SAP2000

Training details

DESCRIPTION

This courseware covers the concrete structures design and analysis using sap2000

OBJECTIVES:

- The primary objective of this courseware is to teach students how to effectively model and analysis all types of slab systems including solid slab, flat slab, paneled beams, raft foundation, tanks and high rise buildings systems.
- How to design all cases of column (Axial - Uniaxial - Biaxial) and design?
- Students will make a complete high rise building include drawings and calculation sheets how to make excel sheets.

TRAINING STRUCTURE:

SAP2000	10 class x 2.5 hours = 25 hours

COURSE TEXTBOOKS AND OTHER READING MATERIALS

Web Resources:

- International Design Codes (ECP – ACI – Euro)
- CSI Knowledge Base

PREREQUISITES:

- Basic knowledge and skills about using computers.
- Structure background is a must

COURSE GRADING:

Attendance 40% Assignments (workshop + 2 projects)
60% to pass the course and receive CAD MASTERS certificate you should:

- Attend at least 80% of course hours.
- Score more than 70% as a total score.

SAP2000 – COURSE OUTLINE

Design beams (Steel & Concrete)

- How to draw (simple – continuous – Cantilever) Beams and how to make intermediate hinge.
- How to Assign loads (Distributed load – Triangle load – Trapezoidal load – Concentrated load – Concentrated moment – Distributed moment).
- How to Define Sections (Steel & Concrete)?
- Straining action output (Normal Force – Shear Force – Bending Moment – Torsion).
- Check Deflection (Short Term – Long Term).

Design frames (Steel & Concrete)

- How to Define Sections (Steel & Concrete)?
- Straining action output (Normal Force – Shear Force – Bending Moment – Torsion).
- Check Deflection (Short Term – Long Term).

Design trusses (Steel & Concrete)

- Make Structural system for concrete and steel truss.
- Diff. between Concrete and steel truss members.
- How to define (single angle & Double angle).
- Output Results (Axial Forces).

Design solid slabs

- How to make Structural system from Arch plan.
- How to get Concrete Dimensions (Slabs & Beams).
- Wall Loads Calculations.
- Design Reinforcement for (Beams-Columns-Slabs).

Design Flat Slabs

- How to make Structural system from Arch plan.
- How to get Concrete Dimensions (Slabs & Beams).
- Equivalent Wall Loads Calculations.
- Design Reinforcement for (Beams-Columns-Slab).

Design paneled beams

- Choose Limitation for Paneled beams Length.
- How to determine paneled beams dimensions.
- Design Beams.
- Example (Paneled beams – Paneled Frames – Skew Paneled beams)

Design raft foundation

- Foundations Types.
- How to Choose Foundation Type.
- Design Raft under Gravity load and Seismic loads.
- How to Import Raft from AutoCAD (Raft DXF File).
- Raft Reinforcement.
- Design Raft.

Design of tanks

- Circular Tanks (Underground – Rested on Soil – Elevated).
- Rectangular Tanks (Underground – Rested on Soil – Elevated).
- Design Reinforcement.

How to make DXF file to (SAP2000)

- Draw on AutoCAD DXF File.
- Import to SAP Programs.
- Define Sections.
- Define Loads.
- Assign Loads.
- Design Model.

Seismic Lecture

- How to Calculate Seismic Forces by using (Time History, Response Spectrum, Equivalent static load) .
- How to Calculate Center of Rigidity.
- Check Story Drift.
- Seismic Combinations Equations.
- Seismic Design Techniques.

Design High Rise Building and assign Seismic Loads on Structure on SAP Program

How to design column

- How to Design (Axial, Uniaxial, Biaxial) Columns by using Charts.
- Check Braced and Unbraced Structures.
- Check Buckling.

-Design shear walls

Design Cores (Symmetric and Unsymmetrical)

Calculate torsional moment due to lateral loads and get centers of mass & rigidity.