UNIVERSITY OF CALIFORNIA

CalTeach

Science and Math Teacher Initiative

2015–16 Program Highlights Report

OVERVIEW

The University of California Science and Math Teacher Initiative (SMI), also known as CalTeach, helps to address California's shortage of well-qualified K–12 mathematics and science teachers by improving California's undergraduate pipeline to mathematics and science teaching credentials.

California, a hub of technology and innovation, is challenged by a shortage of the math and science teachers needed to prepare future generations for the workforce. Several factors contribute to this shortfall, which is nationwide in scope and is expected to worsen. These include significant decreases over the last few years in the number of people pursuing teaching credentials, in California and beyond; a projected wave of teacher retirements; and increasing K–12 enrollment in the near future. Recent studies have found that California faces a teacher shortage that is particularly acute in high-need fields, such as math and science education.[1]

The Science and Math Teacher Initiative (CalTeach) was created to address this challenge. Launched in 2005 by the University of California (UC), CalTeach recruits and prepares talented undergraduates to explore careers as math or science educators. Housed at all nine of UC's undergraduate campuses — Berkeley, Davis, Los Angeles, Irvine, Merced, Riverside, San Diego, Santa Barbara and Santa Cruz — programs invite students majoring in math or science to add a sequence of CalTeach courses and fieldwork experiences that introduce them to teaching while they concurrently complete undergraduate degrees. These courses, together with research opportunities and experience in K–12 classrooms, complement participants' discipline-specific studies and prepare them to seek a teaching credential along with their B.A.

CalTeach reaches students and schools throughout the state. Since its inception, more than 12,000 UC undergraduate students have explored careers in teaching math or science through CalTeach. Of these, nearly 2,000 CalTeach participants have gone on to receive math and science credentials and more than 1,700 CalTeach alumni have pursued teaching in California's public schools.

FEATURES CalTeach gives students the skills, tools and experience to pursue a teaching credential. Through rigorous courses, program participants learn and practice conceptual teaching skills in local K–12 classrooms, through field experiences and summer internships at local schools. Mentor teachers oversee participants in K–12 math and science classrooms. Most CalTeach programs also offer a minor or concentration in math and/or science education that focuses on teaching those subjects.

Three UC campuses — Berkeley, Irvine and Los Angeles — offer accelerated credential programs that provide CalTeach students with two options: earn a teaching credential along with the baccalaureate degree or combine the last year of undergraduate studies with the first year of credential studies.

In collaboration with UC faculty and graduate students, CalTeach programs also sponsor research that contributes to our understanding of effective practices for math and science education. Sample topics include CalTeach graduates' preparedness for teaching, the effect of field experiences on attitudes toward teaching and public education, and effective methods for tracking the CalTeach graduates who enter teaching careers.

"I am extremely thankful for all the professional career guidance and field experience UC Riverside's CalTeach program provided along my path to becoming a high school math teacher. Looking back, I cannot believe I was able to complete my education in four years. I am now a high school teacher and I would have not been able to achieve this without CalTeach."

MARIA DE LOURDES MOSQUEDA
ALUMNA, UC RIVERSIDE CALTEACH AND NOYCE SCHOLAR
TEACHER, RIVERCREST PREPARATORY ONLINE SCHOOL

[1] *Linda Darling-Hammond, Roberta Furger, Patrick M. Shields, and Leib Sutcher, Addressing California's Emerging Teacher Shortage: An Analysis of Sources and Solutions (Palo Alto, CA: Learning Policy Institute, 2016).*

"CalTeach participants are obviously learning great teaching skills. As a rule, I find them to be adept at building a rapport with students at all learning levels. They can learn some teaching techniques from me, but it's the questions they ask and the way they interact with students that sets them apart."

JESSICA ULLYOTT
MENTOR TEACHER, UC SAN DIEGO CALTEACH
TEACHER, GOMPERS PREP ACADEMY

"CalTeach is a significant public education resource for California. The state's future economic health depends on having a well-trained, STEM-educated workforce, and CalTeach is expanding not only the number but the quality of STEM teachers in California."

PROFESSOR JEFF REMMEL, UC SAN DIEGO
CHAIR, CALTEACH EXECUTIVE COMMITTEE

PROGRAM OFFERINGS

CalTeach provides a rich array of academic and career preparation opportunities for students interested in pursuing a math or science teaching credential. Its components are grounded in current research on the best practices in teacher preparation. Although campus programs have distinct approaches to teacher preparation, common features across CalTeach programs include:

- Recruiting and advising
- Relevant STEM and education curriculum
- Field experiences
- Research opportunities
- Exposure to professional environments
- Faculty collaboration across disciplines
- Mentorship by current K–12 teachers
- Data collection and analysis
- Community college partnerships
- Financial aid for students and stipends for mentor teachers

YEAR IN REVIEW In 2015–16, CalTeach continued to expand its recruitment and preparation of UC undergraduates for careers as math or science teachers. Despite statewide decreases in the number of people entering the teaching profession, CalTeach participation continues to flourish. The following sections highlight impact, diversity and preparation outcomes, which provide an overview of the program's recent achievements.

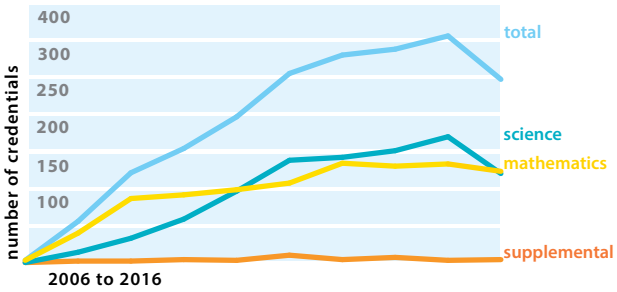
IMPACT

CalTeach continues to grow

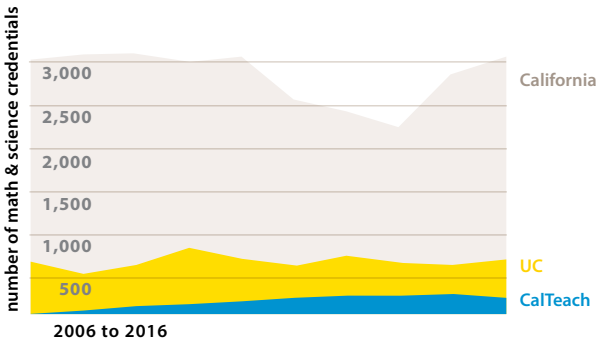
Since 2006–07, over 12,000 UC undergraduate students have participated in a CalTeach program on one of nine UC campuses. In 2015–16, CalTeach total student participation was 1,882, the highest annual enrollment in the program's history.

CalTeach graduates are earning math and science teaching credentials

In 2015–16, 249 math, science and supplemental credentials were awarded to alumni of the CalTeach program.[2] This is associated with the enrollment decrease from previous years and is expected to increase, as shown in the chart above.

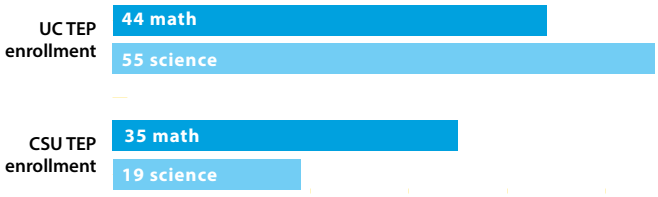


A significant proportion of UC baccalaureates who go on to earn a math or science credential have participated in CalTeach. In 2015–16, CalTeach alumni earned 42 percent of all math and science credentials awarded to UC baccalaureates.[3]



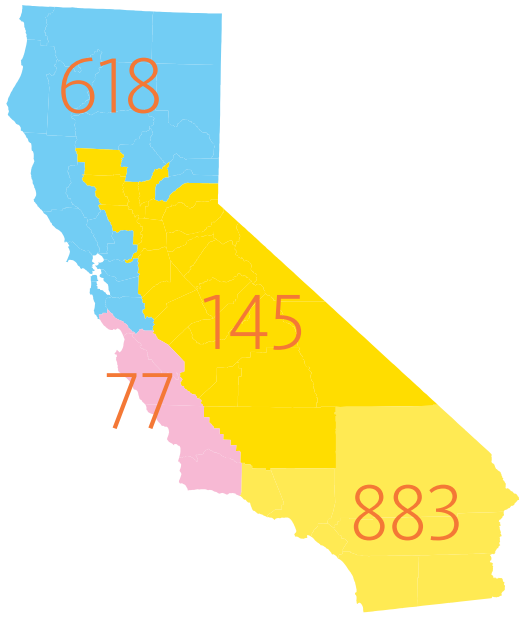
CalTeach graduates pursuing math or science credentials are enrolling in teacher education programs across the state, and many are enrolling in UC's Teacher Education Programs (TEPs)

In 2015–16, 153 CalTeach graduates pursued a math or science credential at a TEP at one of the state's public institutions of higher education. Of those, 99 (65 percent) enrolled in a UC TEP.[4]



CalTeach graduates pursue careers in public education

Since the program's inception, 1,763 CalTeach graduates have gone on to work in public schools throughout California, many in high-need communities.[5]

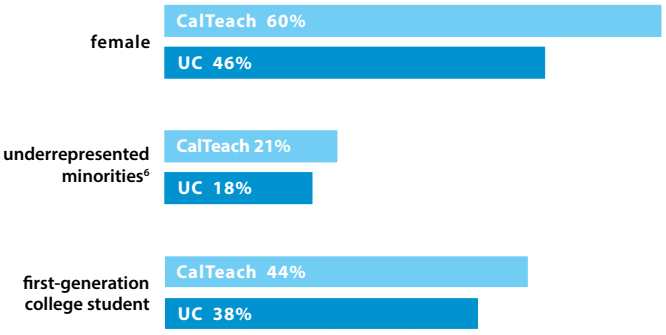


For more detailed information about CalTeach, visit **http://calteach.universityofcalifornia.edu**.

DIVERSITY

CalTeach graduates in STEM majors are highly diverse

In comparison to all UC STEM majors, CalTeach graduates are more diverse across an array of demographic indicators, including gender, ethnicity and families' college background.



In keeping with the program's mission to prepare educators who themselves reflect the growing diversity of California students, more than two-thirds of 2015–16 CalTeach STEM graduates were from underrepresented-minority[6] or Asian backgrounds.

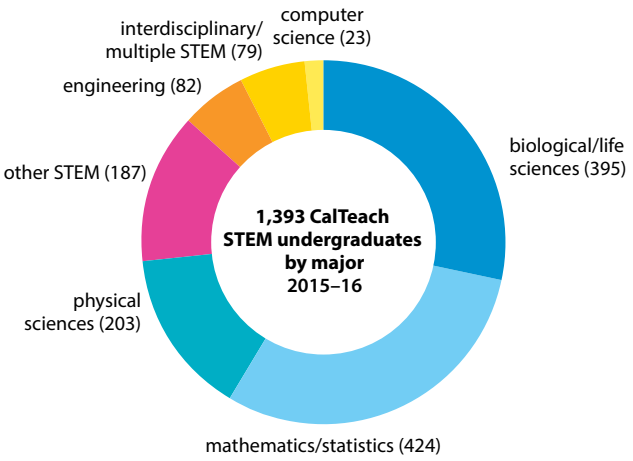
CalTeach participants are working in high-need schools

In 2015–16, CalTeach students participated in field placements in almost 200 K–12 schools ranging widely in economic and educational characteristics, where they gained real-world classroom experience. Nearly 45 percent of the students were placed in low-performing and high-need schools, based on the state's Academic Performance Index (API 1–5).[7]

PREPARATION

CalTeach attracts STEM majors systemwide

Across all UC campuses, the majority of CalTeach participants are majoring in STEM fields. In 2015–16, nearly 74 percent of all participants were STEM majors, with most majoring in the biological/life sciences or mathematics/statistics fields.



[2] *California Commission on Teacher Credentialing, Professional Services Division, 2016.*
[3] *Ibid.*
[4] *University of California Teacher Education Programs and California State University, Chancellor's Office, 2016.*
[5] *California State Teachers' Retirement System (CalSTRS), 2016; missing county affiliation for 40 CalTeach alumni.*
[6] *Includes African American, Chicano(a)/Latino(a), American Indian and Alaska Native.*
[7] *From 2013–14 statistics. An updated index has not yet been adopted by the state of California.*

FUNDING In addition to its state funding allocation, CalTeach programs on every campus are supported by government, foundation, private industry and other extramural sources. All CalTeach programs receive support from the National Science Foundation (NSF), through the Noyce Scholars program, and in some cases through NSF S-STEM grants. This funding provides scholarships, fellowships, stipends and programmatic support for the recruitment and preparation of STEM majors and professionals to become K–12 teachers.

CalTeach also receives funds from private corporations including Amgen, Agilent Technologies, Bechtel, Hitachi, JP Morgan Chase and Verizon, and through partnerships with 100Kin10, the Hearst Foundations, the Howard Hughes Medical Institute, the Knowles Science Teaching Foundation, Math for America, the National Math Education Advancement Foundation, National Math and Science Initiative, The Allergan Foundation and the UTeach Institute. The program is also supported by private donations and grants from community and family foundations.

Finally, every UC campus that is home to the CalTeach program provides significant monetary resources from its own academic departments, as well as in-kind contributions in the form of dedicated faculty and administrator time, classroom space, student scholarships and other kinds of support.

CalTeach programs are housed at each of UC's nine undergraduate campuses:

Berkeley	**calteach.berkeley.edu**
Davis	**mast.ucdavis.edu**
Irvine	**calteach.uci.edu**
Los Angeles	**cateach.ucla.edu**
Merced	**calteach.ucmerced.edu**
Riverside	**smi.ucr.edu**
San Diego	**physicalsciences.ucsd.edu/programs/cal-teach**
Santa Barbara	**education.ucsb.edu/calteach**
Santa Cruz	**calteach.ucsc.edu**
UC Systemwide	**calteach.universityofcalifornia.edu**

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Data sources for this report include the following:

- California Commission on Teacher Credentialing (CTC)
- California Department of Education (CDE)
- California State Teachers' Retirement System (CalSTRS)
- California State University (CSU)
- University of California