

NSF Research Experiences for Undergraduates Program: Designing for Safety and Safety by Design

UC San Diego
JACOBS SCHOOL OF ENGINEERING
Structural Engineering

National Science Foundation (NSF) EEC-1757994

2020 REU Program Announcement

The goal of this NSF REU Summer Program is to immerse U.S. scholars in a highly interdisciplinary and meaningful research environment in the field of engineered structures. Designing for safety embodies quantifying potential load conditions, monitoring for anomalies during operations, and digesting this information and translating them to actionable and new knowledge for improving current and future system designs. Sample research areas include:

- ❑ Cyber-modeling & digital surrogates
- ❑ Composite materials & damage characterization
- ❑ Risk assessment & decision-making
- ❑ Sensor technologies & development
- ❑ Signal processing & analysis
- ❑ Structural design & optimization
- ❑ Structural health monitoring
- ❑ Structural reliability
- ❑ Topology optimization

Eligibility

- ❑ U.S. citizen or permanent resident
- ❑ Enrolled undergraduate student (transfer students are eligible)
- ❑ GPA 3.0 or higher
- ❑ Major in science, technology, engineering, or mathematics (STEM)

Summer Program Information

- ❑ Program Dates: June 21, 2020 to August 15, 2020
- ❑ Duration: 8 weeks
- ❑ Priority Application Deadline: January 15, 2020
- ❑ Funding: Stipend of \$4,000 + travel, lodging, and meals
- ❑ Housing: Campus housing included and pre-arranged

To find out more and apply?

Visit: <http://armor.eng.ucsd.edu/apply/reu>

About UC San Diego Structural Engineering

Students scholars in the 2020 REU Program at UC San Diego will conduct research in and be housed in the Department of Structural Engineering. The Department, and its faculty and students, conduct cutting edge research in aerospace, biological, civil, geotechnical, mechanical, and naval/marine structures by integrating engineering mechanics, computational modeling simulations, experimental testing, and practical design concepts. The Department is home to the world-class Charles Lee Powell Laboratories, the Caltrans Seismic Response Modification Device, and the Englekirk Engineering Center. Through these facilities, students and visitors have access to some of the most unique, innovative, and productive research infrastructure in the world.

REU Program Details

REU student scholars will work in pairs and be assigned – based on their interests – to work with a faculty mentor and graduate students in Structural Engineering. Students will conduct independent research while collaborating with and learning from other scholars in an integrated group setting. In addition to research, students will also be immersed in a plethora of enrichment activities, such as:

- ❑ Research and laboratory training
- ❑ Research facility tours
- ❑ Graduate school preparation
- ❑ Technical and professional development seminars
- ❑ Social activities with other undergrads
- ❑ Faculty and graduate student lunches
- ❑ Summer Undergraduate Research Symposium

2020 REU Research Projects

Computational Emphasis:

- ❑ Structural failure prediction and forecast
- ❑ Optimization of electrical aircraft wing
- ❑ Design optimization & additive manufacturing
- ❑ Modeling of structures subjected to extreme loadings

Experimental Emphasis:

- ❑ Composite damage characterization
- ❑ Ultrasonic imaging of structures
- ❑ Multifunctional nanocomposite sensors
- ❑ Infrared thermography for structural damage assessment

REU Program Faculty Mentors

- J. S. Chen
- Alicia Kim
- Hyonny Kim
- Ken Loh
- Gilberto Mosqueda
- Michael Todd