# ENGINEERING INNOVATION
## DOESN'T "JUST HAPPEN"

**True advances that serve society take clear-eyed determination, technical smarts, creativity, and the openness to collaborate across disciplines.**

**That's how we work at the Jacobs School.**

Our faculty have the highest per capita research funding of any public engineering school in the nation. We work with industry partners to tackle the challenges that no lab, department or company can handle alone.

## WE ARE INVENTING THE DIGITAL FUTURE

- Context-aware robotics
- Nano for energy and medicine
- 5G and the future of communication
- Wearable sensing and computing systems
- Cyber and digital security
- Data science and machine learning

| 246 JACOBS SCHOOL FACULTY | 26 Faculty hires in 2017 |
|---|---|
| | 75+ Faculty hires in the last four years |

| $178M IN RESEARCH FUNDING | $131M Government sponsored research |
|---|---|
| | $47M Industry-sponsored research + gift-and-endowments income |

| JACOBS SCHOOL | ENROLLMENT | DEGREES |
|---|---|---|
| UNDERGRADUATES | 5,857 | 1,925 |
| MASTERS | 1,636 | 812 |
| PHD | 1,156 | 171 |
| TOTAL STUDENTS | 8,649 | 2,908 |

| UC SAN DIEGO | ENROLLMENT | DEGREES |
|---|---|---|
| UNDERGRADUATES | 28,587 | 7,207 |
| GRADUATE STUDENTS | 8,037 | 2,329 |

| UC SAN DIEGO | |
|---|---|
| RESEARCH FUNDING | $1.16 Billion |
| FACULTY | 1,731 |

Data from 2017

## BIOENGINEERING

| | |
|---|---|
| 28 | Faculty |
| 618 | Undergraduates |
| 278 | Graduate students |



- autodigestion
- bioinformatics
- biomaterials / biomechanics
- cell / tissue mechanics
- biophotonics / biosensors
- cardiac mechanics
- cardiovascular engineering and imaging
- cartilage / tissue engineering
- genomic engineering
- metabolic bioengineering
- microcirculation / transfusion medicine
- molecular / cellular bioengineering
- nanotechnology
- neuroengineering
- regenerative medicine / stem cells
- systems bioengineering
- translational bioengineering

## MECHANICAL & AEROSPACE ENGINEERING

| | |
|---|---|
| 46 | Faculty |
| 1,266 | Undergraduates |
| 543 | Graduate students |
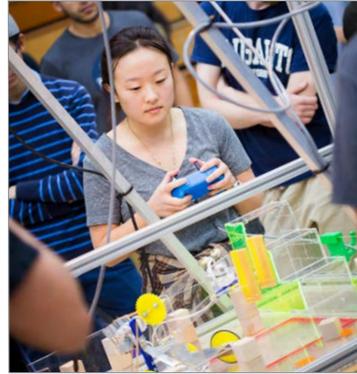


- biomaterials, bio-inspired tech
- cell / membrane mechanics
- control, estimation and optimization
- high-energy materials processing
- materials for extremes
- medical device technologies
- MEMS for extreme and biological environments
- networked control systems
- renewable and carbon-neutral energy technologies
- robotics and design
- solid and soft matter mechanics of metamaterials
- thermo-physics, heat and mass transfer
- tribology for memory storage
- turbulence, geophysical flows, macro/microfluidic flows

## COMPUTER SCIENCE & ENGINEERING

| | |
|---|---|
| 59 | Faculty |
| 1,716 | Undergraduates |
| 786 | Graduate students |



- artificial intelligence / machine learning
- bioinformatics
- computer architecture
- computer science pedagogy
- databases and info mgmt.
- embedded systems, VLSI/CAD
- graphics and vision
- human-computer interaction
- programming languages
- robotics
- security and cryptography
- software engineering
- systems and networking
- theoretical computer science

## NANOENGINEERING

| | |
|---|---|
| 28 | Faculty |
| 616 | Undergraduates |
| 200 | Graduate students |



- advanced nanomaterials
- computational materials science
- nanobiotechnology
- nanomanufacturing
- nanomedicine
- nanophotonics
- nanorobotics
- nanosensors
- nanotechnologies for energy storage and conversion
- stretchable electronics
- sustainable nanoengineering

## ELECTRICAL & COMPUTER ENGINEERING

| | |
|---|---|
| 56 | Faculty |
| 1,155 | Undergraduates |
| 779 | Graduate students |



- applied electromagnetics
- bioinformatics / bionanotech
- brain imaging / mapping
- communications systems
- cyber-physical systems security
- electronic circuits / systems
- embedded systems
- intelligent systems / robotics
- machine learning and data science
- magnetic and optical storage
- medical devices and systems
- nanoelectronics
- network infrastructure
- neural interfaces
- photonics / nanophotonics
- signal/image/video processing
- systems energy engineering
- wearable sensors

## STRUCTURAL ENGINEERING

| | |
|---|---|
| 25 | Faculty |
| 486 | Undergraduates |
| 206 | Graduate students |



- aerospace structures / aviation safety
- biomechanics
- composites / nanomaterials
- computational fluid-structure interaction analysis
- computational mechanics for extreme events damage prediction
- earthquake engineering and infrastructure renewal
- geotechnical engineering / geomechanics
- large-scale experimental research
- multi-hazard mitigation for earthquakes, blasts and more
- risk analysis / visualization / optimization
- structural health monitoring / nondestructive evaluation