3-Day Short Course on
Analysis and Design for Robustness of Offshore Structures Subjected to Accidental Loads

★ Speakers ★

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21 PDUs accredited by the Professional Engineers Board, Singapore

Date: 12 ~ 14 July, 2005
Time: 9.00 am – 5.00 pm daily
Venue: National University of Singapore

Organized by:
➢ Professional Activities Centre, Faculty of Engineering
➢ Centre for Offshore Research & Engineering

Supported by:
➢ Keppel Offshore & Marine Ltd
The topics that are lectured will be frequently illustrated by thorough reviews of real analysis and design cases from the offshore industry in which the authors have been involved.

1) Principles for Ultimate and Accident Limit States Design
2) Basic Principles for Nonlinear Behavior of Frame-Structures
   - The Plastic Hinge Concept
   - Plastic Mechanisms
   - Buckling of Beam-Columns
   - The Role of Shape Imperfections
   - Demonstration Examples: Beam Under Lateral Loading, Beam Column in Compression, Collapse of Plane Frames
3) Strength of Tubular Joints
   - Strength of Simple Tubular Joints
   - Modelling of Joints with Nonlinear Springs
   - Reinforced Joints
   - Effect of Weak Joints on System Behaviour - Demonstration Example
4) Modelling of Grouted Tubes
   - Basic Concept, Theoretical Formulation
   - Element Behavior, System Strength
   - Demonstration Examples - Pushover Analysis of Jackets with Grouted Member
5) Nonlinear Behaviour of Foundation
   - Pile-Soil Modelling with Nonlinear Springs
   - Example - Soil According to API Code
   - Spudcan Modelling for Jack-up on Clay or Sand According to SNAME
   - Demonstration Example: Static Pushover Analysis of Jack-Up
6) Nonlinear Dynamic Analysis of Jackets & Jackups subjected to Extreme Storms, Ship Collisions and Earthquakes – Demonstration Examples
7) Analysis of Blast Response
   - Single-Degree-of-Freedom Analysis, Use of Design Charts or Pressure/Impulse Diagrams
   - Demonstration Examples: Response of Blast Wall and Drilling/Wellhead Module
8) Fire Analysis
   - Characteristic Fire Loads, Heat Transfer Analysis
   - Mechanical Properties at Elevated Temperatures
   - Mechanical Response Analysis: Bounding Surface Concept; Shell Element Models
   - Demonstration Examples: Fire Analysis of Several Recent Production Platforms
   - Use of Passive Fire Protection
9) Design for Robustness Against Very Extreme Actions
   - Integrity of Welded Connections
   - Structural Lay-Out for Robustness
   - Survival of Structures Subjected to Extreme Fires and Explosions
   - Demonstration Examples

Worked examples will be presented to illustrate the methods introduced on accidental loads and the associated responses. These examples will provide appropriate guidance to engineers and designers on the evaluation and assessment of structural robustness.
ENQUIRIES
Please contact Miss Lilian CHOONG for
more information at
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Email: engcll@nus.edu.sg

REGISTRATION FEE*
Participants from Singapore: SGD900.00 +
SGD45.00 (GST)
Overseas participants: SGD900.00 (GST
Exempted)
* Course registration fees include course
materials, refreshments and lunches

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STRUCTURES SUBJECTED TO ACCIDENTAL LOADS, 12 – 14 July 2005

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