



DYNAMIC ANALYSIS FOR RC STRUCTURES UNDER DYNAMIC LOADING IN PETROLEUM INDUSTRY



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Abar Solutions Petroleum Consultancy Invite Your Employee To Participate With Us In Special Training Course As Under Details:

Course Name		DYNAMIC ANALYSIS FOR RC STRUCTURES UNDER DYNAMIC LOADING IN PETROLEUM INDUSTRY			
Code	Period	Start	End	Location	Fees
CIV 139	5 Days	03/11/2024	07/11/2024	Doha - Qatar	1500 KD
** The fees includes: lecturer, training material, training room with one coffee break, certificate of attendance in last day training course **					

Course Overview

In most industrial projects as petroleum industry in general and power generation and also refinery projects. There are many structures affecting by dynamic load due to machines or due to blast load. The design management procedure for industrial projects will be clarified. All the load that affect the structure building in oil and gas facilities will be illustrated.

Course Objectives

The participants will be provided with detailed course material and will be familiarized with the suitable way of concrete design in industrial structure. The engineer will be familiar with any problem and its solution in the concrete structure in the petrochemical industry and its causes of failure.

Familiarize participants with the issues, standards, and procedures used to design structures that resist blast loads.

Provide participants with in-depth knowledge of the principles of dynamic analysis. Develop basic competence in the use of available engineering methods for calculating blast loads and

Dynamic structural response.

Provide an overview of the design approach used for typical construction materials (steel, concrete, masonry),

Systems (shear walls and frames), non-structural components (doors and windows).

Course Content

Day 1: Introduction to RC Structures and Dynamic Loading

Introduction to Reinforced Concrete (RC) Structures:

- Basics of RC structures.
- Material properties and design considerations.



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Overview of Dynamic Loads in the Petroleum Industry:

- Types of dynamic loads (seismic, wind, machinery-induced vibrations).
- Impact of dynamic loads on RC structures.

Case Studies:

- Examples of RC structures in the petroleum industry.

Day 2: Theoretical Foundations of Dynamic Analysis

Dynamics of Structures:

- Basic concepts of structural dynamics.
- Free and forced vibration analysis.
- Damping and resonance in structures.

Mathematical Modeling for Dynamic Analysis:

- Equations of motion for RC structures.
- Mode shapes and frequencies.

Software Tools for Dynamic Analysis:

- Introduction to software tools commonly used in the industry.
- Hands-on session with example problems.

Day 3: Seismic Analysis and Design of RC Structures

Seismic Loading:

- Characteristics of seismic activity relevant to petroleum installations.
- Design considerations for seismic resistance in RC structures.

Seismic Design Codes and Standards:

- Overview of relevant codes (e.g., Eurocode, ACI).
- Application of codes in dynamic analysis.

Practical Applications:

- Case studies on seismic analysis of RC structures in the petroleum industry.
- Group exercises on seismic design.

Day 4: Wind and Machinery-Induced Vibrations

Wind Loading:

- Wind characteristics and their effects on RC structures.
- Design considerations for wind resistance.



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Machinery-Induced Vibrations:

- Sources of vibrations in the petroleum industry (e.g., compressors, pumps).
- Dynamic analysis for vibration control.

Mitigation Strategies:

- Vibration isolation techniques.
- Structural reinforcement methods.
- Case studies and hands-on exercises.

Day 5: Advanced Topics and Project Work

Advanced Dynamic Analysis Techniques:

- Nonlinear dynamic analysis.
- Time history analysis.
- Response spectrum analysis.

Risk Assessment and Mitigation:

- Identifying and assessing risks associated with dynamic loading.
- Developing mitigation strategies for RC structures.

Methodology

Expert Lectures: In-depth sessions led by industry experts covering advanced topics.

Interactive Workshops: Hands-on activities and group projects to apply concepts.

Case Studies: Detailed analysis of real-world examples and best practices.

Panel Discussions: Insights and experiences shared by industry thought leaders.

Assessments: Evaluations and feedback to measure understanding and progress.



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