A faculty-led initiative connects today's college women with digital age careers

TPI: Bridging the Gap

America faces a looming workforce crisis. Without a course correction, the U.S. Bureau of Labor Statistics estimates that by 2026, the U.S. will have over 900,000 computing job openings but only enough college grads with the computing knowledge and skills to fill 50 percent of those jobs.

As our digital economy grows, business leaders view computing as a fundamental skill for careers in every sector: not just technology and industry but also health, transportation, finance, government and education.

The Technology Pathways Initiative (TPI) was launched in 2015 to bring about systemic change, from campus to career. Even though they now make up more than half of all college graduates, women are drastically underrepresented among computing graduates and professionals. TPI empowers universities to create new pathways to computing degrees and careers for women and underrepresented students. As of 2020, TPI also supports California Community Colleges enhancing degree programs with computing coursework.

TPI Universities

TPI is represented by SFSU, SJSU, UC Berkeley, UC Davis, UC Riverside, and Cal Poly at San Luis Obispo; leading California universities and major suppliers of local talent to its workforce. Participation is driven by faculty interest in developing new and self-sustaining interdisciplinary degree programs and making them available to a broader cross-section of students.

- New degree programs integrate computing with biology, mathematics, statistics, cognitive science and other fields of study that already have high female student enrollment. These fields continue to evolve and expand in part through innovative applications of technology.
- Each new degree program begins with a cohort of students who benefit from new curricula and teaching methods designed to enhance their computing education.
- Cross-campus collaboration and sharing of new curricula and teaching methods will help ensure a scalable and replicable model that can be used by other universities, all of which serve large and diverse student populations.

San Francisco State University

Photo credit: Paul Asper, SFSU

At SFSU, Biology majors add computing skills to expand their career opportunities in the Digital Age.

"We are excited to have highly motivated students enrolled in a new interdisciplinary degree program at SFSU. Through the Technology Pathways Initiative, we gained resources and support for faculty collaboration across our Biology and CS departments to develop new interdisciplinary curricula and education pathways. Our first cohort of women and men Biology students are now adding computing knowledge and skills to their educational experience, keenly aware of the benefits this will have in their careers."

—Pleuni Pennings, Assistant Professor/Biology, SFSU; Ilmi Yoon, Professor/CS, SFSU

San José State University

At SJSU, Biology majors can study computing to enhance their career prospects in bioinformatics.

Photo Credit: David Schmitz, SJSU

"Our region's high-tech, biotech, and other industries are looking to the California State University system for more graduates prepared to work in interdisciplinary fields such as bioinformatics and data science. In collaboration with the Technology Pathways Initiative, we are developing a new interdisciplinary Minor in Bioinformatics. This program will allow our students of life sciences, disciplines with high percentages of female students, to acquire the bioinformatics and computational skills their future employers will be looking for."

—Sami Khuri, Professor and Chair, Department of Computer Science, San José State University

University of California, Berkeley

At UC Berkeley, interdisciplinary data science degree programs prepare more students for tomorrow's technology careers.

Photo Credit: Steve McConnell, UC Berkeley

"As a participating university in the Technology Pathways Initiative, we are developing new interdisciplinary degree programs that integrate computing knowledge and skills with fields of study that have high percentages of female students. Our students are excited to have curricular options that better match their interests and prepare them well for technical careers."

—Dan Klein, Electrical Engineering and Computer Sciences Vice Chair, University of California, Berkeley

University of California, Davis

Photo Credit: UC Davis

At UC Davis, interdisciplinary majors in Quantitative Biology and Cognitive Science are making computing education more accessible to diverse students.

"When we make computer technology part of a degree program that includes genomics, or brain science, students see how the technology contributes right from the start, and it becomes an integral part of the learning experience. These programs will equip graduates with a broad range of skills appropriate for today's job markets."

—Nina Amenta, Tim Bucher Chair and Professor of Computer Science, UC Davis

University of California, Riverside

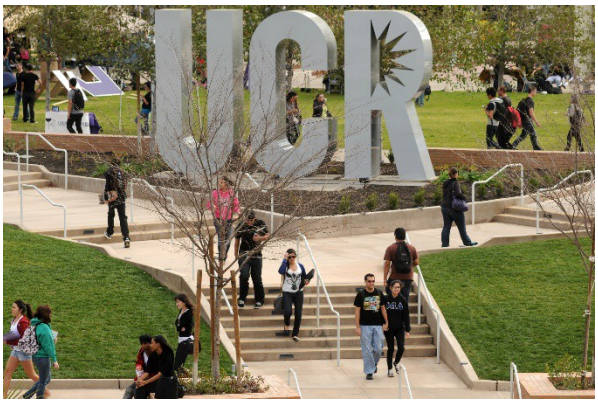

Photo Credit: UC Riverside

Interdisciplinary computing degree programs create education pathways to careers in Applied Data Sciences.

“Through cross-campus collaboration, we will create new interdisciplinary degree programs that integrate curricula in computer science, statistics, and domain areas (e.g. astronomy, biology, and economics) in which data science can be applied.”

—Kathryn Uhrich, Dean, College of Natural & Agricultural Sciences.

California Polytechnic State University

At Cal Poly, a new Bioinformatics Cross-Disciplinary Minor adds computing skills essential for 21st century careers.

Photo courtesy of Cal Poly

"At Cal Poly we engage our science and mathematics students in classes and research that ask them to think and work across disciplines. We share CAWIT's goal of increasing the number of women in science and technology careers. This collaboration will create new opportunities to enhance the future success of our graduates."

—Dean Wendt, Dean, College of Science and Mathematics

TPI Industry Partners

Academic-industry partnerships are the cornerstone of the Technology Pathways Initiative. Leading high technology companies are sponsoring participating universities in their development and implementation of new interdisciplinary degree programs. They are also supporting community colleges enhancing their degree programs with computing coursework. Industry partners include Genentech Foundation, Intel Corporation, KLA Foundation, Salesforce and Xilinx. Along with a major funding commitment, these partners provide mentoring, internships, workshops, onsite visits and other campus-to-career opportunities for college students in TPI degree programs.

About CAWIT

Founded in 2014, the Center for Advancing Women in Technology (CAWIT) is a 501(c)(3) nonprofit organization based in Silicon Valley. Through its flagship Technology Pathways Initiative, CAWIT provides a collaboration platform for university, industry and government leaders to create new pathways for the advancement of women in technology, from campus to career. Learn more at www.cawit.org.