

Co-op and Internship Programs

The University's co-op education and internship programs help students acquire practical experience in their chosen fields, broadening their understanding of bioengineering practice and increasing opportunities for employment and enhanced starting salaries. The University's Silicon Valley location is home to many of the most innovative biotechnology and medical device companies in the world, affording ample opportunity for internships and the real-world industrial and technical experience required to succeed in this field.

Study Abroad

Studying in a foreign country provides an unmatched experience, and while it may present a challenge for undergraduate bioengineering students, those with strong academic standing can spend one or more terms abroad and still normally complete their coursework and graduate within four years. Early, careful planning can make it happen!

After Graduation

SCU's mix of practical and theoretical experiences and our commitment to academic and ethical excellence cultivate outstanding bioengineers who are highly sought-after candidates for both higher education and employment. Our undergraduate students are well prepared for advanced study at any of the top graduate schools across the country. Employers in Silicon Valley and throughout the world provide a wealth of opportunities for SCU bioengineers in a variety of career paths.

Faculty

Emre Araci, assistant professor, Ph.D., University of Arizona. *Expertise:* microfluidic and optofluidic technologies for biology and medicine, implantable and miniaturized devices for telemedicine, single molecule protein counting

Prashanth Asuri, assistant professor, Ph.D., Rensselaer Polytechnic Institute. *Expertise:* biomaterials engineering, cell culture platforms, bioinnovation and design

Unyoung (Ashley) Kim, associate professor, Ph.D., University of California, Santa Barbara. *Expertise:* microfluidic systems for diagnostics and experimental science

Biao (Bill) Lu, assistant professor, Ph.D., University of Manitoba, Canada. *Expertise:* protein engineering, protein therapeutics, drug delivery, molecular sensor and imaging technology

Yuling Yan, founding chair and professor, Ph.D., Keio University, Japan. *Expertise:* bioimaging, image and signal analysis for biomedical and clinical applications

Zhiwen (Jonathan) Zhang, associate professor, Ph.D., University of Texas at Austin. *Expertise:* protein engineering, biodevice/bioinstrument engineering, drug discovery, cell-based assay development, synthetic biology, chemical biology

For further information, please contact

Department of Bioengineering
School of Engineering
Santa Clara University
500 El Camino Real
Santa Clara, CA 95053
408-554-4874

www.scu.edu/engineering/bioengineering

SANTA CLARA UNIVERSITY

Bioengineering



SCU OMC-7914F 8/16 1.000



The Jesuit University in Silicon Valley

Bioengineering



Bioengineering is one of the fastest growing segments of engineering today and holds the promise of improving the lives of all people in very direct and diverse ways.

Bioengineers apply electrical, chemical, mechanical, and other engineering principles to understand, modify, or control biological systems. Examples of bioengineering advances include artificial knee and hip joints, cardiac pacemakers, kidney dialysis machines, arthroscopic surgical tools, MRI and CT scanning systems, inhaleable insulin systems, automated defibrillators, genomics, proteomics, and portable diagnostic devices for use in developing countries.

Bioengineers enjoy exciting careers in the medical-device and biotechnology industries, or in biomedical research. Many continue their education in medical school.

Our Program

The bioengineering program at SCU offers a comprehensive education for bachelor's and master's students. A solid theoretical foundation in biology, chemistry, physics, mathematics, and engineering, combined with substantial hands-on experience in state-of-the-art laboratories and on real-world projects prepares our students to solve problems at the interface of engineering and the life sciences.

Our outstanding faculty, emphasis on values-based education, and focus on collaborative learning create an excellent environment for academic and personal growth that prepares our students for fulfilling careers or advanced study.

Many students opt to participate in our combined B.S./M.S. program to earn both a bachelor's and a master's degree in as little as five years.

Program Educational Objectives

In addition to providing the practical knowledge necessary for success, the bioengineering program has identified five specific outcomes for our graduates; namely:

- the ability to apply advanced mathematics, science, and engineering to formulate and solve problems at the interface of engineering and biology;
- the ability to make measurements on and interpret data from living systems, addressing the problems associated with the interaction between living and non-living materials and systems;
- the ability to think creatively, communicate effectively, learn independently, and to cooperate and work on projects within a team;
- an understanding of professional and ethical responsibility, and contemporary issues as they apply to bioengineering; and
- an understanding of the impact of bioengineering solutions in a global and social context.

Undergraduate Program

- **Major in bioengineering** — designed to prepare students for careers in the medical device and biotechnology industries, graduate study in bioengineering, or entry into medical school
- **Minor in bioengineering or biomedical engineering** — designed for science majors, students completing prerequisites for medical school, or engineering majors

At Santa Clara University, we educate the leaders and innovators of the future. In keeping with our Jesuit philosophy, we cultivate exceptional bioengineers with integrity. Coursework is project-oriented and laboratory intensive, providing opportunities for practical, hands-on experimentation based on theoretical concepts. Rigorous practical education is partnered with core curricula designed to encourage students to think critically and act responsibly. In addition to being technically trained, Santa Clara University bioengineers develop excellent communication and management skills, essential to success in any career path.

Senior Design and Research

A unique feature of Santa Clara's undergraduate bioengineering program is the comprehensive and intensive capstone project known as the senior design project. In-depth application of the skills learned during the preceding three years, from initial concept development through analysis, design, and report writing, replicates the process demanded of bioengineers in practice. A highlight of the academic year, the Senior Design Conference affords students an opportunity to present their projects before a panel of alumni and other invited industry judges.

Student research is a priority at Santa Clara University, and our students are actively involved in exciting, meaningful research from their earliest undergraduate days. Students in the bioengineering program can participate in ground-breaking research as early as their freshman year.

