UNDERGRADUATE RESEARCH

OVERVIEW

Cal Poly’s College of Agriculture, Food and Environmental Sciences (CAFES) provides numerous opportunities for undergraduate students to participate in applied research, working directly with faculty to apply knowledge learned in the classroom to real-world settings. Throughout the duration of their research projects, students develop solutions to real-world problems, often sponsored by industry. Participating in a research project exemplifies Learn by Doing and can be transformational to a student’s career path.

Faculty throughout the college are always looking for students to assist with their scholarly activities. Undergraduate students have one-on-one interactions with faculty members and graduate students performing cutting-edge research, with some undergraduates publishing their findings in scientific journals or presenting at industry conferences. These projects may include formulating and experimenting with different nutritional diets for certain species, creating more sustainable ways to farm and harvest crops or examining the environmental effects of nitrogen on agricultural production. Students gain various skills from their experience, including critical thinking, reading and communication skills, analytical ability, hypothesis development and experimental design knowledge. Participating in research allows students to better understand their desired field of interest and collaborate with industry professionals. These connections open the door to future employment opportunities while building a student’s educational and employment portfolio.

Summer Undergraduate Research Program (SURP)

The Summer Undergraduate Research Program (SURP), is one of the research opportunities available to all students. Each summer the college sponsors dozens of students from each of the college’s nine departments to participate in the 10-week research program. Students select a research topic within a desired field of study, collaborate with faculty research leads and create a poster to showcase their findings during a college-wide symposium that is often attended by industry representatives. This experience can be incredibly impactful on a student’s career trajectory and success, helping them land that first job or admission to graduate school.

45 students were sponsored by CAFES in 2022 to participate in SURP to work on applied research important to California, the U.S. and beyond. The goal is grow the program to provide the opportunity for up to 100 students to participate each year.

RESEARCH OPPORTUNITY: Senior Project

All undergraduate students must complete a senior project before graduating from Cal Poly. A senior project is a capstone project that allows students to utilize all the knowledge they have gained during their time at Cal Poly. Every major has different guidelines for their senior project; however, some students may decide to work in research or the industry to fulfill this requirement.
Cal Poly empowers students by offering them research opportunities as early as freshman year. I get to work for graduate students and interface with people who are experts in the field. Working in research led me to getting a job at Driscoll’s working on their strawberry breeding program.”

AIDAN INOUE, third-year plant sciences major

Student Research Project
As the world population continues to grow, finding ways to feed future generations that reduces environmental impact is critical. At the BioResource and Agricultural Engineering Department lab, Associate Professor Gregory Schwartz and fifth-year bioresource and agricultural engineering major Raven Middleton are researching ways to do aquaculture that keep sustainability in mind. Aquaculture is the process of raising fish and plants in water in a synergistic system that attempts to lessen the impact of ocean farming. In the summer of 2022, Middleton spent more than two months building and fine-tuning the saltwater multi-trophic aquaculture system as part of the college’s Summer Undergraduate Research Program. Right now, 70 California yellowtail fish live in a 700-gallon tank, where Schwartz and Middleton are interested in understanding how aquaculture systems function so that they can be replicated anywhere in the world. “We are measuring for performance,” Middleton said. “If this can be done inland, it provides new opportunities for food production.”