

# NEESREU PROGRAM SUMMER 2012



*Are you interested in changing the world around you? Do earthquakes and tsunamis excite you? Would you like to interact with large scale test equipment or sophisticated cyberinfrastructure? You can spend the summer delving into leading-edge earthquake engineering experiments at world-class facilities, while building connections with mentors and a national network of interns.*

**OVERVIEW** The George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) is a network of experimental sites across the country designed to enhance engineers' and scientists' potential for discovery and collaboration. The network includes state-of-the-art equipment to support physical simulations of earthquakes and tsunamis. The sites use a cyberinfrastructure to collect, store and visualize high volumes of data and access earthquake engineering simulation software using ultra-high-speed Internet2 connections. Together, these resources provide the means for collaboration and

discovery that lead to innovative solutions needed to protect life and property from the hazards of earthquakes and tsunamis.

**ABOUT THE PROGRAM** The NEESreu is a dynamic 10-week summer research program for upper division undergraduate students interested in civil engineering, computer science/engineering, seismic risk mitigation, or engineering education. Each participant will be assigned to an individual project that contributes to the goals of an existing NEES research project or to development cyberinfrastructure tools and/or educational modules. The program period runs from June through August, with exact dates depending upon location. Students receive a \$5,000 stipend inclusive of housing expenses. You will work with NEES researchers, attend virtual trainings with other NEESreu interns, and participate in enrichment activities including attending the NEES Annual Meeting in Boston MA and the Young Researchers Symposium at the end of the summer. Video

conferencing and meetings using virtual world technology will be held to further the cohort experience with fellow NEESreu students at the various research sites. Mentors will include university faculty, researchers, and graduate students.

#### **APPLICATION REQUIREMENTS**

- Minimum GPA for acceptance into the program is 3.0
- Upper division undergraduate status (preferred)
- NSF limits participation in the program to U.S citizens and permanent residents of the United States

Visit [nees.org/education/for-students/reu-program](http://nees.org/education/for-students/reu-program) to learn more about the laboratory sites and to apply online- the application deadline is March 5th, 2012.

**This is not your typical REU... NEES**



## NEES REU 2012 Important Dates

March 5th – REU Applications Review Begins

May 29th – June 25th REU Programs begin at different sites

July 10th – 13th NEES Annual Meeting in Boston, MA

Aug 3rd – 31st REU Programs end

Aug 15th – 18th NEES REU Young Researcher Symposium, Stanford CA

## NEES REU Research Sites

*University of California at Santa Barbara*

(Program dates: June 4th to August 10th)

REU students working with NEES@UCSB will assist in the processing and analysis of seismic data from our field sites and will work on the development of project pages for two of the field experiments (soil-foundation-structure-interaction and crosshole array) for the NEES hub Project Warehouse (<https://nees.org/warehouse>) and for the NEES@UCSB web site.

*University of California at Los Angeles*

(Program dates: June 25th to August 31st)

NEES@UCLA is primarily a field site, focusing on hands-on testing in the field and laboratory. Intern

projects are determined by the NEES@UCLA field schedule. NEES@UCLA REU students get practical, hands-on experience with instrumentation, specimen construction, testing, and data processing and visualization.

*Lehigh University, Bethlehem PA*

(Program dates: May 29th to August 3rd, 2012)

Current research include projects dealing with effects of tsunami driven debris, seismic hazard mitigation using both active and passive damper systems and post-tensioned coupled wall systems. Activities might include design and construction of test specimens and fixtures, instrumentation set-up, test execution and data analysis.

*University of Illinois, Urbana-Champaign, IL*

(Program dates: June 4th to August 10th)

The large-scale hybrid testing projects at UIUC will incorporate students working to calibrate and instrument large and small-scale specimens, use of a 3D imaging device to capture real-time motion, data analysis using MATLAB, and specimen design and validation testing. Current large scale summer tests will include C-shaped walls and hybrid masonry, among others.

*Oregon State University, Corvallis Oregon*

(Program dates: June 18th to August 24th)

A tsunami-debris impact project will be underway in summer 2012, studying scale model shipping containers and logs. Students will work on small scale experiments, the large scale experimental set-up, day-to-day operations, and data analysis with MATLAB.

*The University of Nevada, Reno*

(Program dates: June 4th to August 10th)

Students working at the University of Nevada will get hands-on experience with shake table testing by helping graduate students prepare experiments in the laboratory (including installing instrumentation, placing specimens on the shake tables, and helping during test days). Also, one student will conduct a complete research project on the performance of load cells, which will entail analytical modeling and actual testing of the components in the laboratory.

*University of California, San Diego*

(Program dates: June 18th to August 24th)

REU students will assist in one of two projects to be tested on the UCSD Large Outdoor Shake Table to investigate the seismic effects of retaining walls using tire-derived aggregates or reinforced masonry wall systems. Activities may include the design and construction of test specimens, instrumentation set-up, and participation in the execution of the tests, data analysis, and analytical studies.

*University at Buffalo*

(Program dates: June 4th to August 10th)

REU students working at NEES@Buffalo may be involved in an array of tasks and assignments including: the design, construction, instrumentation and testing of steel structural frames, or squat wall specimens; computer analysis including hybrid simulations and data analysis using “crack propagation” software; or experimentation, data analysis and modeling with modern methods of pipeline rehabilitation.

