



### DEAN'S MESSAGE

"Ch-ch-ch-changes..." the late David Bowie's classic call to "turn and face the strange" could well have been our theme song in the School of Engineering during the past year. With a 50 percent bump in enrollment over the past few years testing the limits of our physical space, and with plans in the works, but not yet underway, to create a revolutionary STEM (science, technology, engineering, mathematics) complex here on campus, we have definitely faced, embraced, and struggled with strange, uncharted territory. And change is good!

A year ago we packed up and moved our engineering administrative offices and some of our research areas out of the venerable Bannan Engineering Center to a new 20,000-sq.-ft. space just off campus. It was painful to split our community, but by doing so, we freed up office space for new faculty, added a classroom, and expanded laboratories on campus. Now the Department of Bioengineering has six new labs, our Robotics Systems Laboratory, Maker Lab, and Frugal Innovation Hub have about doubled their square footage, and we have added the EdVenture Lab, a space to host and incubate student and faculty engineering projects.

None of this would have been possible without turning to "face the strange." A year ago we were desperate for space and uncertain about the changes to come. The Greek sage Heraclitus observed 2,500 years ago that "the only thing constant is change"; today we know we can flourish through change. We also know there is a lot more to come! "Ch-ch-ch-changes..."

Godfrey Mungal  
Dean  
School of Engineering

### The Wheels on the House Go Round and Round

Tiny House Hunters, Tiny House Nation, Tiny House Builders.... If you watch HGTV at all, you know that the Tiny House movement is BIG!

Promising affordable, sustainable, off-grid living, the trend toward downsizing is on the rise here in California, where land and building costs have skyrocketed. To advance the movement and give collegiate students an opportunity to learn about it in a very hands-on way, the Sacramento Municipal Utility District (SMUD) created the Tiny House Competition. Santa Clara University is one of ten teams competing in the inaugural contest patterned after the U.S. Department of Energy's Solar Decathlon.

Nearly thirty team members from a diverse range of majors—communications, engineering, environmental studies, finance, psychology, and more—have spent the past year researching construction materials and techniques and designing the 238-square-foot rEvolvE House, whose name reflects both its transportability and the revolution that is taking the world by storm.

Now it's time to build, and this summer a stalwart student crew is hard at work turning plans into reality. "We're using lightweight materials, energy-efficient appliances, LED lighting, and we save space by putting our water tanks and pumps under the raised bedroom. But our biggest innovation is something we can't talk about yet—we're waiting to unveil it at the competition," said mechanical engineering senior and project manager JJ Galvin.

Following the competition, rEvolvE House will be installed at Operation Freedom Paws, a local nonprofit organization empowering military veterans to restore their independence by teaming them up with a service dog. The tiny house will serve as temporary accommodation for trainers and as a space for clients and their four-legged partners to learn to work together.







Photo: Jonathan Boret '19

SCU's Tiny House takes shape as undergraduate teammates install the SIPs (Structural Insulated Panels).

But first, teams will drive their creations to Cosumnes River College in Sacramento where the minuscule manses will be judged in four categories: architecture, energy efficiency, communications, and home life. All are welcome to come on Saturday, October 15, 9 a.m. to 4 p.m., to tour the entries, attend workshops, visit exhibits, and more.

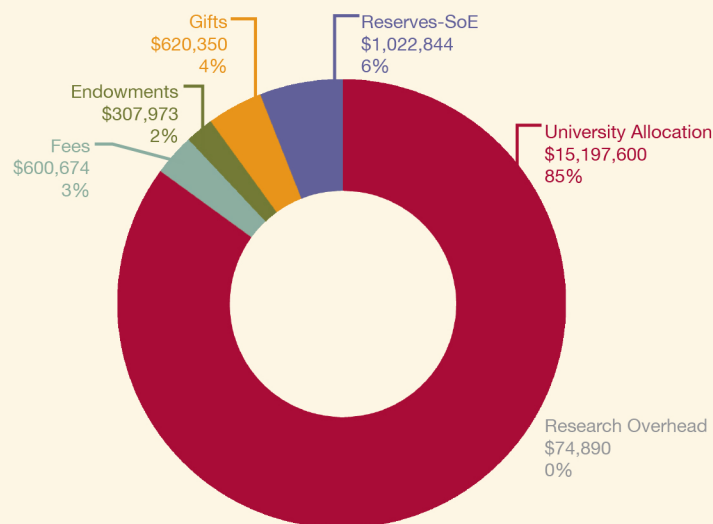
Keep up with the team's progress: [revolvehouse.com](http://revolvehouse.com)

# Some facts and figures from AY 2015-2016

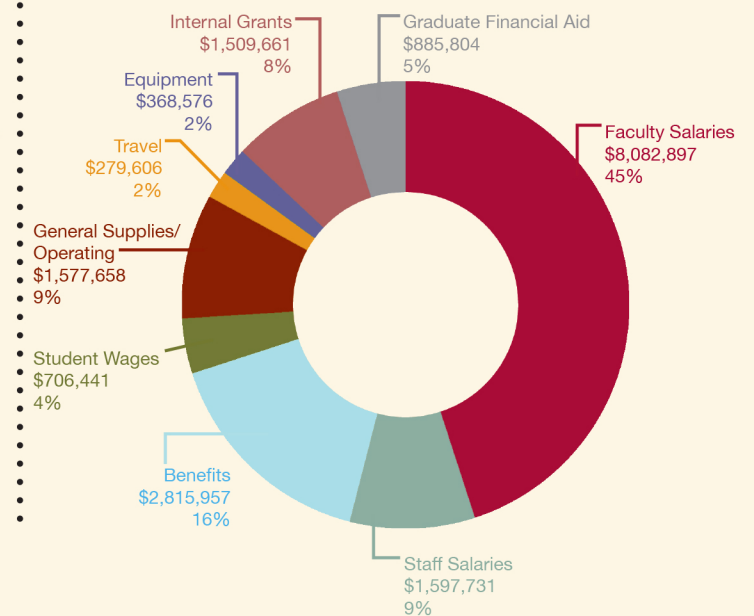
<p><b>2</b> Santa Clara University's School of Engineering has the second highest enrollment of 22 Catholic schools with engineering</p> <p><b>3</b> NASA satellites launched from the International Space Station were monitored and controlled by students from our Robotics Systems Laboratory in spring 2016</p> <p><b>11</b> Percent increase in undergraduate enrollment in Computer Science and Engineering over last year</p> <p><b>12</b> Our ranking in <i>USN &amp; WR</i> among US engineering schools where the highest degree awarded is a bachelor's or master's</p>	<p><b>27+</b> Countries visited by SCU engineering faculty and students for research, immersion, presentations, and more</p> <p><b>81</b> Teams (comprised of 235 students) presented capstone projects at the 2016 Senior Design Conference</p> <p><b>96.3</b> Percent undergraduate engineering retention rate*</p> <p><b>20K</b> Added square footage of expanded facilities for research, labs, and administrative space</p>	<p><b>Degrees Conferred</b></p> <p> Bachelor of Science: 250</p> <p> Engineer's Degree: 1</p> <p> Master of Science: 494</p> <p> Doctor of Philosophy: 4</p> <p style="text-align: right;">Total: 749</p>
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## Revenue and Expenses

**FY 2014-15 Revenue Sources – \$17,824,331**



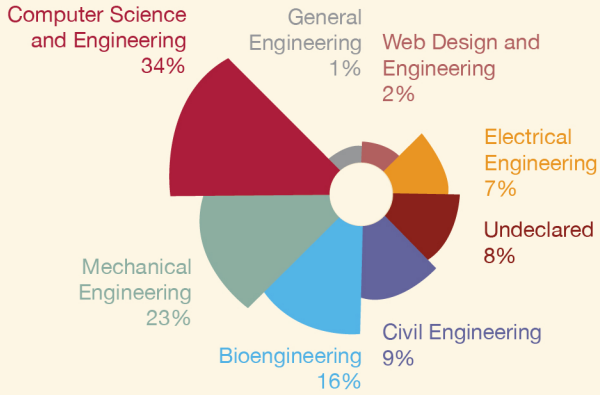
**FY 2014-15 Expense Categories – \$17,824,331**



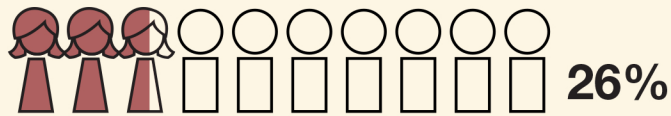
\* Per Fall Census 2015; \*\* Spring 2016 Data

# Undergraduate Programs

Enrollment – Total 1009\*\*



Female Enrollment\*

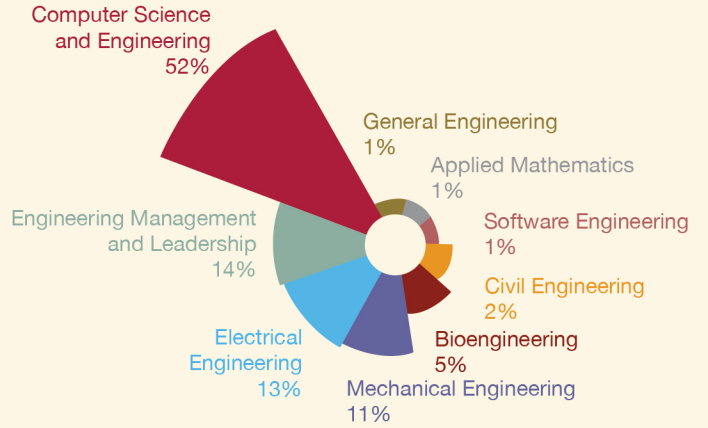


Percentage of Underrepresented Minorities\*\*

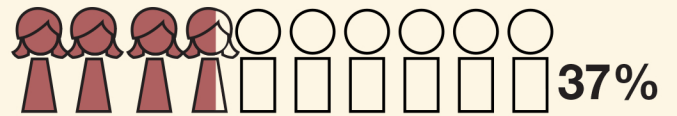


# Graduate Programs

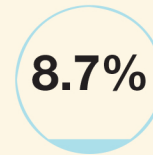
Enrollment – Total 895\*\*



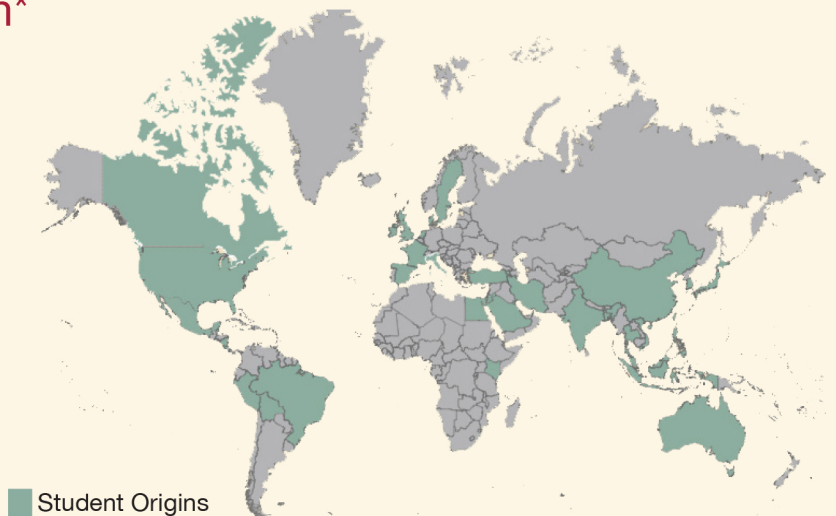
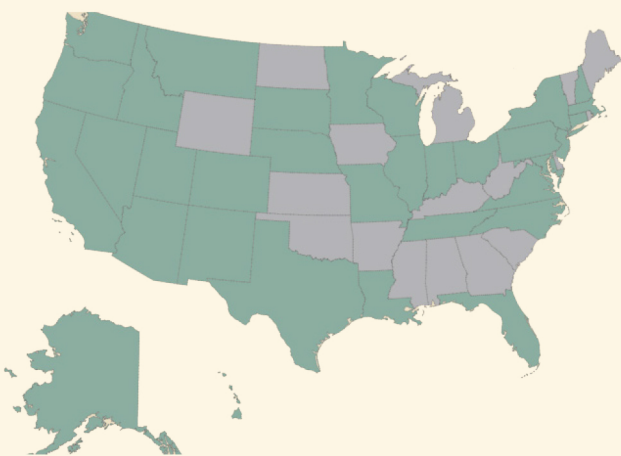
Female Enrollment\*



Percentage of Underrepresented Minorities\*\*



# States and Countries of Origin\*





Santa Clara University  
500 El Camino Real  
Santa Clara, CA 95053

Nonprofit  
Organization  
US Postal  
PAID  
Permit No. 22  
Santa Clara, CA

The Jesuit University in Silicon Valley



Photo: Joanne Lee

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## Doctor of Philosophy Degrees Conferred in 2015-16

### Electrical Engineering:

**Antonis Avgoustinos Orphanou**

Thesis: *Carbon Nanotube Ultra Capacitor Electrical Performance Using Molecular Dynamics Based Model*

Prior Degree: M.S., University of Arizona

Advisor: Cary Yang, Ph.D.

### Jeong Sung Park

Thesis: *Enhanced Wireless Video Communication System for Mobile Devices*

Prior Degree: M.S., University of Southern California

Advisor: Tokunbo Ogunfunmi, Ph.D.

### Mechanical Engineering:

**Chokri Sendi**

Thesis: *Fuzzy Control of Flexible Multibody Spacecraft: A Linear Matrix Inequality Approach*

Prior Degree: M.S., University of Colorado

Advisor: Mohammad A. Ayoubi, Ph.D.

**John Thomas Shepard**

Thesis: *A Multi-Spatial Control Architecture for Collaborative Missions of Federated Multi-Robot Coalition*

Prior Degree: M.S., Santa Clara University

Advisor: Christopher Kitts, Ph.D.



Photo: Nicole Morales

Chokri Sendi and his advisor, Mohammad Ayoubi