



# DESIGN AND COMPUTATIONAL MODELING OF GEOTECHNICAL SYSTEMS CERTIFICATE

**Program Overview:** This certificate program will provide the in-depth knowledge and skill set necessary for performing site investigation and designing various geotechnical systems using analytical and numerical methods. A student must take three (total of nine credits) of the following courses to receive the certificate. All the courses listed below will be offered on-line in synchronous mode.



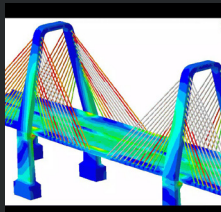
## **CE 6420: Earth Slopes and Retaining Structures**

This course provides in-depth knowledge necessary for analyzing earth slopes using various methods and software, designing earth gravity-cantilever walls, mechanically stabilized earth walls, and sheet pile walls. At the end of this course, the students will be able to perform slope stability analysis using industry-standard software and design various earth retention systems.



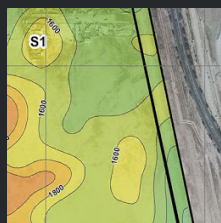
## **CE 8220 – – Foundation Engineering**

This course provides in-depth knowledge necessary for designing shallow and deep foundations subjected to axial and lateral loads. The course will cover bearing capacity and settlement analysis of the shallow foundation, analytical methods for calculating deep foundation capacity, pile load test, wave analysis, and pile drivability analysis. Industry-standard finite element and/or finite difference software will be introduced in deep foundation design and analysis. At the end of this course, the students will be able to select a suitable foundation type and design it for axial and lateral loads.



## **CE 8010 – Finite Element Analysis of Geotechnical Systems**

This course provides the basic knowledge necessary for developing finite element models of geotechnical systems and analyzing them by applying static and dynamic loads. The industry-standard finite Element software, CANDE, PLAXIS, and ABAQUS/ANSYS, will be introduced to the students. At the end of this course, the students will be able to develop finite element models of various geotechnical systems including, earth slopes, soil-pile-bridge systems, and tunnels, and analyze them by applying static and earthquake loads, and interpret results for better decision making.



## **CE 8200 – Geotechnical Site Characterization**

This course provides the in-depth knowledge needed to conduct successful geotechnical site investigations. At the end of this course, students will have a working understanding of several common geotechnical field test methods and, along with geologic information, be able to apply the test results to select appropriate soil and rock properties for the design of civil structures.

**MORE COURSES AVAILABLE** at <https://bit.ly/3tAFybp>

Scan for more information



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