



**Developing Human capital to
move your business into realm
of excellent performance and
global relevance**

Site Investigation & Soil Properties for Geotechnical Engineering Design

Venue: Apollo Hotel, Randburg, Johannesburg

2 CPD POINTS IN PROGRESS



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Who Should Attend

- Structural Engineers
- Geotechnical engineers
- Civil engineers
- Construction Project Managers
- Environmental Engineers
- Project Engineers
- Consultant's technical field personnel
- Construction Site Engineers
- Construction Consultant Managers
- Contractors
- Dam Engineers
- Technical Engineers/Managers
- Transport Engineers
- Designers, Quantity Surveyors
- Construction Inspectors
- University Educators/ Lecturers
- Engineering geologists
- Soil Engineers
- Geohydrologists
- Rock engineers
- Lab Technicians & Technologists
- Tunnel engineers
- Materials and pavement engineers
- Site investigation technicians at different levels



An Overview of Geotechnical Engineering and Design

Description

Most civil, municipal and environmental practitioners involved in construction and transportation projects require a working understanding of soil behaviour under various loading and environmental conditions.

This course provides an opportunity to understand basic concepts of geotechnical engineering used in a variety of applications so that participants can gain confidence in dealing with subsoil related problems that they encounter on engineering projects.

The course will focus on both fundamental concepts of soil mechanics as well as applications of those concepts in the design of geotechnical structures such as foundations, embankments, excavations, and retaining walls. All key concepts and applications will be explained and emphasis will be placed on the practical application of the information provided. We will also provide a certificate to verify that you have completed the short course.

This course will be beneficial to all construction, municipal and transportation practitioners and especially to those involved in the design, approval and maintenance of civil and environmental engineering projects and any other structural and construction systems. The course will be of value for those who are new to geotechnical engineering as well as to those who have experience with geotechnical practice.

Facilitator Profile



Ian Hammond
Principal Geotechnical Consultant
and Civil Engineer

Ian is an independent highly experienced consultant and Director at Geotheta Geotechnical Consulting Engineers and whose areas of expertise are in construction and geotechnical engineering, which includes operation, monitoring and closure. Ian Hammond has been involved with various management projects over the years in the capacity of various leadership positions.

He holds a Bachelor of Sciences degree, a Graduate in Civil Engineering and a Masters of Business Administration from the University of Witwatersrand. With earlier roles in Project management, contract management, tailings, water dam design, mine waste facilities design, construction, operation and closure which are complemented by his excellent communication, comprehension and learning skills have enabled him to develop companies and improve profitability. Ian has established five companies in his career thus far and fully managed these companies to provide environmental solutions to heavy industries in South Africa.

Having worked in the industry for many years, his skills are currently at an optimum level as he is familiar with the challenges faced by many companies. He understands the business related environmental concerns posed by day-to-day activities and functions as a solution provider to these challenges and issues faced.

Objective

The participants in this course will:

- Understand the importance of in-situ soil behavior and its value in engineering practice
- Become familiar with in-situ testing methods and field instrumentation techniques.
- Understand the principles and procedures for geotechnical site investigation and monitoring.
- Learn how to select the right type of instrument for monitoring and site investigation.
- Become knowledgeable about the observational method in geotechnical engineering and state-of-the-art technologies used for geotechnical monitoring and instrumentation methods.
- Gain insight into the long term behaviour of geotechnical structures.
- Review applications of site investigation, geotechnical monitoring and instrumentation for slopes, settlement, fills, excavations and walls.

COURSE CONTENT

DAY 1: BASIC CONCEPTS OF GEOTECHNICAL MECHANICS

Basic Soil Engineering Concepts

- Origin and formation of soil
- Soil composition
- Particle size distribution
- Phase relation in soil
- Soil classification
- Stress in soil

Water in soil: Permeability and Seepage

- Groundwater flow in soil
- Permeability of soil
- 1-D and 2-D flow
- Controlling groundwater in construction
- Seepage analysis
- Engineering consequences of flow control in soil

Stress Distribution in Soil and Soil Settlement

- Distribution of stress in soil
- Effective stress
- Consequences of stress variation in soil

- Settlement in soil
- Consolidation analysis
- settlement calculations

Shear Strength and Soil Failure

- Failure in soil
- Stress-strain behaviour of soil
- Shear strength analysis and measurement
- Shear strength parameters used in design

DAY 2: GEOTECHNICAL ENGINEERING IN PRACTICE

Site Investigation

- Planning subsurface investigation
- Geophysical methods
- Geotechnical drilling
- In-situ testing
- Understanding and interpreting geotechnical reports
- Field identification of soil samples

Foundations Analysis and Design

- Shallow versus deep foundations, foundation design requirements
- Bearing capacity analysis for shallow foundations (LSD and LRFD)

- Settlement estimation, and shallow foundation design

Slope Stability Analysis

- Slope instabilities
- Failure types and causes
- Slope stability analysis (hand calculations and computer programs)
- Stabilization techniques for unstable slopes

Lateral Earth Pressure and Retaining Structures

- Lateral earth pressure
- Earth pressure coefficients
- Retaining walls
- Design of retaining walls
- Excavation supports





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REGISTRATION FORM

Site Investigation & Soil Properties for Geotechnical Engineering Design

Venue: Apollo Hotel 158 Bram Fischer Dr, Randburg, Johannesburg - South Africa

Full Two-Day Master Class ☐ R 7,999 Ex VAT

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Delegate 4:	Job Title: _____
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