Research and Co-op/Internship Programs

Students in general engineering are highly encouraged to gain practical engineering experience with co-op, internship, or research opportunities. The University's co-op education and internship programs help students acquire practical experience in their chosen fields, broadening their understanding of general engineering practice and increasing opportunities for employment and enhanced starting salaries. The University's Silicon Valley location is home to many of the most innovative tech sector companies in the world, affording ample opportunity for internships and the real-world industrial and technical experience required to succeed in this field. Undergraduate student research is also a priority at SCU; students have the opportunity to become actively involved in exciting, meaningful research as early as their first year.

Multicultural Awareness/Study Abroad

Multicultural awareness is necessary for working effectively in an increasingly interdependent and global world. In the General Engineering program, we welcome these opportunities which serve to deepen a student's consciousness and motivation to bring technical knowledge to bear on global problems. SCU has a broad array of programs available to students through our Global Engagement Office. These opportunities can take place either overseas or in an underserved domestic community, and include Study Abroad, Global Fellows Internships, and Immersion experiences.

After Graduation

SCU's mix of practical and theoretical experiences and our commitment to academic and ethical excellence cultivate outstanding general engineers 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 general engineers in a variety of career paths.
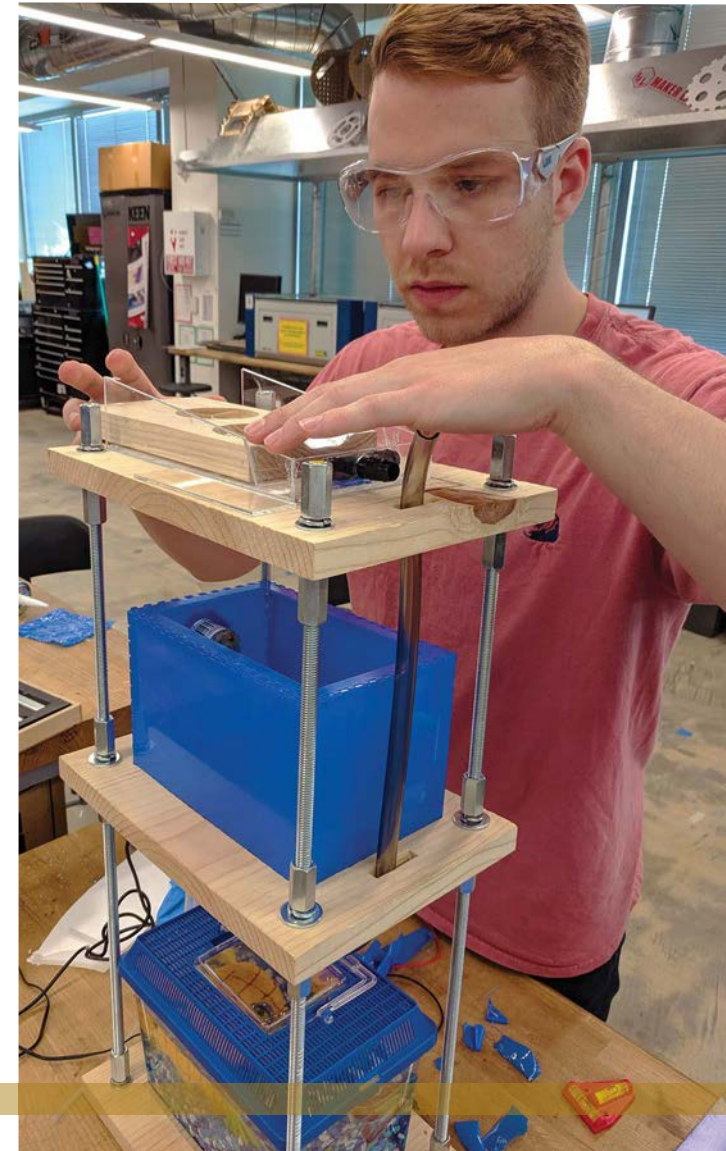
Faculty

Jessica Kuczenski, Director, Ph.D., University of Notre Dame. *Expertise:* engineering education and research; engineering design; thermodynamics, sustainability; entrepreneurship

Matthew Gaudet, Ph.D., Graduate Theological Union, Berkeley. *Expertise:* engineering ethics; organizational ethics; ethics of disability; military ethics

Robert Schaffer, Ph.D., Stanford University; Founder, Elevate Tutoring (501(c)3). *Expertise:* engineering education, electrical engineering (signal processing), entrepreneurship

Front Cover: An engineering student (Junior, Peter Naughton) puts the finishing touches on his desktop aquaponics project in the School of Engineering's Maker Lab. This project is part of his final project in ENGR 2: Introduction to Engineering Design and Prototyping.

For further information, please contact

General Engineering
Santa Clara University
500 El Camino Real
Santa Clara, CA 95053
408-554-5313

Or Visit:

www.scu.edu/engineering/academic-programs/general-engineering

FLGD 14337   ENGR   05/19   750

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SANTA CLARA UNIVERSITY

GENERAL ENGINEERING

Santa Clara University

The Jesuit University in Silicon Valley

General Engineering

The degree program for General Engineering is designed for those interested in a career involving engineering knowledge but with more flexibility than a specific engineering discipline.

Our program combines interdisciplinary explorations and practical engineering design training vital to problem solving and technical innovation in a changing global society. In addition to being technically trained, Santa Clara University general engineers develop excellent communication, teamwork, and management skills, essential to success in any career path.

You might like this program if:

- You have an interest in various engineering disciplines and would like to diversify your skill set as much as possible

- You are passionate about product design and innovation

- You want to concentrate your studies on a non-typical technical discipline such as humanitarian engineering, entrepreneurship and engineering, etc.

- You wish to further your technical knowledge as it relates to engineering's impact on society and your specific learning pursuits

Our Program

The Bachelor of Science Engineering degree program provides a technical degree with concentrations designed to meet the needs of the individual. Students gain *engineering core knowledge*, then *customize their degree* to concentrate on an area of interest, culminating their learning experience with a multidisciplinary senior capstone design project. Integrating the project with society's need is a key focus of this program.

Our program offers a wide variety of courses introducing students to engineering and engineering design while providing the ethical framework to understand the current and future needs of society. Active, problem-based academic activities relevant to the engineering profession and the local and global community enhance student learning.

Program Offerings

- **Major in General Engineering** – designed to prepare students for interdisciplinary engineering careers or graduate study in fields such as law, medicine, business, or education

- **Minor in General Engineering** – designed for students majoring in non-engineering fields to gain an introduction to engineering design and analysis

- **Minor in Technical Innovation, Design Thinking, and the Entrepreneurial Mindset** – designed for students who wish to complement their major with courses and activities relating to technical innovation, business, law, and the world of design that are critical to success in start-ups, large companies, social enterprises, and even civic organizations

Program Educational Objectives

In addition to providing the practical knowledge necessary for success, the general engineering program has identified four specific outcomes for our graduates; namely, within five years of graduation our graduates will:

- Apply the fundamental concepts of science and engineering using innovative design thinking toward the sustainable solution of practical problems, safely addressing the needs of a global marketplace

- Demonstrate use of appropriate methods to effectively communicate with diverse audiences guided by an understanding of and sensitivity to the social, political, ethical and legal relationships in the work environment

- Function effectively in the team work environment with integrity and professionalism

- Engage in lifelong learning with demonstrated commitment to personal and professional growth along with societal improvement through on-the-job experiences or advanced studies

Project-Based Curriculum and Senior Design Capstone

Critical for multidisciplinary practice in design and innovation, general engineers complete open-ended design projects every year. For example, first-year students create a robot using an Arduino microcontroller as part of an end-of-quarter Robot Show. Additional projects are completed in courses such as Community-Based Engineering Design, where students are partnered with real community liaisons and their completed designs can positively impact a local community in need.

The general engineering program culminates in a senior design capstone project. 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. The capstone experience replicates the process demanded of general engineers in practice through application and integration of design skills learned throughout their SCU engineering curriculum. Our engineering students are tasked to create a new, functional prototype from initial concept development through analysis, prototyping, testing and communication (formal report writing). Additionally, general engineers pair their capstone project with an entrepreneurship seminar to explore the impact of their project on society, where activities are framed from the point of view of a business model.