



MAESTRO
CONSULTANTS

**STRUCTURE AND
CIVIL MAINTENANCE
&
DESIGN FOR
NON-ENGINEERS**

COURSE OUTLINE 2020

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TRAINING TITLE

STRUCTURE AND CIVIL MAINTENANCE & DESIGN FOR NON-ENGINEERS

VENUE

Dubai, UAE

DURATION

5 Days

DATES

01 - 05 March 2020

PRICE

US\$4,000 per attendee including training material/handouts, morning/afternoon coffee breaks and Lunch buffet daily.

TRAINING INTRODUCTION

Construction is the largest industry in the world and anything constructed needs to be designed first. Structural Engineering deals with the analysis and design aspects, the basic purpose of which is to ensure a safe, functional and economical structure. While designing, the designer constantly interacts with specialists like architects, operational managers, etc. Once the design is finalized, the implementation takes involvement of people to handle aspects like statutory approvals, planning, quality assurance, material procurement, etc. The entire exercise can be undertaken in a highly coordinated way if everyone involved understands the 'project language', which is a combination of designs and specifications. To understand the language fully, it is necessary to appreciate the principles of structural analysis and design and a course on this topic comes in handy here. Participants of this workshop will gain a basic knowledge of structural and civil engineering that includes principles of analysis of structures and their application, behavior of materials under loading, selection of construction materials and design fundamentals for RCC and steel structures. The emphasis has been kept on the determination of nature and quantum of stress Developed under loads and the way structures offer resistance to it. Being the most widely used construction materials, RCC and steel has been covered in detail though masonry and timber have also been described briefly. In addition to the road design, retaining walls and sheet piles will be presented in the course in addition to illustrated the different types of foundations.

TRAINING OBJECTIVES

At the end of this seminar participants will have:

- Fully understand the role of the structural and civil engineer
- Comprehend the behavior of structural members under loading
- Understand the concept of stress functions like tension, Compression, shear and bending
- Use the basic concepts for analysis of statically determinate and indeterminate structures
- Analyze deformation of members under loading
- Understand the significance of material properties in design
- Undertake basic design of Reinforced Cement Concrete Structures
- Undertake basic design of Steel Structures
- Building Inspectors
- Project Managers
- Construction Supervisors
- Municipal Officials
- Architects
- Quantity Surveyors
- Concrete Technologists
- Reinforcement Detailers
- Building Maintenance Personnel
- Structural Rehabilitation Staff

TRAINING AUDIENCE

Anyone associated with the construction industry would benefit from this course. In view of the vastness of the sector, the following personnel would typically be able to gain immediate benefit out of this course.

- Building Inspectors
- Project Managers
- Construction Supervisors
- Municipal Officials
- Architects
- Quantity Surveyors
- Concrete Technologists
- Reinforcement Detailers
- Building Maintenance Personnel
- Structural Rehabilitation Staff

TRAINING OUTLINE

INTRODUCTION TO STRUCTURAL ENGINEERING PRINCIPLES OF STRENGTH OF MATERIAL

Theory of elasticity

- Stress-strain characteristics
- Sectional properties
- Deflection & deformation

STRUCTURAL ANALYSIS

- Principle of mechanics
- Determinate & indeterminate structures
 - Different structures system
- Determination of stress functions (direct, bending & shear stresses)
- Analysis of statically determinate structures
- Analysis of statically indeterminate structures
- Analysis of deformation under loading

DESIGN PHILOSOPHIES

- Material behavior under stress
- Working stress design
- Limit state design
- Loads

DESIGN PROCEDURE OF REINFORCED CEMENT CONCRETE (RCC) STRUCTURES

- Material & components
- Stress behavior

- Ultimate & permissible stresses
- Design of beams & slabs
- Design of walls & columns
- Design of frames
- Pre-stressed concrete design

DESIGN PROCEDURE OF STEEL STRUCTURES

- Materials & properties
- Stress behavior
- Methods & design of fastenings
- Design of beams
- Design of columns & struts
- Design of tension members
- Design of trusses
- Design of built up sections
- Limit state design

CONCRETE MATERIALS PROPERTIES

- Concrete materials
- Properties of cement
- Aggregates properties
- Fine aggregate
- Admixtures
- Concrete design mix
- Concrete construction
- Concrete test on site

PRINCIPAL OF ROAD DESIGN

- Survey work
- Soil boring
- Principal of road layout design
- Road section design
- Retaining walls types
- Sheet pile design principal
- Types of foundations
- Isolating footing
- Pile foundation

INSPECTION AND MAINTENANCE

- Concrete structure deterioration
- Ways of inspection
- Non-destructive testing
- Corrosion problem
- Inspection about corrosion risk

MAINTENANCE RISK BASED INSPECTION

- Qualitative risk assessment
- Maintenance plan
- Implement risk maintenance plan
- Workshop about maintenance plan for Industrial plant

TRAINING CERTIFICATE

MAESTRO CONSULTANTS Certificate of Completion for delegates who attend and complete the training course

METHODOLOGY

Our courses are highly interactive, typically taking a case study approach that we have found to be an effective method of fostering discussions and transferring knowledge. Participants will learn by active participation during the program through the use of individual exercises, questionnaires, team exercises, training videos and discussions of “real life” issues in their organizations. The material has been designed to enable delegates to apply all of the material with immediate effect back in the workplace.

