STEM Education Consortium

Funded by the Department of Education First in the World program, the STEM Education Consortium is a regional collaboration among Cal State LA, Pasadena City College, and West LA College that is supporting the development, implementation, and assessment of low-cost, high impact curricular strategies in first-year science courses.

The Consortium's curricular strategies have increased student success in terms of greater student retention, higher overall GPAs, and higher STEM GPAs as compared to traditional science curricula over the past three years. Results from the third year include:

- Cal State LA students in flipped classrooms had higher STEM GPAs for all students (+0.20), female students (+0.20), and URM students (+0.15) than their respective peers who experienced a traditional curriculum in the same course.

- Pasadena City College students learning through problem-based classrooms in introductory biology and other science courses had higher STEM GPAs than their respective peers in other sections of the course using a traditional curriculum. For problem-based introductory biology, STEM GPAs were higher for female students (+0.55) and URM students (+0.40), and for all other problem-based science courses, STEM GPAs were higher for all students (+0.29), female students (+0.22), and URM students (+0.19).

- West LA College students who participated in growth mindset study groups as part of their science courses had higher overall GPAs (+0.24) than their peers in the same courses who did not participate in the study groups.

- Approximately 90% of the students impacted by the Consortium's curricular strategies are from high-need student populations (either female or URM or first-generation or PELL/government award eligible) designated by the Department of Education.

Source: STEMEC—Cal State LA
Cal State LA Spotlight

Cal State LA receives NIH grant to boost research in biomedical and behavioral sciences

Cal State LA has been awarded a five-year, $500,000 grant from the National Institutes of Health (NIH) to provide biomedical and behavioral sciences research opportunities to undergraduates.

The grant, from the NIH’s Eunice Kennedy Shriver National Institute of Child Health and Human Development, will establish the Summer Program of Research Opportunities for Undergraduate Training (SPROUT) at Cal State LA to offer firsthand research experience to students, along with a paid stipend for the summer.

Coordinated by Ray de Leon, the grant’s principal investigator and director of the School of Kinesiology and Nutritional Science at Cal State LA, and co-principal investigator Kimberly Morland, SPROUT will be housed in the university’s Rongxiang Xu College of Health and Human Services.

Through a 15-week summer intensive training program, undergraduate students will gain expertise and develop research skills in behavioral and biomedical sciences, including the areas of rehabilitation and child development.

Participants will learn about graduate programs and careers in research. They will also attend workshops on scientific writing, analytical techniques, data management and data presentation. SPROUT scholars will work with professors engaged in a wide range of research.

Cal State LA receives grant from the Weingart Foundation

Cal State LA has been awarded a $525,000 grant from the Weingart Foundation to accelerate the achievement of students pursuing degrees in STEM.

The three-year grant will allow Cal State LA to establish the Acceleration Initiative, which will prepare students from groups who are underrepresented to succeed in STEM. The goal is to produce more diverse STEM graduates who are prepared for the workforce and ready to contribute locally and globally.

Through the Weingart grant, Cal State LA will hire a director who will integrate the university’s already existing STEM programs for middle school, high school and first-year college students. The university will also leverage the funding to expand and improve the programs, and to attract individual donors and private funders. The Acceleration Initiative will bring together four programs: MESA (Mathematics, Engineering, Science Achievement), LAunchPad, STEP (Summer Transition to ECST Program) and FYrE@ECST (First-Year Experience at ECST).

The MESA Schools Program provides rigorous math, engineering and science academic support to middle and high school students from educationally disadvantaged schools.

LAunchPad is a two-week summer program that introduces high school girls who have finished their junior year to the fields of engineering and computing through hands-on projects. The aim is to increase female enrollment to 25 percent by 2025.

STEP is a seven-week summer math boot camp that prepares incoming ECST freshmen to complete their first-year academic requirements. The program also integrates students into college life.

FYrE@ECST is a first-year cohort program that provides students with skills and support for ongoing success in their ECST majors. Approximately 90 percent of students who participate in FYrE@ECST will continue to pursue a degree in STEM.

Research has shown that ECST students engaged in these programs are more likely to pursue STEM majors, complete challenging courses, engage in projects with peers and graduate on time from Cal State LA with a STEM degree, said Emily Allen, the grant’s principal investigator and the dean for the College of Engineering, Computer Science, and Technology (ECST) at Cal State LA.
CSU Aims to Increase Number of Women and Minorities in Astronomy and Physics

Women and members of certain minority groups—namely African-Americans, Hispanics and Native Americans—continue to be underrepresented in STEM fields. While underrepresented minorities (URM) constitute 30 percent of the U.S. population, they only hold 8.9 percent of all STEM doctorate degrees. Their presence is even lower in departments such as physics and astronomy, where URMs hold less than 4 percent of Ph.D.’s nationwide. URMs face a number of barriers that keep them from earning advanced degrees in these subjects, including lack of academic preparation and financial support.

To help close the equity gap in physics and astronomy, the CSU has joined a state-wide network with the University of California (UC) and the California Community Colleges (CCC) for a program called Cal-Bridge.

"The Cal-Bridge program is designed to provide the mentoring and financial resources they need to help them achieve their dreams of becoming physicists and astronomers," says Alexander Rudolph, a Cal Poly Pomona professor of physics and astronomy, and director of the Cal-Bridge program.

The program identifies CSU students from underrepresented groups who display strong academic potential and provides them with the necessary support to successfully matriculate to a Ph.D. program, targeted at the UC campuses in the Cal-Bridge network. Scholars are supported for three years, beginning their junior year and lasting through their first year of grad school. CCC students must transfer to a participating CSU to join the program.

XSEDE Offers Advanced Computing Training at Cal State LA

More than 70 undergraduate and graduate students participated in the recent XSEDE/DIRECT-STEM training workshops at Cal State LA. The XSEDE or Extreme Science and Engineering Discovery Environment program is a year-long program that enables students to participate in a series of voluntary Saturday workshops. It is funded by the National Science Foundation.

"We instruct the students in scientific computing and data science," said Paul Nerenberg, assistant professor of physics and biology and research advisor for the DIRECT-STEM program funded by NASA. "These are going to be core skills for them in their careers no matter what they do," he added. Students from a variety of majors participate, including math, engineering, chemistry, physics, geosciences, and even art.

Linda Akli had been thinking of how to strengthen XSEDE’s engagement with Hispanic-serving institutions. Akli is the manager of the XSEDE Broadening Participation program and assistant director of Training, Education, and Outreach for the Southeastern Universities Research Association.

After researching schools, Akli and Rosie Gomez of the Texas Advanced Computing Center (TACC) made a visit to Cal State LA to talk with leadership about partnering with XSEDE. They learned that the DIRECT-STEM program focused primarily on math concepts in an applied context, and that they had just begun teaching programming in Python, a computer language.

"It sounded like an opportunity for us both," said Akli.

After much planning between the two programs to find the best sequence of training events, two workshops that involved both analytic and computational math exercises using Python were offered in fall 2018, along with an Introduction to Scientific Computing and the basics of Python. In spring 2019, an Introduction to Linux/Unix and Advanced Python was offered. This included hands-on access to the Stampede2 supercomputer, one of the most powerful systems in the world.

The training organizers have already met to discuss how the workshops will be structured for 2020. The program plans to offer more workshops next year as compared to this year.
STEM Education funding opportunities

Innovative Technology Experiences for Students and Teachers (ITEST)
PIVOT Opp ID: 88511
Type: Research, Program or Curriculum Development or Provision
Deadline: August 14, 2019

Robert Noyce Teacher Scholarship Program
PIVOT Opp ID: 77148
Type: Program or Curriculum Development or Provision
Deadline: August 27, 2019

Improving Undergraduate STEM Education: Hispanic-Serving Institutions
PIVOT Opp ID: 178981
Type: Meeting or Conference or Seminar, Research, Program or Curriculum Development or Provision
Deadline: September 18, 2019 and continuous

Integrative Activities in Physics
PIVOT Opp ID: 175645
Type: Collaboration or Cooperative Agreement, Program or Curriculum Development or Provision
Deadline: October 31, 2019

Cyberlearning and Future Learning Technologies (Cyberlearning)
PIVOT Opp ID: 126640
Type: Meeting or Conference or Seminar, Research, Program or Curriculum Development or Provision
Deadline: January 13, 2020

To view the full listing, click anywhere on the opportunity area.

Upcoming seminars and events at Cal State LA and other locations

- Transfer Orientation dates: July 16, 2019, July 30, 2019, and August 6, 2019, New Student and Parent Programs
- Cohort 10 Selection Day #1, July 26, 2019, Main office, Los Angeles Urban Teacher Residency Transformation Initiative (LAUTR-TI)
- Fall 2019 Student Researcher Application deadline: July, 31, 2019—see website for more details, NASA DIRECT -STEM Pre-Trainee Program
- Seminar dates (biweekly): August 27, 2019 to December 3, 2019 at 12:00 PM in Biological Sciences, Room 245, Biological Sciences
- Seminar dates (weekly): August 27, 2019 to December 3, 2019 at 12:00 PM, Salazar Hall, Room 244, Chemistry and Biochemistry
- Seminar dates (weekly): August 29, 2019 to December 5, 2019 at 3:15 PM in Biological Sciences, Room 335, Physics and Astronomy
- Fall 2019 Workshop dates: September 14, 2019 between 9:00 AM to 3:00 PM in King Hall Lecture Hall 1, October 5, 2019, October 19, 2019, November 2, 2019, and November 16, 2019—locations TBD, NASA DIRECT -STEM Pre-Trainee Program

Contact
Please contact us for more information about our services.

STEM Education Consortium
Biological Sciences, Room 154
Phone: (323) 343-5270
Email: STEMEC@calstatela.edu