

CEE 595F – Geotechnical Seminar – ONLINE

Friday, November 5, 2021 | 11:00am Central Time on Zoom

Permafrost Degradation and Its Impact on Natural Environment, Infrastructure, and Society in the Arctic**Ming Xiao***Pennsylvania State University*

Speaker Bio: Dr. Ming Xiao is a Professor and Director of the Civil Infrastructure Testing and Evaluation Laboratory (CITEL) in the Department of Civil and Environmental Engineering at the Pennsylvania State University. His research focuses on design and performances of civil infrastructure (such as roads, bridges, foundations, and dams) from investigating fundamental mechanisms to full-scale performances using experimental, numerical, and analytical methods. He has led collaborative and cross-disciplinary research projects funded by the National

Science Foundation, Federal Highway Administration, Department of Interior, and state Departments of Transportation to address infrastructure systems' challenges.

Abstract: Warming air temperatures are driving the warming of permafrost across the Arctic and sub-Arctic. This in turn degrades the geomechanical properties of soils, disrupts both the natural environment and built systems, and results in long-lasting societal impacts. In this presentation, Dr. Xiao will first illustrate through examples the warming and thawing of permafrost and how they impact the natural environment, civil infrastructure, and people's life in the Arctic Alaska. Then, Dr. Xiao will present an ongoing research project on understanding and forecasting long-term variations of in-situ geophysical and geomechanical characteristics of degrading permafrost using distributed acoustic sensing (DAS) and distributed temperature sensing (DTS).