plenty of research continues to be done on the medical side of the issue toward

treatment and vaccines, environmental research like Dr. Lauer's is much less common.

"My work is more targeted toward knowing the pathogen better to prevent disease," Dr. Lauer said. "For example, when we figure out where the pathogen is growing and what actually spikes its growth in a particular area, we can maybe give recommendations that these soils should not be disturbed."

Often what disturbs the soil is construction. With better knowledge of the pathogen, scientists like Dr. Lauer could recommend that a new solar range, for instance, shouldn't be built in a certain area because of the likelihood of *Coccidioides* spores being present. Knowing that could allow developers to avoid areas that would make their

workers and the community sick or be prepared for better dust mitigation.

"I really got interested in this field of research because I realized there is not much done regarding figuring out why the pathogen is successful in this habitat and why not in another one," she said.

Early on in her research, Dr. Lauer took samples of soil and dust within the city of Bakersfield, in places like the fairgrounds and random parking lots.

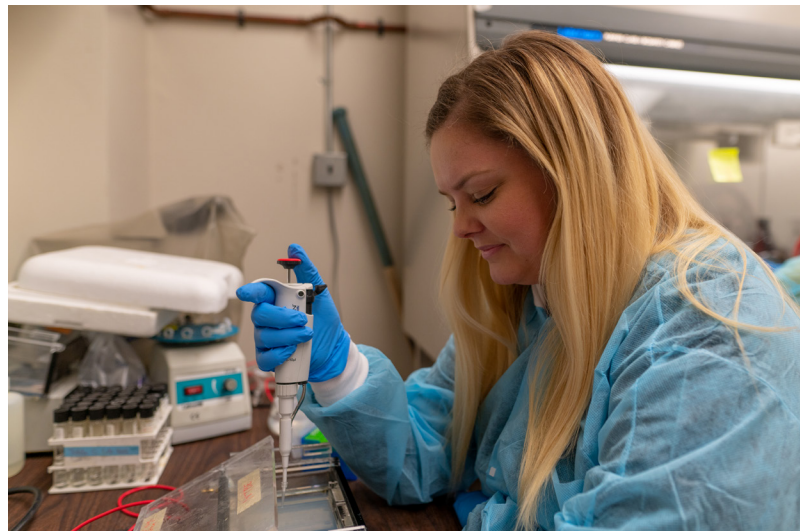
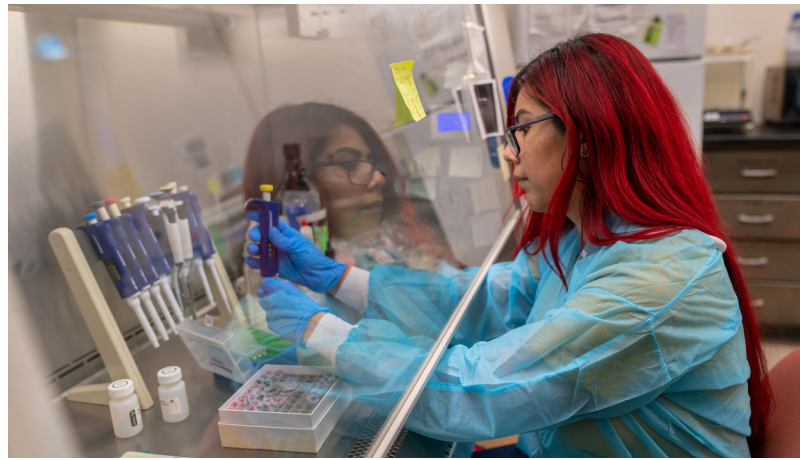
"I just wanted to know if there were pockets within the city that support *Coccidioides* growth, and there were," she said. "So, the pathogen is an opportunist. It depends, I believe, primarily on the other microorganisms that are already established in the soil, if it can start growing. That's something that has not been researched in a lot of depth."

Dr. Lauer and her students study the pathogen on a molecular level, using DNA extraction and the Polymerase Chain Reaction (PCR). Her research has received funding from NASA and the U.S. Department of Defense. Another project, supported by the Council on Ocean Affairs, Science & Technology, studies Valley fever in pinnipeds like seals and sea lions. Her work has also recently been shared in a CBS News Bay Area broadcast.

Recently, Dr. Lauer has collaborated on this work with local high school students and teachers as part of the Citizen Scientist Project led by Dr. Brittney Beck, a professor in CSUB's teacher education program. For about three years, Kern High School District students have collected and analyzed soil samples using the same techniques Dr. Lauer uses in her lab to determine the fungus' presence. It gives the students hands-on research experience and adds to Dr. Lauer's data.

"The progress is slow but successful," Dr. Lauer said. "The students are super excited, and they have sampled hundreds of dust samples. We have found positive samples and negative samples."

Dr. Lauer's research has also recently expanded thanks to a collaboration with the Bureau of Land Management to investigate recreational areas and assess the risk of Valley fever to hikers, off-road drivers and others who use those spaces. She and her student have found positive samples at



places like Atwell Island Restoration Project, Cyrus Canyon, Keysville Special Recreation Management Area and Buena Vista Aquatic Recreational Area. Her work on this project started in January 2022 and will conclude later this year.

While Valley fever is her expertise, Dr. Lauer also wants to broaden her research into environmental restoration. She and a group of students recently started developing a butterfly garden by Student Housing East, and she'd like to follow that with restoration of the Audubon Bakersfield Environmental Studies Area north of campus and Stockdale Highway. Native animal populations there have decreased in years, but the recent rainy season and the potential for another wet winter inspire some optimism.

"I hope this is a good chance for this area to naturally be restored, but we also want to help," Dr. Lauer said. "Hopefully we get some grants at some point to really get going with a restoration that deserves the name restoration."

CSUB celebrates first public health grad

When Karla Herrera decided to change her major from pre-nursing to public health, it was a leap of faith that the brand-new program would be a good fit for her. She had to believe not just in herself but in her university.

Herrera was among the first students to enroll in California State University, Bakersfield's public health program when it first launched in the fall of 2021. With many requirements already met thanks to her previous major, Herrera became CSUB's first public health graduate just two years later.

"I'm very excited and it feels very special to be the first one," she said. "I just hope that I can set a good example for others wanting to be in public health, and I hope I can put a good word out for what a public health student looks like and make some good things happen in the community."

A Bakersfield native who moved to Houston at 5 years old and returned here at 16, Herrera's interest in health care came from personal experience — growing up, her parents had issues with their health, and as a freshman in high school, Herrera was already experiencing high blood pressure. Knowing her family's health history was not something she could "escape," she decided to eat healthy and be active.

"It kickstarted my journey in health," Herrera, 23, said. "I became interested in the human body and health overall. Later, as I grew up, it built into something not just about me and my family, but about my community's health as well, and that's where public health came in."



Herrera started CSUB with the intention of enrolling in the nursing program. It was in the height of COVID when she first heard the university was planning a public health degree, and the general upheaval of her college experience during remote learning made Herrera feel like it might be time to embrace something new.

"I've always been afraid of change, but I've also been a firm believer that I have to put myself outside of my comfort zone, because that is when I see growth in myself and my life," she said. "So, when I heard about it, I was like, 'It's time to make this change.'"

Public health students will take a senior seminar course in their final semester, but as the program's first and only graduating senior so far, the class was just Herrera and Dr. Linh Bui, an assistant professor in the program. Dr. Bui said Herrera exhibits great critical thinking and diligence in all her work.

"Most importantly, she is passionate about improving the local community health," she said. "She is a great representation of CSUB public health students. I believe she will bring her skills

and passion to serve the community, and I am really proud of her."

As a student, Herrera interned at the Kern County Public Health Department working within the tobacco prevention program. In the months since graduation, she's already been hired in a full-time position as a health education assistant in the same program. She's happy for the opportunity to continue working in town and helping others.

"Bakersfield has always been good to me, and it has a special place in my heart," she said. "Your community is where you're at, no matter where you're at. There's a lot of need in Bakersfield, so I really wanted to focus on making a change in my community."

The public health program was created to respond to an urgent need for professionals in the field locally. There were few students enrolled in public health classes the first semester it was offered. By the spring 2023 semester, there were already 68.

For Dr. Todd McBride, CSUB's director of health programs, Herrera's graduation is "the culmination of a lot of hard work by many contributors" from the university and the Bakersfield community.

"The regional need for a four-year degree program in public health is profound," he said. "Graduates from our program will be on the front line in efforts to close the health disparity gap in many of our communities. I look forward to many more CSUB students following in Ms. Herrera's footsteps."

Herrera encourages future public health students to not be afraid to speak in class and share their ideas.

"We need different minds of different experiences and different backgrounds to be able to understand the various levels of community and people that we have here in Bakersfield," she said. "We need people from every city in Kern County to help better the community."



"We need different minds of different experiences and different backgrounds to be able to understand the various levels of community and people that we have here in Bakersfield."

-Karla Herrera

Math Field Day proves its legacy

What's the formula for success for California State University, Bakersfield's longest-running event? For Math Field Day, getting to 50 years is due to the dedicated faculty of the university's Mathematics Department and generations of high schoolers who enjoy a good challenge.

On March 11, 2023, the longtime event — now officially called the Lee Webb Math Field Day in honor of its founder — celebrated its golden anniversary at the Doré Theatre. For decades now, it has given high school math students the chance to compete in several different events and be celebrated for their mathematical talents.

"I'm incredibly proud of the fact that this university and particularly this department has carried it forward," said Dr. Lee Webb, a retired CSUB math professor who has remained involved in his namesake event.

The event's first 29 years were led by Dr. Webb before passing the torch to Dr. David Gove, current chair of the university's math department, who has run the event for the last 21 years.

"David has been a rock," Dr. Webb said of his successor. "I don't think the Math Field Day would even be held anymore if it wasn't for David."

Dr. Webb started Math Field Day in 1971, just one year after CSUB held its first classes. He and a colleague wanted to hold an event that would help put the new school on the map.

"We just thought, 'We're a backwater location here, and no one knows what Cal State Bakersfield even is,'" Dr. Webb recalled, adding that before CSUB opened, its region was one of the largest without a four-year university. "This area has really come along well with respect to developing its reputation, but back in 1970 and '71, it hadn't yet. So, the purpose (of Math Field Day) was to get more kids involved in the area of science and math, and we've succeeded pretty darn well."

The day includes several math activities and runs with support from college student volunteers. That many of them were once Math Field Day participants themselves is a clear sign of the event's legacy. Christian Bernal Zelaya, a CSUB



Dr. David Gove, left, took over Math Field Day for Dr. Lee Webb when he retired.

math major who graduated in spring 2023, participated as a high school senior in 2019 with Independence High School.

“For me, the whole event felt more like a math get-together than a competition, which is why I started to enjoy mathematics, because of the fun it involves,” Bernal Zelaya said of his experience as a participant. “I also liked meeting other high school students that weren’t from my school who also had an interest in mathematics.”

Math Field Day has only ever taken two years off, both due to the COVID-19. Last year’s competition was held virtually, so this year marked a return to in-person events. Even before the pandemic, though, attendance had begun to wane. Dr. Gove chalks that up to more conflicts in students’ increasingly busy schedules.

“The main thing that would make it not go on another 50 years is if we stop having any schools willing to participate,” Dr. Gove said. “Part of the charm but part of the danger of Math Field Day is we’re not part of a national competition. There’s no next round; the winners don’t get to go a state meet or anything like that. It’s all homegrown, and this is it.”



Many CSUB students volunteering for Math Field Day once participated in it as high school students themselves.

Like with previous years, the 50th annual Math Field Day wrapped up with some words from Dr. Webb. Dr. Gove said his predecessor summarizes the importance of math very well.

“He talks about how vital it is for the country to have a talented, scientifically and mathematically literate populace,” Dr. Gove said. “We’re hoping the students who participate will all continue their interest in mathematics. We don’t expect them to only do mathematics, but math is necessary for every other STEM field.”

NSME faculty, including Dr. Gove, recognized with CSUB awards

California State University, Bakersfield recently honored four educators for their contributions to the university and the community. Among the honored faculty members were three NSME instructors.

Mathematics professor Dr. David Gove received the Faculty Leadership and Service Award, while fellow mathematics professor Dr. Rebecca Larson received the Millie Ablin Excellence in Teaching Award. Geologist Dr. Liaosha Song earned the Promising New Faculty Award.

In addition to our faculty, NSME instructional support technicians, Fab Lab specialists and equipment technicians were also recognized with the Outstanding Group of the Year Award.



Dr. Rebecca Larson receives her award from Provost Vernon Harper and President Lynnette Zelezny.



Mereli Landa and patient

Nursing students go on Peru outreach trip

When nursing student Leslie Lopez-Mendoza signed up for a nursing outreach trip to Peru, she didn't know what exactly she had gotten herself into. Not only would it be her first time using her newly acquired nursing skills outside of the clinical setting, but the trip was also the first-ever study abroad opportunity for California State University, Bakersfield's nursing students. With no peers who had previously gone on the trip to ask what it would be like, her decision to go was an act of faith.

"I really didn't know what to expect; I knew we were going to go and help the community, but I just wasn't sure exactly how," said Lopez-Mendoza. "I was in between going or not, and I just decided to go because I was like, 'Why not, it's not going to hurt.' But I'm just so happy I did decide to go. It was one of the best experiences of my life."

In July 2022, 21 CSUB nursing students and their professor traveled to Cuzco, Peru for a 10-day trip

focused on providing health services to those in the town and its outlying communities. At each location, students would admit patients, conduct screenings for blood pressure and glucose levels, give head-to-toe assessments, administer a fluoride dental treatment and work with a doctor onsite to get them started on any necessary medications.

"When we're here in town and in the hospital, everything is so driven by computerized charting and making sure that they are following all the policies and procedures, and I think so much of caring for the patient gets lost in that shuffle," said nursing professor Krystal Ball, who organized the trip. "When you're doing outreach, it's just about you and the patient and what you're providing for them. It's a very powerful situation where they really can key into what drives their passion to want to be a nurse."



Leslie Lopez-Mendoza and Annika Gonzalez



Sarah Prounh and Jaipreea Kahlon



Myka Norton

Want to support the next trip?
Visit give.csub.edu/nsme.shtml and select "Nursing Student Global Outreach Fund" in the "I want to support" drop-down menu.



Nichelle Medrano and patients



Daisy Carillo and patient

New faculty join NSME



Dr. Chia Thao joins CSUB's growing public health department as its third faculty member, teaching classes on health communication and health equity, as well as the freshman seminar. Born and raised in a refugee camp in Thailand, Dr. Thao's family came to the United States when she was 13, settling in Fresno. Earning her bachelor's degree in health science from CSU Fresno and her Ph.D. in public health from the University of California, Merced, Dr. Thao's research interests involve improving minority health disparities and promoting wellbeing. When not at work, Dr. Thao enjoys reading, watching movies and spending quality time with her husband and kids.



Statistician **Dr. Anjana Yatawara** is the newest member of the CSUB mathematics department. Originally from Sri Lanka, Dr. Yatawara earned his bachelor's degree in statistics from the University of Peradeniya and completed his Ph.D. in mathematics from Missouri University of Science and Technology earlier this year. His research focuses primarily on time series analysis and its applications to economics, but his models also have direct applications in areas like biology and environmental sciences. Dr. Yatawara and his wife have a rescue Chihuahua mix named Tabasco, and Dr. Yatawara enjoys hiking, graphic designing and playing video games.



Dr. Gyeong Sung Kim will bring his years of mechanical and civil engineering expertise to CSUB when he joins the Department of Physics and Engineering as an assistant professor this fall. Dr. Kim earned his bachelor's degree in mechanical engineering from Korea Maritime and Ocean University, his master's degree in civil engineering from Korea University and his Ph.D. in mechanical engineering from the University of Maryland at College Park. His research focuses on the development of alternative water resources, water efficiency and water-based energy systems. As a new Californian, Dr. Kim is excited to travel to national parks with his wife and son and try new foods.

Electrical engineer **Dr. Sina Jahandari** will join CSUB's Department of Computer and Electrical Engineering and Computer Science in the spring 2024 semester. Originally from Tehran, Iran, Dr. Jahandari earned his bachelor's degree in electrical engineering from the Khajeh Nasir Toosi University of Technology, his master's degree in mechatronics engineering from the University of Tehran and his Ph.D. in electrical engineering from the University of Minnesota, Twin Cities. Dr. Jahandari's background is in control systems and his current research focuses on data-driven modeling and decision-making in uncertain and dynamic environments. In his free time, Dr. Jahandari enjoys hiking.

Fab Lab community engagement

Well over 650 members of the community visited the Fab Lab in the 2022-2023 academic year. Groups from area K-12 schools and community organizations like the Boys & Girls Club visited our makerspace and learned all about what they can build there. In addition to campus tour visits, the Fab Lab also hosted Community Science Nights and attended community events like the Edwards Air Force Base Air Show. For open hours and tour opportunities, email fablab@csu.edu.



Fab Lab specialist Bobby Hartssock and Fab lab interns host a group of students from William Penn Elementary in these photos from February 2023.



Congratulations to our faculty members who received tenure and/or promotion in 2023!

TATHAGATA ACHARYA

Associate Professor

Physics and Engineering; Tenure and Promotion

KRYSTAL BALL

Associate Professor

Nursing; Tenure and Promotion

ZHONGZHE LIU

Associate Professor

Physics and Engineering; Tenure and Promotion

KARLO LOPEZ

Professor

Chemistry & Biochemistry; Promotion

AMIN MALEK

Associate Professor

Computer and Electrical Engineering and Computer Science; Tenure and Promotion

LIAOSHA SONG

Associate Professor

Geological Sciences; Tenure and Promotion

JANE YADON ASHLEY

Associate Professor

Nursing; Tenure and Promotion

