Structural Design Using SAFE 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

Structural Design Using SAFE Training Course is designed to develop advanced skills in reinforced concrete slab design, foundation engineering, structural analysis, and finite element modeling using CSI SAFE software. This industry-focused training enables engineers, designers, and construction professionals to master structural modeling, load analysis, seismic design considerations, punching shear evaluation, and code-compliant design optimization. Participants gain practical expertise in transforming engineering concepts into efficient and safe structural solutions using modern Building Information Modeling (BIM), digital engineering workflows, and computer-aided structural design technologies.

This course integrates theoretical principles, hands-on software applications, and real-world structural case studies to provide practical knowledge of high-rise building design, flat slab systems, mat foundations, post-tensioned slabs, and reinforced concrete structures. Through project-based learning, participants develop the ability to perform accurate structural analysis, interpret design results, prepare professional reports, and implement global standards including ACI 318, Eurocode, and international structural design practices.

Programme Curriculum

Structural Design Using SAFE Training Course

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Course Duration

5 days

Course Objectives

By completing this Structural Design Using SAFE Training Course, participants will be able to:

1. Master CSI SAFE software interface, modeling techniques, and structural analysis workflows.
2. Develop advanced skills in reinforced concrete slab and foundation design.
3. Perform accurate finite element analysis (FEA) for structural systems.
4. Understand load combinations, load paths, and structural behavior.
5. Design efficient flat slabs, waffle slabs, and conventional slab systems.
6. Analyze and optimize mat foundation and isolated foundation systems.
7. Apply ACI 318 and international design code requirements.
8. Evaluate punching shear, bending moments, and reinforcement detailing.
9. Create professional structural design reports and engineering documentation.
10. Improve structural efficiency through design optimization techniques.
11. Integrate SAFE workflows with BIM and digital construction technologies.
12. Develop practical solutions for complex structural engineering projects.
13. Enhance career capabilities in modern structural engineering and computational design.

Target Audience

1. Structural Engineers seeking advanced SAFE software skills.
2. Civil Engineers involved in reinforced concrete design.
3. Design Consultants working on building structures.
4. BIM Engineers integrating structural workflows.
5. Construction Professionals managing structural projects.
6. Engineering Graduates developing industry-ready skills.
7. Project Managers supervising structural design activities.
8. Architects collaborating with structural engineering teams.

Course Modules

Module 1: Introduction to Structural Design Using SAFE

- Overview of **CSI SAFE structural engineering software**.
- Understanding SAFE applications in modern design projects.
- Introduction to structural modeling concepts.
- Software interface navigation and project setup.
- Engineering workflow from modeling to reporting.
- **Case Study: Commercial Building Structural Analysis Project**

Module 2: Structural Modeling and Design Fundamentals

- Creating structural grids and modeling systems.
- Defining materials and structural properties.
- Assigning slab thickness and support conditions.
- Understanding structural load transfer mechanisms.
- Developing accurate engineering models.
- **Case Study: Office Building Flat Slab Modeling Project**

Module 3: Load Application and Structural Analysis

- Dead loads and live load definition.
- Load combinations and design scenarios.
- Wind and seismic load considerations.
- Structural response evaluation.
- Analysis result interpretation.
- **Case Study: Seismic Design Evaluation of Concrete Structure**

Module 4: Reinforced Concrete Slab Design

- Flat slab and conventional slab design.
- Reinforcement layout optimization.
- Bending moment and shear evaluation.
- Deflection control methods.
- Code-based reinforcement requirements.
- **Case Study: High-Rise Residential Flat Slab Design**

Module 5: Foundation Design Using SAFE

- Foundation modeling techniques.
- Mat foundation design principles.
- Soil pressure evaluation.
- Settlement considerations.
- Reinforcement detailing for foundations.
- **Case Study: Industrial Facility Mat Foundation Design**

Module 6: Advanced SAFE Design Applications

- Punching shear analysis.
- Column and slab interaction.
- Post-tensioned slab concepts.
- Advanced finite element modeling.
- Structural performance optimization.
- **Case Study: Post-Tensioned Commercial Structure Design**

Module 7: Design Codes, Detailing, and Reporting

- ACI 318 structural design standards.
- Eurocode design principles.
- Reinforcement detailing practices.
- Engineering drawings preparation.
- Professional design documentation.
- **Case Study: International Code Compliance Project**

Module 8: Professional Project Application and Industry Workflow

- Complete structural design workflow.
- Model review and quality control.
- Design optimization strategies.
- BIM integration practices.
- Final engineering project presentation.
- **Case Study: Integrated Building Design 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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