CEER Research Experiences for Undergraduates Program:

Designing for Safety and Safety by Design

Center for Extreme Events Research (CEER) – Jacobs School of Engineering

UC San Diego
JACOBS SCHOOL OF ENGINEERING
Structural Engineering

2023 CEER Summer Program Announcement

The goal of this CEER REU Summer Program is to immerse diverse 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 knowledge for improving current/future system designs. The Program is **tentatively planned as an in-person experience**. Sample research areas include:

- ❑ **Cyber-modeling & digital surrogates**
- ❑ **Composite materials & testing**
- ❑ **Nanocomposite materials & sensors**
- ❑ **Risk assessment & decision-making**
- ❑ **Signal processing & analysis**
- ❑ **Structural design & optimization**
- ❑ **Structural health monitoring**
- ❑ **Topology optimization**

Eligibility

- ❑ 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 18 to August 12, 2023
- ❑ **Duration:** 8 weeks
- ❑ **Application Deadline:** February 15, 2022
- ❑ **Costs:** $5,000 (registration)
- ❑ **Housing (optional):** ~ $3,000

To find out more and apply?

Visit: https://armor.eng.ucsd.edu/apply/ceer-summer

ARMOR

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About UC San Diego Structural Engineering

Students scholars in the 2023 CEER 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.

CEER REU Program Details

CEER 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 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**

2023 REU Research Topics

Computational Emphasis:

- ❑ **Structural failure prediction and forecast**
- ❑ **Machine learning and data-driven computing**
- ❑ **Topology optimization methods**

Experimental Emphasis:

- ❑ **Composite damage characterization**
- ❑ **Stimuli-responsive materials**
- ❑ **Post-wildfire mudflows**

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Center for Extreme Events Research

- **CEER Director:** Prof. Ken Loh
- **CEER Associate Director:** Prof. Hyonny Kim
- **CEER Associate Director:** Prof. Michael Todd