

MECHANICAL AND MATERIALS SCIENCE ENGINEERING DEPARTMENT
COLLEGE OF ENGINEERING AND APPLIED SCIENCE

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

APPLICATION DEADLINE: 02/25/2022

PROJECT TITLE: Vibration Testing of Damaged Engineering Structures

Yongfeng Xu
Department of Mechanical and Materials
Engineering
College of Engineering and Applied Science
Tel: 513-556-2755
Email: xu2yf@uc.edu

Project Description

The objective of this project is to understand the influence of damage on the structural dynamics of engineering structures made of advanced materials. An UPRISE student will be recruited by the Structural Health Assessment and Monitoring Laboratory under the supervision of Dr. Xu to perform numerical and experimental investigations for this project. The Laboratory mainly focuses on structural dynamics with applications for damage detection. The UPRISE student will receive a wide spectrum of training to conduct vibration research and gain experience with graduate-level fundamental engineering research, from literature search to preparing a manuscript for publication. Specifically, the UPRISE student will work with graduate students to:

1. Design and simulate engineering structures made of advanced materials.
2. Perform a parametric study of the influence of different parameters of the structures.
3. Prepare test specimens for experimental investigations.
4. Conduct vibration tests on the specimens and verify results from the simulations.

An ideal candidate will: (a) use CAE/CAD software, such as SOLIDWORKS and AutoCAD, (b) have basic knowledge of Vibrations/Waves, and (c) have a passion for learning and solving problems.