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Serial No
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Rev.
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EOTSS Doc. CODE :

EOTSS/CIVIL/4017Soft-CIV/2025

المعهد الهندسي لخدمات التكنولوجيا والبرمجيات



Engineering office for Technology and Software Services

SAFE: Design and Analysis of Concrete Slabs and Foundations



SAFE: Design and Analysis of Concrete Slabs and Foundations

Course Code: 4017Soft-CIV

Duration: 3–4 Weeks (20–25 Hours)

Delivery Mode: Online / On-site / Hybrid

Level: Intermediate

Certification: SAFE Structural Design Certificate

Introduction

SAFE is a specialized software developed by CSI (Computers and Structures Inc.) for the modeling, analysis, and design of concrete floor and foundation systems. It is an industry-standard tool used by structural engineers to accurately analyze and reinforce slab systems and various foundation types, all in one integrated environment.

Main Branch: United building – E Shams –Front NBE
, El Siouf _Alexandria

Tel: 01102060500-01144470856



الفرع الرئيسي: عمارات المتحدة – عمارة عين شمس – امام البنك
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■ Course Description

This course is tailored to help civil and structural engineers master the use of SAFE in real-world structural projects. It covers the complete process of modeling, load application, analysis, and design of concrete **slabs** and **foundations**, including the generation of construction drawings and reinforcement schedules.

📦 Course Content

Module 1: Introduction to SAFE

- Overview of SAFE and its integration with ETABS
- Exploring the graphical interface and settings
- Overview of design codes and material libraries

Module 2: Structural Modeling

- Defining materials and cross-sections
- Creating slab geometry and supports
- Load application: Dead, live, seismic, and other custom loads

Module 3: Slab Analysis and Design

- Design of solid and hollow-core slabs
- Punching shear checks and reinforcement layout
- Serviceability checks: deflection, cracking, and moment distribution

Module 4: Foundation Design

- Isolated footing (pad footings)
- Strip footing and combined footings
- Load transfer and bearing capacity checks

Module 5: Output, Reports, and Drawings

- Generating reinforcement drawings
- Creating design reports and quantity schedules
- Exporting to CAD for construction documentation

Module 6: Final Project

- Design and documentation of a slab + foundation system for a residential or commercial building
- Peer review and instructor feedback

📁 Materials Included

- SAFE user guide and modeling templates
- Example project files
- Reinforcement detailing standards
- Slab and footing design checklists

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- Final assessment project and certificate

Requirements / Instructions

Prerequisites:

- Basic understanding of reinforced concrete design
- Prior exposure to structural analysis software is helpful

Software Requirements:

- SAFE (latest version recommended) installed
- Windows OS, 8GB+ RAM, and a dedicated graphics card

Participant Instructions:

- Ensure software is ready before the course starts
- Participate in hands-on modeling exercises
- Submit the final project to receive certification

Learning Outcomes

Upon successful completion, you will:

- Efficiently model and analyze floor slabs and foundations
- Understand design code checks within SAFE
- Produce professional drawings and reinforcement layouts
- Be job-ready for structural design tasks in consulting or contracting firms

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