# The Department of Civil and Environmental Engineering at the University of Houston presents...

CIVE 6111 Graduate Seminar

**Investigation into the Feasibility for Open FORM Utilization to Solve Fluid Structure Interaction Problems pertinent to USACE Research Areas**

Chris "Ryan" Denney, Graduate Student
Department of Aerospace Engineering at Mississippi State University

Friday, September 23, 2022
2:45pm-3:45pm
Classroom Business Building (CBB) - Room 104
Zoom: https://uh-edu-cougarnet.zoom.us/j/95702511696?pwd=VFIybkh4emhETHNITGV0dXRHS3pIZz09

## Abstract

OpenFOAM is a free and open-source computational fluid dynamic software (CFD) which has the ability to solve a large range of complex fluid flow problems. This study is conducted to determine if the current state of OpenFOAM has the capability to accurately model large-scale multiphase fluid structure interactions of multiple connected floating bodies designed for shallow water. OpenFOAM contains multiple rigid body motion solvers and mesh motion techniques. These are investigated and ultimately determined that OpenFOAM is not currently able to model floating bodies with unique shallow water hull shapes due to the existing coupling scheme between the fluid and forward body dynamics solvers.

## Bio

Christopher "Ryan" Denney is a 2020 graduate from Mississippi State University's Department of Aerospace Engineering. He is currently pursuing a graduate degree in Computational Engineering from Purdue University. Ryan works as a Research Hydraulics Engineer for the US Amy Corps of Engineers, Engineer Research and Development Center, Coastal and Hydraulics Laboratory. He is working on both military and civil works projects regarding computational fluid dynamics of riverine structures and fluid structure interactions.