Global Horizon
TRAINING CENTER

Training Course:
Applied Stress Analysis for Structural Integrity and Design

17 - 21 August 2025
Dubai (UAE)
Residence Inn by Marriott Sheikh Zayed Road, Dubai

Training Course:
Applied Stress Analysis for Structural Integrity and Design

Training Course code: EN236138 From: 17 - 21 August 2025 Venue: Dubai (UAE) - Residence Inn by Marriott Sheikh Zayed Road, Dubai Training Course Fees: 5300 Euro

Introduction

Stress Analysis is a critical discipline in structural and mechanical engineering, essential for ensuring the integrity, performance, and safety of components under load. From bridges and buildings to aerospace and automotive systems, understanding how stress distributes across materials is key to preventing failure and improving designs.

This 5-day training program is designed to provide engineers and designers with a solid foundation in stress analysis principles, covering both theoretical concepts and practical applications. Participants will learn to evaluate stress and strain in structures, apply relevant failure theories, and use simulation tools such as FEA software to model and interpret results effectively.

Course Objectives

By the end of this program, participants will be able to:

- Understand the fundamentals of stress, strain, and deformation in solid materials.
- Analyze how structures behave under various types of loading conditions.
- Apply failure theories to predict material behavior and prevent structural failure.
- Use Finite Element Analysis FEA tools to simulate and interpret stress behavior.
- Recommend design improvements based on analytical findings and safety standards.

Target Audience

This course is ideal for professionals working in structural, mechanical, or design engineering roles, including:

- Structural and Mechanical Engineers
- Product and Component Designers
- Aerospace, Automotive, and Energy Engineers
- Maintenance and Reliability Engineers
- Engineering graduates seeking advanced analysis skills

Outlines

Day 1: Introduction to Stress Analysis & Material Behavior

- Definitions of stress, strain, and mechanical properties
- Types of loads: static, dynamic, thermal
- Young□s modulus, Poisson□s ratio, yield and fracture
- Manual calculations for basic stress cases
- Workshop: Tension, compression, and bending examples

Day 2: Failure Theories & Load Case Analysis

- Maximum stress, strain energy, and Von Mises criteria
- Understanding brittle vs. ductile failure
- Combined loading scenarios and superposition
- Shaft torsion and beam analysis techniques
- Hands-on exercise: Analyze a simply supported beam

Day 3: Introduction to FEA & Simulation Tools

- Fundamentals of Finite Element Analysis FEA
- Meshing, boundary conditions, and load application
- Model setup using FEA software ANSYS, Abaqus, SolidWorks Simulation
- Interpreting contour plots and stress distribution
- Practical session: Build and simulate a basic part

Day 4: Advanced Stress Applications & Industry Cases

- Stress concentrations, shear stress, and thermal stresses
- Fatigue analysis and cyclic loading
- Dynamic loads and time-dependent behavior

- Case studies: Oil & gas components, aircraft structures, pressure vessels
- Group task: Analyze failure in a real-world component

Day 5: Design Safety, Standards & Engineering Reporting

- Factor of safety and design margin concepts
- International standards: ASME, ISO, ASTM applications
- Writing a professional stress analysis report
- Design recommendations and redesign strategies
- Final project: Full analysis and team presentation

Registration form on the Training Course: Applied Stress Analysis for Structural Integrity and Design

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Complete & Mail or fax to Global Horizon Training Center (GHTC) at the address given below

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Payment Method

- ☐ Please find enclosed a cheque made payable to Global Horizon
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