

Department of Civil Engineering

CE 5353-18397/14598/14599 Geotechnical Site Investigation Fall 2016

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 characteristics of the project contemplated, widely diverse geological environments, local equipment, personal preferences and time and budget constraints. One of the most important roles of a Geotechnical Engineer is to develop the scope of the investigations, 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 Local Consultant and Students will have an opportunity to meet with one of the Local Consultant towards the end of November.

Instructor:

Dr. Vivek Tandon, A-221, x-6924, Vivek@utep.edu

Time and Location:

Time 4:30 pm - 5:50 pm MW Location: Miners Hall 300

Office Hours:

Students are always welcome.

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 Investigation 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:

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

Homework:

To complement the course content covered in the class, homework will be assigned on regular basis. All homework should be neat and of professional quality. The poor quality of homework will result in reduced grades. In addition to regular homework, some reading (technical papers) homework will be assigned to compliment 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 summary of the papers. The papers will be available on Blackboard.

Lecture Notes:

The lecture notes as needed will be available on the Blackboard.

Tentative Syllabus:

- 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