

A photograph of two women, one with glasses and one with braids, looking intently at a small insect on a hand. The background is a light blue gradient.

UNIVERSITY
OF
CALIFORNIA

Science and Math Teacher Initiative (CalTeach)

2014-15 Program Highlights Report

OVERVIEW

The University of California Science and Math Teacher Initiative (SMI/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, the hub of tremendous technological innovation, is challenged like much of the nation by a shortage of the math and science teachers needed to prepare future generations for the workforce. Several factors contribute to this shortfall and are expected to worsen it, including 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.

FEATURES

CalTeach reaches students and schools throughout the state. Since its inception, 10,652 UC undergraduate students have explored careers in teaching math or science through CalTeach. Of these, 1,682 math and science credentials were awarded to CalTeach students and 1,623 CalTeach alumni have pursued teaching in California's public schools.

CalTeach gives students the skills, experience and tools 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 through 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.

“CalTeach took my love of science and showed me that I had a gift for sharing it with my students. As a result of the CalTeach program, and especially the mentorship of the program's director, I graduated from UC Santa Barbara with honors, earning a degree in biological sciences, with a minor in math and science education, as well as a teaching credential and master's degree in teaching.”

NATALIE BEHR, MS IN EDUCATION
ALUMNA, UCSB CALTEACH
TEACHER, ORLAND HIGH SCHOOL

¹Linda Darling-Hammond, Roberta Furger, Patrick M. Shields, and Leib Sutcher. (2016). *Addressing California's emerging teacher shortage: An analysis of sources and solutions*. Palo Alto, CA: Learning Policy Institute.

“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, UCSD 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, UCSD
CHAIR, CALTEACH EXECUTIVE COMMITTEE

PROGRAM OFFERINGS

CalTeach provides a rich array of academic and career preparation opportunities for students interested in teaching math or science. Its components are grounded in current research on the best practices in undergraduate teacher preparation. While each campus math and science department has its own unique approach to CalTeach, common features across the program include:

- Recruiting and advising
- Relevant 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 and stipends for students and mentor teachers



YEAR IN REVIEW In 2014-15, CalTeach continued 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

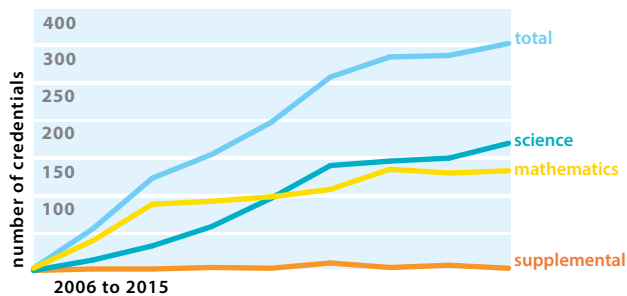
CalTeach continues to grow

Since 2006-07, over 10,000 UC undergraduate students have participated in a CalTeach program on one of nine UC campuses. In 2014-15, CalTeach total student participation was 1,678, a slight decrease from the previous year.

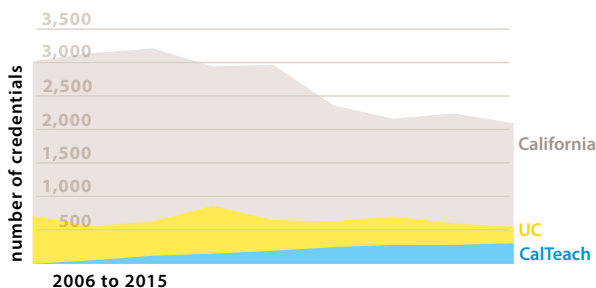
2014-15	1,678 participants
2013-14	1,742 participants
2012-13	1,738 participants
2011-12	1,643 participants

CalTeach graduates are earning math and science teaching credentials

Since 2006-07, the number of credentials awarded to CalTeach graduates has steadily increased, despite a diminishing number of teacher credentials being awarded across the state. In 2014-15, 308 math, science and supplemental credentials were awarded to alumni of the CalTeach program.²

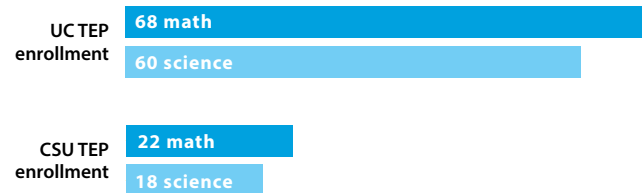


An increasing proportion of UC baccalaureates who go on to earn a math or science credential have participated in CalTeach. In 2014-15, CalTeach alumni earned nearly 56 percent (308) of all math and science credentials awarded to UC baccalaureates.³ This is a nine percent increase in the proportion of credentials awarded to CalTeach participants in the previous year.



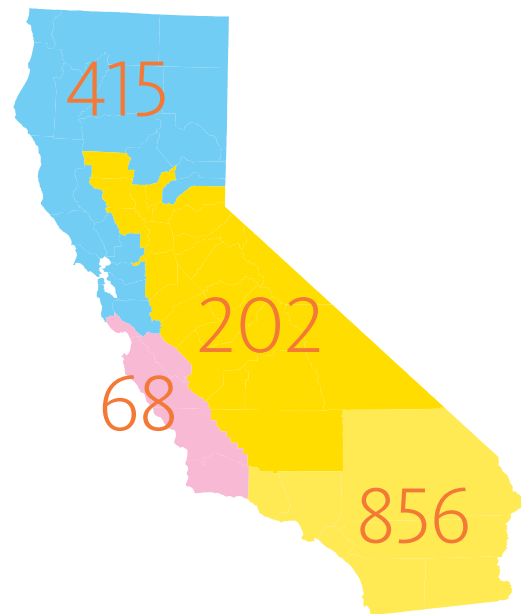
CalTeach graduates pursuing math or science credentials are enrolling in teacher education programs across the state, and most are enrolling in UC's Teacher Education Programs (TEPs)

In 2014-15, 207 CalTeach graduates pursued a math or science credential at a TEP at one of the state's public institutions of higher education. Of those, 128 (69 percent) enrolled in a UC TEP.⁴



CalTeach graduates pursue careers in public education

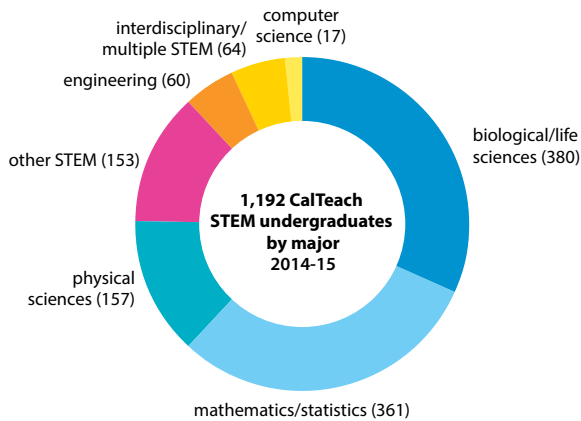
Since the program's inception, 1,623 CalTeach graduates have gone on to work in public schools throughout California, many in high-need communities.⁵



PREPARATION

CalTeach attracts STEM majors systemwide

Across all UC campuses, the majority of CalTeach participants are majoring in STEM fields. In 2014-15, nearly 68 percent of all participants were STEM majors, with most majoring in the biological/life sciences or mathematics/statistics fields.



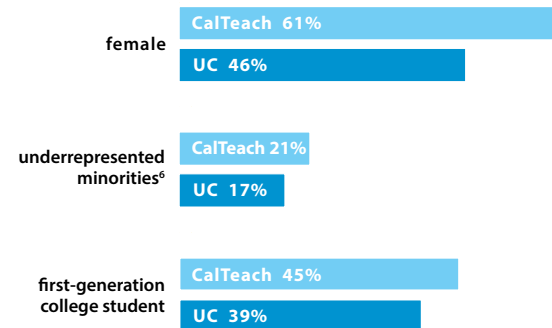
CalTeach participants are working in high-need schools

In 2014-15, CalTeach students participated in field placements in 196 K-12 schools where they gained real-world classroom experience. Although these field placements occurred throughout the state, in schools with a variety of economic and educational characteristics, nearly 32 percent were low-performing and high-need schools, based on the state's Academic Performance Index (API 1-5).

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.



Consistent with the program's mission to prepare prospective educators that are representative themselves of the growing diversity of California's K-12 students, more than two-thirds of 2014-15 CalTeach STEM graduates were students of color, including underrepresented minorities and students from Asian backgrounds.

²2012-13 was the ninth consecutive year in which the total number of initial teaching credentials issued in the state dropped. California saw a 7 percent decrease in the number of newly issued credentials in 2012-13. This represents a nearly 30 percent decline in the past five years (Teacher Supply in California: A Report to the Legislature, California Commission on Teacher Credentialing, 2013).

³Ibid.

⁴University of California Teacher Education Programs and California State University, Chancellor's Office, 2015.

⁵California State Teachers' Retirement System (CalSTRS), 2015; missing county affiliation for 82 CalTeach alumni.

⁶Includes African American, Chicano(a)/Latino(a), American Indian and Alaska Native.



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 Howard Hughes Medical Institute, the Knowles Science Teaching Foundation, Math for America, the National Math Education Advancement Foundation, National Math and Science Initiative and the UTeach Institute. The program is also supported by private donations and grants from community and family foundations.

Finally, each UC campus on which a CalTeach program resides provides significant monetary resources from their home 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	education.uci.edu/calteach
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
- University of California