

AIMS² Research Project in Civil Engineering

Research Duration: Spring 2018 – Fall 2018

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Title of Project: Virtual Labs – Learning Engineering Mechanics and Dynamics with Virtual Hands-on Experiments

Goals and Objectives of the Project, Expectations and Outcomes

As hands-on experiments strengthen theories learned in engineering mechanics and dynamics, and mobile learning becomes very popular, virtual labs are on the rise. The goal of this project is to create, test and assess virtual-lab modules, and ultimately implement those modules in existing courses.

Student research assistants are expected to work 5 to 6 hours per week. This project does not require students to have strong background in engineering majors, nor programming skills. However, they must be willing to learn while learning and think deeply about this project. Students will explore open web-resources, learn and use qdex (qdex is an eLearning mobile platform for STEM education). With faculty mentors' instruction, they will create and test the virtual-lab modules.

Through this experience students will develop research skills such as

- (1) an ability to evaluate information found in open web-resources,
- (2) an ability to develop and refine good questions to get needed results,
- (3) an ability to display persistence by continuing to pursue information to gain a broad perspective,
- (4) an ability to respect intellectual property rights,
- (5) an ability to use interpersonal relationship to gather and share information.

And, most importantly they are engaged to their own success.