Foundation Engineering Training Course

Professional Development Training Course Outline

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

Course Introduction

Foundation Engineering is a critical discipline within Civil Engineering that focuses on the analysis, design, and construction of structural foundations that safely transfer loads from superstructures to the ground. Foundation Engineering Training Course is designed to equip engineers, site supervisors, and construction professionals with industry-relevant, practical, and modern geotechnical engineering skills required for safe and cost-effective foundation design. The course integrates soil mechanics, structural load behavior, geotechnical investigation, and foundation failure prevention techniques aligned with global construction standards and smart infrastructure development trends.

In today’s rapidly evolving construction industry, demands for sustainable infrastructure, high-rise building foundations, deep excavation safety, and seismic-resistant design are increasing significantly. This training emphasizes real-world applications, case-based learning, advanced design tools, and modern construction methodologies. Participants will gain hands-on knowledge in bearing capacity analysis, settlement control, pile foundation design, raft foundations, and soil-structure interaction, making them capable of delivering safe, durable, and high-performance foundation systems for complex engineering projects.

Programme Curriculum

Foundation Engineering Training Course

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Course Duration

5 days

Course Objectives

1. Master soil mechanics and geotechnical investigation techniques
2. Understand bearing capacity analysis for shallow and deep foundations
3. Apply pile foundation design and load transfer mechanisms
4. Evaluate soil-structure interaction in modern infrastructure
5. Design earthquake-resistant foundation systems
6. Control differential settlement in large-scale structures
7. Implement deep excavation safety and shoring systems
8. Analyze foundation failure mechanisms and mitigation strategies
9. Use geotechnical software and digital modeling tools (BIM integration)
10. Apply sustainable and eco-friendly foundation engineering practices
11. Perform site investigation and soil testing interpretation
12. Design raft and mat foundations for heavy structures
13. Integrate smart construction monitoring and real-time foundation assessment

Target Audience

1. Civil Engineers
2. Structural Engineers
3. Geotechnical Engineers
4. Construction Project Managers
5. Site Supervisors
6. Engineering Students (Final Year & Postgraduate)
7. Infrastructure Consultants
8. Government/Public Works Engineers

Course Modules

Module 1: Introduction to Foundation Engineering

- Basics of soil mechanics and engineering geology
- Types of foundations and selection criteria
- Soil classification and properties
- Load transfer mechanisms
- Introduction to geotechnical design principles
- **Case Study:** Failure analysis of shallow foundation in clay soil due to improper soil investigation

Module 2: Site Investigation & Soil Exploration

- Methods of soil exploration (boreholes, sampling)
- Standard Penetration Test (SPT) and CPT analysis
- Laboratory soil testing techniques
- Groundwater table evaluation
- Report interpretation and documentation
- **Case Study:** High-rise building settlement due to inadequate site investigation

Module 3: Bearing Capacity of Soils

- Ultimate and allowable bearing capacity concepts
- Terzaghi's bearing capacity theory
- Plate load test applications
- Safety factors in foundation design
- Load distribution in soil layers
- **Case Study:** Bridge foundation failure caused by overestimated bearing capacity

Module 4: Shallow Foundations Design

- Isolated, strip, and combined footings
- Raft and mat foundation design principles
- Load eccentricity handling
- Settlement control techniques
- Construction methods and quality control
- **Case Study:** Raft foundation performance in multi-storey commercial complex

Module 5: Deep Foundations (Piles & Caissons)

- Types of piles and installation methods
- Load transfer in pile foundations
- Pile load testing procedures
- Negative skin friction issues
- Group pile behavior
- **Case Study:** Offshore pile foundation design for coastal infrastructure project

Module 6: Earth Retaining Structures & Excavations

- Retaining wall types and design
- Sheet piles and diaphragm walls
- Shoring and bracing systems
- Excavation safety standards
- Earth pressure theories
- **Case Study:** Basement excavation failure in urban construction site

Module 7: Settlement Analysis & Ground Improvement

- Types of settlement (immediate, consolidation, differential)
- Soil compaction techniques
- Grouting and stabilization methods
- Geosynthetics applications
- Ground improvement technologies

- **Case Study:** Settlement correction in industrial warehouse foundation

Module 8: Advanced & Sustainable Foundation Systems

- Seismic foundation design principles
- Smart monitoring systems (IoT in foundations)
- Sustainable construction materials
- BIM in foundation engineering
- Risk assessment and mitigation strategies
- **Case Study:** Earthquake-resistant foundation system in seismic zone 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
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

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

Register Online Now

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