



## Equipment Grant Recipient

### DR. NICK ROBERTS

Dr. Roberts is an associate professor of mechanical and aerospace engineering at Utah State University. He is the faculty advisor for the ASHRAE student branch. He teaches in the areas of thermodynamics and heat transfer and conducts research focused on sustainable transportation and buildings.

### TEAM MEMBERS

Nick Roberts  
Som Dutta  
Jackson Graham,  
Joshua Burdick  
Madilyn Webb  
David Olsen

### FUNDING

ASHRAE Grant \$5,000  
Local Industry \$1,000  
Department Funds \$1,000

### DURATION

12 months to Design, Build, Test, and Develop Lab Content

## Design and Acquisition of a Modular Environmental Chamber to Expand HVAC Related Education at Utah State University

### OUR STORY

The ASHRAE Student Branch at Utah State University was founded in 2019 by a group of interested and motivated students. The USU Student Branch has embraced the ASHRAE mission by getting involved and leading several campus sustainability projects with other student organizations. We will continue leading these projects but need additional curriculum additions to support these students' interests and allow them to contribute to more sustainability related efforts, particularly in areas relevant to ASHRAE. Without additional resources to support this, adding courses has been difficult. The ASHRAE Equipment Grant Program provided us with the needed funds to acquire through a design and build process, equipment that would enhance an existing lab course, and to do so in a way that allows us to include HVAC content in the required curriculum. Our goal is to leverage this project to attract more students to the area and garner future resources for a continued curriculum growth in areas relevant to ASHRAE.

### OUR PROJECT

The purpose of the project was two-fold: (1) for a group of students to design, build, test, and develop lab course materials for an instrumented environmental chamber as part of their senior level capstone design experience, and (2) to incorporate the environmental chamber into multiple courses, MAE 4400 (thermal/fluids laboratory) primarily, to enhance the current curriculum with additions of HVAC and related topics. We are nearing the end of the design, build, test, and development of course materials, which has been a fantastic experience for the student team. Our program emphasizes the importance of the design process, and this project has turned out to be a challenging and rewarding project based on the constraints of stow size, ability to move, assemble, and take down, sufficient and easy to use instrumentation to obtain meaningful measurements, and the development of the lab course materials. We're now excited to see the results of this capstone project being used in courses this coming fall semester as well as some planned outreach events on campus.

