

Training Title

STRUCTURE AND CIVIL MAINTENANCE & DESIGN FOR NON ENGINEERS

Training Duration

5 days

Training Venue and Dates

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| Structure and Civil Maintenance & Design for Non Engineers | 5 | 19-23 February, 2024 | \$5,500 | Dubai, UAE |
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Trainings will be conducted in any of the 5 star hotels.

Training Fees

- **5,500 US\$ per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet Lunch.**

Training Certificate

Prolific Consultants FZE Certificate of Course Completion will be issued to all attendees.

COURSE OVERVIEW

COURSES 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.

COURSE 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*

SUITABLE FOR:

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*
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TRAINING METHODOLOGY:

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions, and motivate everybody find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

Very useful Course Materials will be given.

COURSE 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

Case Studies, Discussions, Last Day Review & Assessments will be carried out.

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