Geotechnical Site Investigation Training Course

Professional Development Training Course Outline

Category	Construction Institute	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Geotechnical Site Investigation Training Course is designed to equip engineers, geologists, construction professionals, and infrastructure specialists with advanced knowledge of soil investigation techniques, subsurface characterization, ground engineering principles, and geotechnical risk management. The course focuses on modern site investigation methodologies, field exploration techniques, laboratory testing, geological interpretation, and data-driven geotechnical analysis required for safe and sustainable infrastructure development. Participants will gain practical expertise in borehole investigation, drilling methods, in-situ testing, soil profiling, rock characterization, geotechnical reporting, and foundation design support using internationally recognized engineering practices.

With increasing demand for smart infrastructure, climate-resilient construction, sustainable engineering solutions, and digital transformation in geotechnical engineering, this training provides industry-focused skills to improve project decision-making and minimize construction risks. Through real-world case studies, field-based examples, advanced investigation strategies, and practical exercises, participants will learn how to develop reliable geotechnical models, interpret site conditions, evaluate ground behavior, and deliver high-quality investigation reports for buildings, highways, bridges, tunnels, dams, and major infrastructure projects.

Programme Curriculum

Geotechnical Site Investigation Training Course

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Course Duration

5 days

Course Objectives

By the end of this **Geotechnical Site Investigation Training Course**, participants will be able to:

1. Understand advanced principles of geotechnical engineering, engineering geology, and subsurface investigation planning.
2. Apply modern site characterization techniques for complex soil and rock conditions.
3. Develop effective geotechnical investigation programs aligned with project requirements.
4. Master borehole drilling, sampling techniques, and geological logging procedures.
5. Interpret soil mechanics, rock mechanics, and laboratory testing results.
6. Utilize advanced in-situ testing methods including SPT, CPT, pressuremeter, and geophysical surveys.
7. Analyze ground conditions, settlement risks, slope stability, and foundation challenges.
8. Implement digital geotechnical workflows, GIS applications, and data visualization techniques.
9. Prepare professional geotechnical investigation reports and engineering recommendations.
10. Apply risk-based geotechnical design approaches for infrastructure projects.
11. Improve understanding of sustainable geotechnical practices and climate-resilient engineering.
12. Evaluate real-world geotechnical failure case studies and lessons learned.
13. Enhance project delivery through innovative ground engineering solutions and best practices.

Target Audience

1. Civil Engineers involved in infrastructure and construction projects.
2. Geotechnical Engineers seeking advanced investigation skills.
3. Engineering Geologists and Geological Consultants.
4. Site Engineers and Construction Project Managers.
5. Structural Engineers requiring geotechnical knowledge.
6. Environmental Engineers involved in ground assessment projects.
7. Government and Infrastructure Development Professionals.
8. Consultants and Contractors working in foundation and earthworks projects.

Course Modules

Module 1: Fundamentals of Geotechnical Site Investigation

- Principles of modern **geotechnical investigation planning and execution**.
- Role of site investigation in **foundation engineering and infrastructure safety**.

- Geological setting, soil formation, and subsurface conditions.
- Investigation stages from desk study to final reporting.
- International standards and best practices in geotechnical engineering.
- **Case Study:** Investigation planning for a high-rise building project affected by variable soil conditions.

Module 2: Geological Assessment and Site Characterization

- Engineering geology concepts for construction projects.
- Soil classification and geological mapping techniques.
- Rock mass characterization and discontinuity assessment.
- Subsurface profiling and geological interpretation.
- Application of GIS and digital mapping technologies.
- **Case Study:** Geological assessment for a highway expansion project through challenging terrain.

Module 3: Field Investigation Techniques and Drilling Methods

- Borehole drilling methods and equipment selection.
- Soil and rock sampling procedures.
- Core recovery, rock quality designation (RQD), and logging.
- Groundwater investigation and monitoring techniques.
- Field documentation and quality control procedures.
- **Case Study:** Deep foundation investigation for a bridge construction project.

Module 4: In-Situ Testing and Geophysical Investigation

- Standard Penetration Test (SPT) applications.
- Cone Penetration Testing (CPT) techniques.
- Plate load tests and pressuremeter testing.
- Seismic and electrical resistivity surveys.
- Interpretation of field testing results.
- **Case Study:** Using CPT and geophysical methods for urban redevelopment projects.

Module 5: Laboratory Testing and Geotechnical Data Analysis

- Soil classification and index testing.
- Consolidation, shear strength, and permeability testing.
- Rock laboratory testing methods.
- Data validation and engineering interpretation.
- Developing reliable geotechnical parameters.
- **Case Study:** Laboratory evaluation of soft clay behavior for foundation design.

Module 6: Geotechnical Risk Assessment and Engineering Solutions

- Identification of geotechnical hazards and uncertainties.
- Settlement analysis and bearing capacity evaluation.
- Slope stability and landslide risk assessment.
- Ground improvement technologies.
- Risk mitigation strategies for construction projects.
- **Case Study:** Slope failure investigation and stabilization design for a mountain road project.

Module 7: Advanced Digital Geotechnical Engineering

- Digital transformation in geotechnical investigations.
- 3D geological modeling and visualization.
- BIM integration with geotechnical data.
- Artificial intelligence applications in ground engineering.
- Remote sensing and smart monitoring technologies.
- **Case Study:** Digital ground modeling for a large-scale transportation infrastructure project.

Module 8: Geotechnical Reporting and Project Applications

- Structure of professional geotechnical investigation reports.
- Interpretation of findings and engineering recommendations.
- Foundation design inputs and construction support.
- Quality assurance and project documentation.
- Lessons learned from global geotechnical projects.
- **Case Study:** Preparation of a complete geotechnical report for a commercial development project.

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
21 Sep 2026	25 Sep 2026	Online	$1,000
21 Sep 2026	25 Sep 2026	Physical	$1,500
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0

Ready to enroll or request a customized program? Book online or contact us:

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