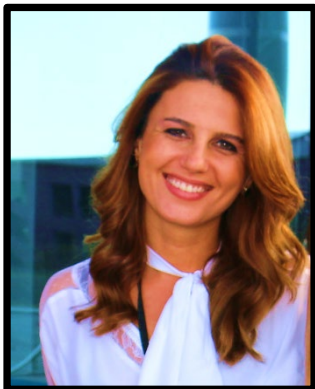


CIVIL AND ENVIRONMENTAL ENGINEERING DISTINGUISHED DEPARTMENT SEMINAR



DR. TUGCE BASER

Endowed Associate Professor
Department of Civil Engineering
Saint Louis University

Date: Thursday, October 15th, 2026

Time: 11:00am - 12:00pm EST

Location: In person, Bingham Bldg., Vose #138

Zoom Link: [Here](#)

Role of Multiphysics in Subsurface Processes

Abstract: Subsurface geosystems systems and their performance are governed by strongly coupled thermal, hydraulic, and mechanical processes. This talk will examine how a multiphysics perspective can improve the understanding, prediction, and engineering of subsurface processes across environments ranging from frozen ground to geothermal systems. This presentation will highlight how changes in temperature, phase state, moisture migration, stress, and material properties interact across multiple spatial and temporal scales. The overarching objective is to demonstrate how coupling physical processes, observations, and computational models can move subsurface engineering from isolated analyses toward predictive, adaptive, and more resilient systems.

Bio: Dr. Tugce Baser is an Endowed Associate Professor in the Department of Civil Engineering at Saint Louis University specializing in geotechnical and geoenergy engineering. Her research focuses on coupled thermo-hydro-mechanical processes in porous media, underground thermal energy storage, geothermal systems, and cold-region geotechnics. Dr. Baser worked on multiple projects on subsurface heat transfer, and advanced characterization of geomaterials using sensing and modeling approaches. Her work on geothermal applications includes thermal response testing, numerical modeling of geothermal systems, and digital twin frameworks for underground energy systems. She is a recipient of the AFOSR Young Investigator Award, MURI award and has led research supported by AFOSR, ARO, DOE and other federal agencies on resilient infrastructure, subsurface energy systems, and emerging technologies for cold-regions engineering.