CE 5353-27877/24919/23797/25582 (Spring 2021)
Geotechnical Site Investigation

Course Objective and Description:

The objective of this course is to familiarize students with the principles of site investigation. The course objective will be accomplished by exposing students to various procedures for subsurface investigation applicable to the Geotechnical field (including Geophysical techniques like Resistivity, Seismic Fraction, and Ground Penetrating Radar). A standard approach for subsurface investigation cannot be adopted because of the project's characteristics, widely diverse geological environments, local equipment, personal preferences, and time and budget constraints. One of the essential roles of a Geotechnical Engineer is to develop the investigations' scope, direct the investigation, interpret the available information and present the conclusion in a concise and usable manner to those responsible for design and construction. The goal of this course is to expose you to these steps.

In addition, a field trip will be organized in coordination with the Local Consultant, and Students will have an opportunity to meet with one of the Local Consultants towards the end of November.

Instructor:

Dr. Vivek Tandon, Virtual x-6924, Vivek@utep.edu

Time and Location:

Time *4:30 pm - 5:50 pm* ***MW*** ***Location:*** *Virtual*

Office Hours:

Virtual.

Text Manual:

Manual on Subsurface Investigations National Highway Institute Publication No. FHWA NHI-01-031 Federal Highway Administration Washington, DC by Paul W. Mayne, Barry R. Christopher, and Jason DeJong. This will be available as a reserved material in the library.

Wightman, W.E., Jainoos, F., Sirles, P. and Hanna, K. (2003) "Application of Geophysical Methods to Highway Related Problems" Technical Manual, 2002-2003, Federal Highway Administration, Washington, DC.

Manual on Subsurface Investigations by AASHTO (1998)

Handouts

Reference Manual:

Geotechnical Investigations, Engineering Manual 11110-1-1804 by U.S. Army Corps of Engineers.

Geophysical Exploration for Engineering and Environmental Investigations - EM 1110-1-1904.

Grade:

Homework	**250**
Quizzes	**150**
Reading Assignments	**75 (Three Papers)**
Final Project	**350**
Final Exam	**175 (If needed)**
Total	**1,000**

Homework:

To complement the course content covered in the class, homework will be assigned regularly. All homework should be neat and of professional quality. The low quality of homework will result in reduced grades. In addition to regular homework, some reading (technical papers) homework will complement the course content. Each student will be expected to read them and provide a one-page summary of the things learned from the paper rather than a summary of the papers. The papers will be available on Blackboard.

Lecture Notes:

The lecture notes, as needed, will be available.

Tentative Topics to be covered:

1.0 Introduction
2.0 Project Initiation
3.0 Drilling and Sampling of Soil and Rock
4.0 Boring Log Preparation
5.0 In-Situ Testing (including Geophysical Survey)
6.0 Groundwater Investigations
7.0 Laboratory Testing for Soils
8.0 Laboratory Testing for Rocks
9.0 Interpretation of Soil Properties
10.0 Interpretation of Rock Properties
11.0 Geotechnical Reports
12.0 Contracting of Geotechnical Subsurface Exploration