



Students Transitioning to
Engaged and Motivated Success

STEM Discovery Academy

We are now accepting applications for our STEM Discovery Academy that begins July 2020. Students will be able to participate in one of the two week sessions. These are the dates for the two sessions:

Session 1: July 5 - July 17, 2020

Session 2: July 19 - July 31, 2020

Students must apply online <https://www.csustan.edu/STEM-success>



Stanislaus State

WOW 2 STEM

Warriors on the Way to STEM (WOW 2 STEM) is the transfer component of STEM Success Project. Stanislaus State is seeking to expand and improve transfer articulation practices across top 10 regional feeder community colleges to promote STEM transfer pathways.

Peer Mentors

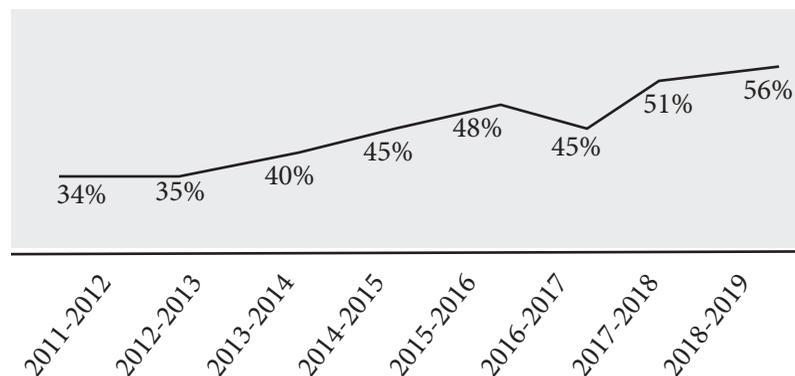
We have two amazing WOW 2 STEM Peer Mentors, Ruben (Physics Major) and Paola (Biology Major), that assist our Transfer Specialist with outreach and student mentoring needs. They also help out with our STEM Discovery Academy in the summer. If you see their friendly faces around campus, we hope you'll wave and say "hello".

Emma is a new STEM Success Peer Mentor who is eager to learn and experience all of the great things being a Peer Mentor has to offer.



"I look forward to working with students to help them achieve their goals here at Stanislaus State"
-Emma Van Hoogmoed, Computer Science | Senior

Since the inception of WOW 2 STEM in AY 2011-12, the prerequisite completion rate for STEM transfer students has increased to 55%.



STEM Success SUMMIT

The STEM Success Summit is designed to initiate a joint effort within key stakeholders from CSU Stanislaus and community colleges to explore how to improve STEM transfer student success and seamless transitions from community colleges to CSU Stanislaus.

Our 2nd STEM Success Summit took place on October 12, 2019 with 60 participants that included faculty, staff and students.



Spring 2020 New Student Orientation

Our Transfer Specialist and Peer Mentors were present at our New Student Orientation (NSO) for our incoming Transfer students. We were able to connect with a variety of STEM majoring students, answer questions and introduce them to our STEM Success Project. Following NSO, students were offered the opportunity to visit Naraghi Hall of Science for more information about the STEM Success program, a Transfer Student Panel presentation, and a tour of our science facility.



Research with Dr. Morsony

Dr. Morsony's research is in astronomy, particularly involving explosions in space. Using computers, he models supernova, gamma-ray bursts, and other events involving black holes and neutrons stars. He compares models with real observations to try to learn the properties and origins of these very energetic events.



Research with Dr. Cover



Dr. Cover and his students conduct research on freshwater ecosystems, with a focus on aquatic insects. Over the next few years, a major goal is to investigate the biodiversity of temporary streams (i.e., creeks that dry up for part of the year) in the Diablo Range, the hills that run along the west side of the San Joaquin Valley. Very little is known about the biology and ecology of these aquatic habitats and organisms, so Dr. Cover and his students are making regular visits to nearby streams to determine which species are present and how their life cycles are adapted to the annual cycles of wetting and drying. Laboratory research involves sorting and identifying aquatic

invertebrates, careful observation of the morphology of aquatic insects using microscopy and photography, and preparation of samples for genetic sequencing to determine genetic differences among populations. This research is motivated by a desire to learn about the non-human world all around us (natural history) as well as to prevent the extinction of species and loss of biodiversity (conservation biology). Dr. Cover is willing to serve as a research mentor to students from all STEM disciplines.

Research with Dr. Russell

My research students are currently working on two projects. The first involves a gas chromatographic method to quantitate ethanol volume percent in kombucha teas. The second project aims to characterize the alpha acid composition in craft beers without the need for costly HPLC instrumentation, which will enable small craft breweries to make more informed decisions regarding their hop additions. I accept undergraduate research students that are typically chemistry or biology majors with an interest in analytical chemistry.



Research with Dr. Kim

Dr. Kim's research interests include Big data analysis and processing, Computer networking and Cyber security, Cloud Computing, and Internet of Thing (including smart city and smart farm). The projects under Dr. Kim involve extensive design, deployment, and development of practical solutions for the topics. One of ongoing projects is medical Big data analysis to find correlation between disease (8,000) and genome data (of 22 chromosomes) of 20,000 patients. The other ongoing project is Big data transfer to send large amount of data (e.g. video streaming) through high speed network (10 Gbps). Dr. Kim is willing to serve as a research mentor to computer science majors and minors.



Research with Dr. Sankey

Dr. Sankey's Paleobiology Research Group is working on the mass extinction that wiped out the dinosaurs 65.5 million years ago at the Cretaceous/Paleogene (K/P) boundary. We are working on samples of small vertebrate fossils screened from several localities measured to the K/P boundary. Student researchers will do the following this year: a) read the relevant literature; b) learn how to identify teeth from dinosaurs and other vertebrates; c) curate the fossils (label, catalog, and enter data into Excel); d) take photographs of the fossils and produce publication-quality figures of these fossils; e) help write abstracts, papers, and posters on these results; and f) present their research at professional conferences. Students and Dr. Sankey will attend two professional conferences in the 2018-2019 school year: 1) The Society of Vertebrate Paleontology annual meeting in New Mexico in October and 2) The Western Association of Vertebrate Paleontology annual meeting in Oregon in March. All expenses will be paid to go the conferences. Dr. Sankey is willing to serve as a research mentor to students from all STEM disciplines.



I have gained experience in poster presentation at professional conferences, writing and submitting abstracts for research, and various laboratory skills that will come in handy in the future for research. RISE really provided me with the opportunities to better understand the professional side of research and become more comfortable with my presenting skills.

- Danah Gissler | *Geology Major*

Research with Dr. De Silva

Kevin Lopez (right) and Jasmin Rodriguez (left) are current RISE students working on a Data Science project with Dr. Jessica De Silva from the Department of Mathematics. Kevin is in his first year at Stan State as a Computer Science major, after transferring from Modesto Junior College. Jasmin is in her second year as a Mathematics major after graduating from Orestimba High School. After exploring numerous data sets on Kaggle, Data.gov, and other free data sources, Kevin and Jasmin both selected data sets from Kaggle. Kevin's research objective is to use data sets which include suicide rates by country, year, age range, etc. to determine what features are most correlated with suicide rates of a given country. On a lighter note, Jasmin is working with a data set containing the location of all McDonald's franchises throughout the US. She is merging this data with a set containing more information about each city (e.g., minimum wage) to determine which aspects make



for a prime McDonald's location. After correlation analysis, their goal is to use Machine Learning tools to model their data. To guide their project, Kevin and Jasmin are reading through Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow from O'Reilly Media. For any students interested in coding resources, the online versions of programming textbooks from O'Reilly Media are free for Stan State students!



Our Ninth Annual Science day is organized by faculty and staff in the College of Science with support from the Office of Service Learning and students in the college. One of the fundamental goals of the event is to expose young students to new fields of science, and especially to spark an interest in the areas of STEM (Science, Technology, Engineering, and Mathematics). One of our STEM students, Grace Parsons, worked with Dr. Sankey to present on Science Day.



"We decided to use the annual science day event at Stanislaus State to conduct research on the effectiveness of informal education. In preparation for this, we designed our activity (The Climate Crisis) to be as kid-friendly and informative as possible! We chose to educate the community about things like Pliocene fossils, climate change, rising sea-level, recycling and pollution." - Grace Parsons

World Agriculture Expo

One of the many advantages our RISE students have is the opportunity to participate in National and International conferences. STEM Success was able to send 5 students to the World Agriculture Expo in Tulare, CA. Our students explored impressive Smart Farming IoT (Internet of Thing) solutions as follows; Irrigation automation, plant based technology for optimized irrigation, crop health management, wireless soil moisture sensors, Aatutec drone, and drop optimization system for orchards and vineyards.



"Without all of your great help, students could not have gained from this excellent experience."

- Daehee Kim, Ph.D.

Department of Computer Science

A Sense of Belonging for STEM Students

Sense of belonging is an important predictor of retention and student success, particularly for first generation students and students from historically underrepresented groups. We are very proud to support services and interventions that create and strengthen a sense of belonging for STEM Students at Stanislaus State. We have disseminated findings related to sense of belonging at the following events:

Webinar: *Creating Sense of Belonging for STEM students through US Department of Education- Funded Grants at Hispanic-Serving Institutions* – December 2019
HSI-STEM Research, Policy, and Practice Dissemination Series.

Webinar Link: <http://www.csulb.edu/hsi-stem-lessons-learned/webinars>

Presentation: *Sense of Belonging in Undergraduate STEM Majors: How to Foster It and How to Assess It* – March 2020
Alliance for Hispanic Serving Institution Educators (AHSIE) Conference.



Highlight of STEM Success Response to COVID-19 Crisis:

Administration: All project staff is working remotely during their usual hours and available to students and campus community via email, phone and Zoom.

WOW 2 STEM: All articulation meetings between staff and faculty are being conducted via Zoom. All one-on-one transfer student advising appointments are being conducted online or via phone. Website was updated to indicate virtual office hours for our STEM Transfer Success Specialist

RISE: Monthly RISE student meetings will be taking place via Zoom. The faculty mentors are assigning research assignments to their students that can be remotely completed.

CONTACT US!

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www.csustan.edu/stem-grant



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