

## Using 360° Virtual Lab Tour for Fluid Mechanics Laboratory Instruction

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[A large state university name omitted here] places an emphasis on hands-on experience and provides students with the best education possible through these experiences, especially in Mechanical Engineering (ME). In order to promote this idea, laboratory experiments remain a staple in the ME curriculum. Due to increased student enrollment and limited lab space, lab facilities are not enough to aid students in their traditional, rich hands-on lab experiences.

Our group is focused on creating a virtual lab of the Fluid Mechanics laboratory to supplement existing physical lab exercises. There are two types of virtual labs being created for this project. The first type is a virtual reality (VR) simulation created with the Unity game engine that allows students to interact with a virtual simulation of each lab experiment. The second type is a virtual lab tour created from pictures of the physical laboratory rooms using a commercial software. This portion of the project will provide students with a 360° view of each room in a guided tour and is equipped with a voice over and captions providing detailed instructions for each experiment. Students will also be able access a self-guided (self-learning) tour in which they can move through the tour at any pace that they please.

In this poster, we will discuss the 360° Virtual Lab Tour which will be used as a pre-lab instruction tool at the first stage. The virtual lab tour works as a step-by-step instruction for the students providing them with all the essential information that they need to know about different experiments before coming to the lab. This should ease them into the course and allow them to follow experiment procedures prior to coming to class. This 360° Virtual Lab Tour is aimed to help students be better prepared for their physical laboratory courses and have a better understanding of the engineering principles. Preliminary student tests will be conducted in Spring 2019, and feedback will be collected to guide further development.