SYLLABUS

Course: The Essential Steps for TAKING THE MYSTERY OUT OF THE SUBSURFACE ® 2.0

Location: At Home Study; Online, Offline

Student: Anyone who performs soil borings.

Duration: 8.0 Hours of Instruction, self-paced.

PART ONE:

Introduction Video: 20-minute video and Self-Test

BEGIN HERE: Watch the Video Introduction to the Course. Prepare for the video by having the list of 20 questions in your possession, but do not answer any questions until you're watching the video.

You'll be asked to answer 10 questions to give yourself a general self-assessment of basic skills for observing, logging, and field analysis of sedimentary and stratigraphic synthesis.

Answer the questions using your own words. Refrain looking up answers, just assess yourself. We each use different terminology so just use the terminology that you normally use.

STEP TWO: Find a soil boring log that you are willing to share as part of the first personal tutorial. Instructions for selecting a boring log are included in the video.

STEP THREE: Scan your answers to the 10 questions and send them with your boring log to Dan Kelleher at dan@midwestgeo.com.

Personal Tutorial: A private online tutorial, we'll schedule so it's convenient for both of us.

Zoom or phone conference between instructor and student to establish objectives and teach goals.

Goal: Understand the course vision and objectives for discerning subsurface relationships and then how secondary attributes (such as permeability and properties measured by High Resolution Site Characterization tools) relate to the geologic framework for unraveling sedimentary complexities.

Then you'll be on your way, at your own pace.

PART TWO:

Video: ***THE USE AND MIS-USE OF THE UNIFIED SOIL CLASSIFICATION SYSTEM***

for Improving Field Procedures, Techniques and Characterization

Online video webinar taught by Tim Kemmis, PhD, PG, sets the stage for how soil classification is poorly understood and often misused for the basis of "hydrostratigraphic units" which can lead to monsterous mistakes.

Professionals struggle with basic field procedures and subsurface analysis skills...in large part because the process is not easy but most of us lack the training to do more than just interpret - or guess at - sedimentary relationships.

The Solution: The first essential step is to accurately classify the soil using the Unified Soil Classification (USCS) and give some context to subsurface units. It's not always simple to correlate sediments according to it's depositional and stratigraphic context.

It's easier to try and rationalize secondary observations such as N-values from blow counts, soil classifications, CPT values, geophysical measurements, water level correlations, hydraulic testing or geochemistry indicators - but various degrees of uncertainty remain about subsurface properties on every scale....and as you're likely aware, this is the weakest part of "site characterization."

PART THREE:

Workshop: Self-Tests, Correlation Exercises, Boring Log Practice

Video Boost: 15-minute video of words of encouragement and direction from an instructor about the role of geology in subsurface hydrogeologic, environmental and engineering projects.

Reference: USCS CALIBRATED BASELINE SOIL KIT

Self-paced exercises using calibrated soil samples designed to help test your soil classification and texturing analysis in the field using: Unified Soil Classification System and USDA Soil Textures.

PART FOUR:

Video Webinar: ***CREATING MEANINGFUL SOIL BORING LOGS:*** *Learning to Analyze and Correlate Sedimentary Relationships*

Taught by Tim Kemmis, PhD, PG and Daniel Kelleher, PG, CIPM, this video teaches the Learn the essential step to analyze sedimentary relationships and continue with how to create soil boring logs that are: (1) Complete, (2) Accurate, and (3) Effective.

The Solution: By the end of this module, you will gain key insights for managing subsurface information that will make your work easier, your documentation clearer, and your field efforts and project more profitable.

Everyone benefits when field staff have up-to-date skills coupled with the ability to recognize and manage geologic uncertainties as they arise in the field, rather than waiting to evaluate site conditions in the office once the field work is complete.

PART FIVE:

Video Webinar: ***MANAGING UNANTICIPATED SUBSURFACE CONDITIONS IN THE FIELD:*** *Achieving Efficiency and Project Objectives When Budgets Matter Most*

Taught by Daniel Kelleher, PG, CIPM and Tim Kemmis, PD, PhD , this video webinar teaches the third essential step for identifying unanticipated subsurface site conditions. It explains the benefits of

"thinking on our feet" and addresses the common field problems that plague our industry. Attendees will benefit from this module by learning how adjusting field perspectives and procedures can improve meeting project objectives and control project costs.

We will briefly discuss the promoted benefits of High Resolution Site Characterization (HRSC) but how it can also fail when mis-used with short cuts. The course will conclude with strategies for weaving QA/QC into the fabric of a project helping ensure project profitability and reliability.

PART SIX:

Final Exam: Online and offline test

The final exam is a series of course element challenges, including (1) testing soil classification skills using a set of calibrated soil samples where the student does not know the answer, (2) testing on regional geology expectations similar to a pre-drilling task in a project work plan, (3) testing ability to establish stratigraphy from regional data, (4) testing to recognize depositional environments from a single boring (5) testing to establish sedimentary facies and stratigraphic relationships, and (6) testing improved ability to prepare accurate and completing boring logs.

Final Tutor Session: A private online tutorial and exam assessment.

Zoom or phone conference between instructor and student to ensure course objectives are met.

Goal: Fulfill the course vision and objectives for discerning subsurface relationships by practicing a process for Taking the Mystery Out of the Subsurface ®

Graduation: Private commencement to receive a Continuing Education Certificate from Northern Illinois University Outreach for 8.0 Professional Development Hours (0.8 CEUs).