NPTEL : Elements of Ocean Engineering (Ocean Engineering)

Co-ordinators : Dr. Ashoke Bhar

Lecture 1 - Introduction

Lecture 2 - Physical Oceanography - I

Lecture 3 - Physical Oceanography - II

Lecture 4 - Physical Oceanography - III

Lecture 5 - Physical Oceanography - IV

Lecture 6 - Sediments & Open Ocean

Lecture 7 - Open Ocean - I

Lecture 8 - Open Ocean - II

Lecture 9 - Physical Properties of Water

Lecture 10 - Water and Waves

Lecture 11 - Waves - I

Lecture 12 - Waves - II

Lecture 13 - Waves - III

Lecture 14 - Introduction to Offshore Structures - I

Lecture 15 - Introduction to Offshore Structures - II

Lecture 16 - Waves - IV

Lecture 17 - The Wave Spectra

Lecture 18 - The Wave Spectra (Continued...1)

Lecture 19 - The Wave Spectra (Continued...2)

Lecture 20 - Offshore Structures - I

Lecture 21 - Offshore Structures - II

Lecture 22 - Offshore Structures - III

Lecture 23 - Floating Offshore Structures

Lecture 24 - Drilling from Platforms

Lecture 25 - Drilling and Topsides

Lecture 26 - Topsides

Lecture 27 - Mooring Systems

Lecture 28 - Mooring Systems (Continued...1)

Lecture 29 - Static Analysis of Mooring Cable

Lecture 30 - Static Analysis of Mooring Cable (Continued...)

Lecture 31 - Mooring Systems (Continued...2)

Lecture 32 - Mooring Systems (Continued...3)

Lecture 33 - Mooring Systems (Continued...4)

Lecture 34 - Mooring Systems (Continued...5)

Lecture 35 - Mooring Systems (Continued...6)

Lecture 36 - Fixed Offshore Structures

Lecture 37 - Fixed Offshore Structures (Continued...)

Lecture 38 - Structural Analysis of Jacket Platforms

Lecture 39 - Structural Analysis of Jacket Platforms (Continued...1)

Lecture 40 - Structural Analysis of Jacket Platforms (Continued...2)

Lecture 41 - Jacket Pile Selection

Lecture 42 - Jacket Pile Selection (Continued...1)

Lecture 43 - Jacket Pile Selection (Continued...2)

Lecture 44 - Floating Platform Design

Lecture 45 - Semi-Submersibles

Lecture 46 - Semi-Submersibles & TLPs

Lecture 47 - Tension Leg Platform

Lecture 48 - Tension Leg Platform (Continued...)

Lecture 49 - SPAR Platform

NPTEL : Hydrostatics and Stability (Ocean Engineering)

Co-ordinators : Dr. Hari V. Warrior

Lecture 1 - Introduction

Lecture 2 - Archimedes Principle

Lecture 3 - Archimedes Principle (Continued...)

Lecture 4 - Numerical Integration

Lecture 5 - Problems in Stability - I

Lecture 6 - Problems in Stability - II

Lecture 7 - Problems in Stability - III

Lecture 8 - Problems in Integration

Lecture 9 - Free Surface Effect

Lecture 10 - Inclining Experiment

Lecture 11 - Hydrostatic Curves - I

Lecture 12 - Hydrostatic Curves - II

Lecture 13 - Stability Curve

Lecture 14 - Dynamical Stability - I

Lecture 15 - Dynamical Stability - II

Lecture 16 - Healing Moment - I

Lecture 17 - Healing Moment - II

Lecture 18 - Healing Moment - III

Lecture 19 - Dynamical Stability - III

Lecture 20 - Discussion

Lecture 21 - Righting Stability - I

Lecture 22 - Righting Stability - II

Lecture 23 - Trim Calculations - I

Lecture 24 - Trim Calculations - II

Lecture 25 - Trim Stability - I

Lecture 26 - Trim Stability - II

Lecture 27 - Dry Docking - I

Lecture 28 - Dry Docking - II

Lecture 29 - Bilging - I

Lecture 30 - Bilging - II

Lecture 31 - Bilging - III

Lecture 32 - Bilging - IV

Lecture 33 - Safety Regulations

Lecture 34 - Safety Regulations (Continued...)

Lecture 35 - Safety Regulations (Continued...)

Lecture 36 - Ship Stability on Waves

Lecture 37 - Ship Stability on Waves (Continued...)

Lecture 38 - Ship Stability on Waves (Continued...)

Lecture 39 - Wave Theory

Lecture 40 - Conclusion

NPTEL : Marine Construction and Welding (Ocean Engineering)

Co-ordinators : Prof. N.R. Mandal

Lecture 1 - Introduction to ships & offshore structures

Lecture 2 - Characteristics of shipbuilding industry

Lecture 3 - Structural Requirement

Lecture 4 - Basic Structural Components

Lecture 5 - Structural Subassemblies

Lecture 6 - Bulkheads

Lecture 7 - Decks & Shells

Lecture 8 - Structural Assemblies Double Bottom Construction

Lecture 9 - Wing Tanks & Duct Keels

Lecture 10 - Fore & Altend Construction

Lecture 11 - General Cargo Carrier

Lecture 12 - Bulk Carrier

Lecture 13 - Structural Details

Lecture 14 - Container Ship

Lecture 15 - RO-RO Ship

Lecture 16 - Oil Tanker

Lecture 17 - Structural Alignment & Continuity

Lecture 18 - Steel Material Preparation

Lecture 19 - Shot Blasting

Lecture 20 - Acid Pickling

Lecture 21 - Plate Cutting

Lecture 22 - Plate & Section Forming - I

Lecture 23 - Plate & Section Forming - II

Lecture 24 - Line Heating

Lecture 25 - Fusion Welding & Power Source

Lecture 26 - Welding Parameters & their Effects

Lecture 27 - Welding Methods

Lecture 28 - Shielded Metal Arc Welding

Lecture 29 - Gas Metal Arc Welding - I

Lecture 30 - Gas Metal Arc Welding - II

Lecture 31 - Gas Tungsten Arc Welding

Lecture 32 - Submerged Arc Welding

Lecture 33 - Electroslag Welding

Lecture 34 - Electrogas Welding

Lecture 35 - Friction Stir Welding

Lecture 36 - FSW Metallurgy

Lecture 37 - Welding Defects & NDT

Lecture 38 - Welding Distortions

Lecture 39 - Distortion Mechanism & Types of Distortion

Lecture 40 - Distortion Control & Mitigation

Lecture 41 - Welding Sequence

NPTEL : Marine Hydrodynamics (Ocean Engineering)

Co-ordinators : Dr. T. Sahoo

Lecture 1 - Introduction to Marine Hydrodynamics

Lecture 2 - Law of Conservation of Mass - Continuity of Equation

Lecture 3 - Streamlines and Flow Direction

Lecture 4 - Worked Examples on Various Types of Flow

Lecture 5 - Equation of Motion (Law of Conservation of Momentum)

Lecture 6 - Applications of Equations of Motion

Lecture 7 - Applications of Equations of Motion (Continued...)

Lecture 8 - Two Dimensional Flows

Lecture 9 - Two Dimensional Flows (Continued...)

Lecture 10 - Source, Sink and Doublet

Lecture 11 - Worked Examples on Two Dimensional Flows

Lecture 12 - Conformal Mapping and Joukowsky Transformation

Lecture 13 - Uniform Flow Past an Elliptic Cylinder

Lecture 14 - Aerofoil theory

Lecture 15 - Aerofoil theory (Continued...)

Lecture 16 - Aerofoil theory (Continued...)

Lecture 17 - Schwarz - Christoffel Transformation

Lecture 18 - Motion of a cylinder

Lecture 19 - Vertex Motion

Lecture 20 - Irrotational Flow - A Bird's eyeview

Lecture 21 - Introduction to Water Waves

Lecture 22 - Basic Equation and Conditions of Water Waves

Lecture 23 - Water particle kinematics in wave motion

Lecture 24 - Capillary Gravity Waves

Lecture 25 - Linearised Long Wave Equation

Lecture 26 - Linearised Long Wave Equation (Continued...)

Lecture 27 - Wave motion in two layer fluids

Lecture 28 - Worked Examples on Wave Motion

Lecture 29 - Worked Examples on Wave Motion (Continued...)

Lecture 30 - Gravity wave transformation and energy rotation

Lecture 31 - Gravity wave transformation and energy rotation (Continued...)

Lecture 32 - Gravity wave transformation and energy rotation (Continued...)

Lecture 33 - Navier - Stokes equation of motion

Lecture 34 - Analysis of Basic Flow Problems

Lecture 35 - Analysis of Basic Flow Problems (Continued...)

Lecture 36 - Unsteady unidirectional flows

Lecture 37 - Unsteady unidirectional flows (Continued...)

Lecture 38 - An introduction to Boundary Layer Theory

Lecture 39 - Solution methods for Boundary Layer Equations

Lecture 40 - Solutions Methods for Boundary Layer Equations (Continued...)

NPTEL : Seakeeping and Manoeuvring (Ocean Engineering)

Co-ordinators : Prof. Debabrata Sen

Lecture 1 - Regular Water Waves - I

Lecture 2 - Regular Water Waves - II

Lecture 3 - Definition of Ship Motions & Encounter Frequency

Lecture 4 - Single Degree of Freedom Motions in Regular Waves

Lecture 5 - Uncoupled Heave, Pitch and Roll - I

Lecture 6 - Uncoupled Heave, Pitch and Roll - II

Lecture 7 - Uncoupled Heave, Pitch and Roll - III

Lecture 8 - Uncoupled Heave, Pitch and Roll - IV

Lecture 9 - Uncoupled Heave, Pitch and Roll - V

Lecture 10 - Coupled Motions

Lecture 11 - Irregular Waves

Lecture 12 - Description of Irregular Waves by Spectrum

Lecture 13 - Theoretical Wave Spectrum

Lecture 14 - Ship Motion in Irregular Waves - I

Lecture 15 - Ship Motion in Irregular Waves - II

Lecture 16 - Ship Motion in Irregular Waves - III

Lecture 17 - Description of Short-Crested Sea

Lecture 18 - Motions in Short-Crested Sea

Lecture 19 - Derived Responses & Dynamic Effects - I

Lecture 20 - Derived Responses & Dynamic Effects - II

Lecture 21 - Derived Responses & Dynamic Effects - III

Lecture 22 - Seakeeping Considerations in Design

Lecture 23 - Manoeuvring: Introduction & Basic Equations

Lecture 24 - Dynamic Equations of Motion - I

Lecture 25 - Dynamic Equations of Motion - II

Lecture 26 - Hydrodynamic Derivatives

Lecture 27 - Controls-Fixed Stability

Lecture 28 - Stability & Cotrollability: Definitive Manoeuvres

Lecture 29 - Definitive Manoeuvres - I

Lecture 30 - Definitive Manoeuvres - II

Lecture 31 - Definitive Manoeuvres - III

Lecture 32 - Non-linear Equations of Motion

Lecture 33 - Non-linear Equations & Model Tests

Lecture 34 - Captive Model Tests and Experimental Determination of Hydrodynamic Derivatives

Lecture 35 - PMM Tests - I

Lecture 36 - PMM Tests - II

Lecture 37 - Rudder & Control Surfaces - I

Lecture 38 - Rudder & Control Surfaces - II

Lecture 39 - Theoretical Determination of Hydrodynamic Derivatives - I

Lecture 40 - Theoretical Determination of Hydrodynamic Derivatives - II

NPTEL : Applied Thermodynamics for Marine Systems (Ocean Engineering)

Co-ordinators : Prof. P.K. Das

Lecture 1 - Introduction & Some Definitions

Lecture 2 - First Law of Thermodynamics (Closed System)

Lecture 3 - First Law of Thermodynamics (Open System)

Lecture 4 - Second Law of Thermodynamics

Lecture 5 - Second Law and Carnot Principle

Lecture 6 - Property of Pure Substance, Steam Table

Lecture 7 - Ideal Gas Laws, Different Processes

Lecture 8 - Introduction to Vapour Power Cycle

Lecture 9 - Vapour Power Cycle

Lecture 10 - Steam Power Cycle, Steam Nozzle

Lecture 11 - Basic Concept of Turbine, Velocity Diagram

Lecture 12 - Steam Turbine-Impulse

Lecture 13 - Reaction Turbine Compounding

Lecture 14 - Comparison of Different Staging Arrangement

Lecture 15 - Basics Laws of Fluid Mechanics

Lecture 16 - Pipe Friction, Major Loss, Minor Loss

Lecture 17 - Pipeline & Pipe Network

Lecture 18 - Refrigeration Vapour Compression Cycle

Lecture 19 - Psychometrics

Lecture 20 - Psychometrics (Continued...)

Lecture 21 - Psychometric Processes

Lecture 22 - Psychometric Processes (Continued...), Air Conditioning

Lecture 23 - Summer & Winter Air Conditioning

Lecture 24 - Gas Power Cycles, Cycles for IC Engines

Lecture 25 - Gas Turbine Cycles

Lecture 26 - Modification of Brayton Cycle

Lecture 27 - Introduction to Convective Heat Transfer Forced & Free Convection

NPTEL : Performance of Marine Vehicles at Sea (Ocean Engineering)

Co-ordinators : Prof. Debabrata Sen, Prof. S.C. Misra

Lecture 1 - Components of Resistance - I

Lecture 2 - Components of Resistance - II

Lecture 3 - Dimensional Analysis

Lecture 4 - Frictional Resistance

Lecture 5 - Wave Making Resistance

Lecture 6 - Other Components of Resistance

Lecture 7 - Model Experiments

Lecture 8 - Shallow Water Effects

Lecture 9 - Ship hull form and Resistance

Lecture 10 - Propeller Geometry - Part I

Lecture 11 - Propeller Geometry - Part II

Lecture 12 - Introduction to High Speed Crafts - Part I

Lecture 13 - Introduction to High Speed Crafts - Part II

Lecture 14 - Propeller in Open Water - Part I

Lecture 15 - Propeller in Open Water - Part II

Lecture 16 - Propeller 'behind' a ship

Lecture 17 - Propeller experiments

Lecture 18 - Propeller theories - Part I

Lecture 19 - Propeller Theories

Lecture 20 - Cavitation

Lecture 21 - Regular Sea Waves - I

Lecture 22 - Regular Sea Waves - II

Lecture 23 - Irregular sea Waves - I

Lecture 24 - Irregular Sea Waves - II

Lecture 25 - Ship Motion in Regular Waves - I

Lecture 26 - Ship Motion in Regular Waves - II

Lecture 27 - Ship Motion in Regular Waves - III

Lecture 28 - Ship Motion in irregular Waves - I

Lecture 29 - Ship Motion in irregular Waves - II

Lecture 30 - Ship Motion in irregular Waves - III

Lecture 31 - Motion in Short Crested Sea,Coupled Motions

Lecture 32 - Derived Responses

Lecture 33 - Ship Controllability : Introductory Notes

Lecture 34 - Equation of Motion in Horizontal Plane

Lecture 35 - Hydrodynamic Derivatives and Stability

Lecture 36 - Hydrodynamic Derivatives and Stability

Lecture 37 - Ship Trials and Maneuvers - I

Lecture 38 - Ship Trials and Maneuvers - II

Lecture 39 - Heel During Turn, IMO Requirements

Lecture 40 - Rudder Hydrodynamics

NPTEL : Strength and Vibration of Marine Structures (Ocean Engineering)

Co-ordinators : Prof. S.K. Satsangi, Prof. A.H. Sheikh

Lecture 1 - Introduction to Ship Structures - I

Lecture 2 - Introduction to Ship Structures - II

Lecture 3 - Deflection of Structure Beam - I

Lecture 4 - Deflection of Structure Beam - II

Lecture 5 - Deflection of Structure Beam - III

Lecture 6 - Deflection of Structure Beam - IV

Lecture 7 - Statically Indeterminate Structures - I

Lecture 8 - Statically Indeterminate Structures - II

Lecture 9 - Statically Indeterminate Structures - III

Lecture 10 - Statically Indeterminate Structures - IV

Lecture 11 - Statically Indeterminate Structures - V

Lecture 12 - Statically Indeterminate Structures - VI

Lecture 13 - Longitudinal Bending of Hull Girder - I

Lecture 14 - Longitudinal Bending of Hull Girder - II

Lecture 15 - Longitudinal Bending of Hull Grider - III

Lecture 16 - Theory of Column - I

Lecture 17 - Theory of Column - II

Lecture 18 - Theory of Column - III

Lecture 19 - Theory of Column - IV

Lecture 20 - Calculation of Momentum of Inertia of Main Section

Lecture 21 - Bending in Inclined Condition

Lecture 22 - Calculation of Deflection/Shear Stress

Lecture 23 - Ship Vibration - I

Lecture 24 - Ship Vibration - II

Lecture 25 - Ship Vibration - III

Lecture 26 - Ship Vibration - IV

Lecture 27 - Ship Vibration - V

Lecture 28 - Propeller Induced Vibration & Hull Frequency Estimation

Lecture 29 - Hull Frequency Estimation from Basic Group (Continued...)

Lecture 30 - Analysis of Bulkhead - I

Lecture 31 - Analysis of Bulkhead - II

Lecture 32 - Stress Concentration/Structural Discontinuities

Lecture 33 - Composite Construction

Lecture 34 - Method of Plastic Analysis

Lecture 35 - Calculation of Natural Frequency of Hull Girder

Lecture 36 - Hull Resonance Diagram

NPTEL : NOC:Water Economics and Governance (Ocean Engineering)

Co-ordinators : Prof. Manoj Kumar Tiwari

Lecture 1 - Introduction

Lecture 2 - Global Water Availability and Uses

Lecture 3 - Water Availability and Uses in India

Lecture 4 - Surface Water and Ground Water Resources

Lecture 5 - Water Use Practices and Major Challenges

Lecture 6 - Background to Water Rights

Lecture 7 - Water Rights

Lecture 8 - Right to Sanitation

Lecture 9 - Rights to Water and Sanitation - Underline Principals and Implementation

Lecture 10 - Water Rights : Challenges

Lecture 11 - Water Sustainability : Basic Concept

Lecture 12 - The Dublin Statement on Water Sustainability

Lecture 13 - Action Agenda in the Dublin Statement on Water Sustainability

Lecture 14 - Water Sustainability : Viewpoints

Lecture 15 - Water Sustainability : Conflicts

Lecture 16 - Valuing Water : Economic Value of Water

Lecture 17 - Valuing Water : Use and Non-Use Values

Lecture 18 - Valuing Water : Valuation of Water

Lecture 19 - Valuing Water : Water Valuation Methods

Lecture 20 - Valuing Water : Full Value and Losses

Lecture 21 - Pricing Water : Sustainable Water Pricing

Lecture 22 - Pricing Water : Setting Water Tariffs

Lecture 23 - Pricing Water : Water Tariff Models

Lecture 24 - Pricing Water : Water Tariff Models

Lecture 25 - Pricing Water : Water Tariff Models

Lecture 26 - Water Pricing : Need of Reforms

Lecture 27 - Conflicts in Water Pricing

Lecture 28 - Conflicts in Water Pricing

Lecture 29 - Conflicts in Water Pricing

Lecture 30 - Water Pricing Case Studies

Lecture 31 - Economics of Water Projects

Lecture 32 - Economics of Water Projects : Economic Analysis

Lecture 33 - Economics of Water Projects : Financial Analysis

Lecture 34 - Economics of Water Projects : Benefit-Cost Analysis

Lecture 35 - Economics of Demand and Sectoral Allocation

Lecture 36 - Economics Evaluation of Water Projects

Lecture 37 - Evaluation of Water Projects : Capital Budgeting Methods

Lecture 38 - Evaluation of Water Projects : Capital Budgeting Methods

Lecture 39 - Evaluation of Water Projects : Capital Budgeting Methods

Lecture 40 - Evaluation of Water Projects : Capital Budgeting Methods

Lecture 41 - Evaluation of Water Projects : Selection of Capital Budgeting Methods (Continued...)

Lecture 42 - Evaluation of Water Projects : Selection of Capital Budgeting Methods (Continued...)

Lecture 43 - Water Governance

Lecture 44 - Elements, Dimensions and Principles of Water Governance

Lecture 45 - Principles of Water Governance

Lecture 46 - Principles of Water Governance and Effective Water Governance Schemes

Lecture 47 - Effective Water Governance Schemes and its Benchmarking

Lecture 48 - Decision Making and Implementation in Water Governance and its Benchmarking

Lecture 49 - Water Governance in India : Historical Perspective

Lecture 50 - Water Governance in India : Pre- and Post- Independent

Lecture 51 - Water Governance in India : Water Programmes and Policies

Lecture 52 - Water Governance in India : Water Programmes and Policies (Continued...)

Lecture 53 - Water Governance in India : Environmental Protection and Water Reforms

Lecture 54 - Water Dispute Management : Water Conflicts

Lecture 55 - Water Dispute Management : Interstate and Interstate Water Disputes

Lecture 56 - Water Dispute Management : Interstate Water Dispute Resolution

Lecture 57 - Water Dispute Management : Case Studies

Lecture 58 - Global Water Diplomacy : Trans-boundary Water

Lecture 59 - Global Water Diplomacy : Conflict Vs Cooperation

Lecture 60 - Global Water Diplomacy : Cooperation for Water

Lecture 61 - Course Summary

Lecture 62 - Course Summary (Continued...)

Lecture 63 - Live Session-1

Lecture 64 - Live Session-2

Lecture 65 - Live Session-2 (April 20, 2018)

NPTEL : NOC:Marine Propulsion (Ocean Engineering)

Co-ordinators : Prof. Anirban Bhattacharyya

Lecture 1 - Introduction

Lecture 2 - Propeller Geometry

Lecture 3 - Propeller Geometry (Continued...)

Lecture 4 - Propeller Theory - I

Lecture 5 - Propeller Theory - II

Lecture 6 - Propeller Theory - III

Lecture 7 - Propeller Theory - IV

Lecture 8 - Propeller Theory - V

Lecture 9 - Propeller Theory - VI

Lecture 10 - Propeller Theory - VII

Lecture 11 - Propeller in Open Water

Lecture 12 - Dimensional Analysis and Similarity

Lecture 13 - Propeller Open Water Characteristics

Lecture 14 - Propeller Open Water Characteristics (Continued...)

Lecture 15 - Methodical Propeller Series

Lecture 16 - Hull-Propeller Interaction

Lecture 17 - Hull-Propeller Interaction (Continued...)

Lecture 18 - Ship Powering and Efficiency Components

Lecture 19 - Engine-Propeller Matching - Part I

Lecture 20 - Engine-Propeller Matching - Part II

Lecture 21 - Propeller Model Tests - Part I

Lecture 22 - Propeller Model Tests - Part II

Lecture 23 - Propeller Model Tests - Part III

Lecture 24 - Propeller Cavitation - Part I

Lecture 25 - Propeller Cavitation - Part II

Lecture 26 - Propeller Strength - Part I

Lecture 27 - Propeller Strength - Part II

Lecture 28 - Propeller Design - Part I

Lecture 29 - Propeller Design - Part II

Lecture 30 - Propeller Design - Part III

Lecture 31 - Controllable Pitch Propeller

Lecture 32 - Ducted Propeller

Lecture 33 - Ducted Propeller (Continued...)

Lecture 34 - Problems on Propeller Performance

Lecture 35 - Surface Piercing Propeller, Podded Propeller, Thruster

Lecture 36 - Waterjet Propulsion

Lecture 37 - Unconventional Propulsors

Lecture 38 - Unconventional Propulsors (Continued...)

Lecture 39 - Miscellaneous Topics

Lecture 40 - Energy Saving Devices

NPTEL : NOC:Numerical Ship and Offshore Hydrodynamics (Ocean Engineering)

Co-ordinators : Prof. Ranadev Datta

Lecture 1 - Introduction

Lecture 2 - Introduction to Seakeeping - 1

Lecture 3 - Introduction to Seakeeping - 2

Lecture 4 - Seakeeping - 3

Lecture 5 - Seakeeping - 4

Lecture 6 - Seakeeping - 5

Lecture 7 - Seakeeping - 6

Lecture 8 - Seakeeping - 7

Lecture 9 - Hydrodynamics - 1

Lecture 10 - Hydrodynamics - 2

Lecture 11 - Wave and Wave Effect

Lecture 12 - Waves - 2

Lecture 13 - Waves - 3

Lecture 14 - Introduction to BEM

Lecture 15 - Introduction to BEM (Continued...)

Lecture 16 - Lower Order Panel Method

Lecture 17 - Lower Order Panel Method (Continued...)

Lecture 18 - Case Study - Part 1

Lecture 19 - Case Study - Part 2

Lecture 20 - Demonstration of Panel Method Code

Lecture 21 - Frequency Domain Panel Method

Lecture 22 - Frequency Domain Panel Method (Continued...)

Lecture 23 - Frequency Domain Panel Method (Continued...)

Lecture 24 - Frequency Domain Panel Method (Continued...)

Lecture 25 - Frequency Domain Panel Method (Continued...)

Lecture 26 - Frequency Domain Panel Method (Continued...)

Lecture 27 - Frequency Domain Panel Method (Continued...)

Lecture 28 - Frequency Domain Panel Method (Continued...)

Lecture 29 - Cummins Equation

Lecture 30 - IRF Based Solution - Part 1

Lecture 31 - IRF Based Solution - Part 2

Lecture 32 - Time Domain Solution Using IRF

Lecture 33 - Time Domain Solution Using IRF (Continued...)

Lecture 34 - Numerical Computation of IRF Based Method

Lecture 35 - Numerical Computation of IRF Based Method (Continued...)

Lecture 36 - Forward Speed Effects

Lecture 37 - Strip Theory - Part 1

Lecture 38 - Strip Theory - Part 2

Lecture 39 - Strip Theory - Part 3

Lecture 40 - Strip Theory - Part 4

Lecture 41 - Strip Theory - Part 5

Lecture 42 - Strip Theory - Part 6

Lecture 43 - Strip Theory - Part 7

Lecture 44 - Time Domain Panel Method

Lecture 45 - Time Domain Panel Method (Continued...)

Lecture 46 - Time Domain Panel Method (Continued...)

Lecture 47 - Time Domain Panel Method (Continued...)

Lecture 48 - Time Domain Panel Method (Continued...)

Lecture 49 - Non Linear Time Domain Panel Method

Lecture 50 - Non Linear Time Domain Panel Method (Continued...)

Lecture 51 - Time Domain Panel Method - Code Development

Lecture 52 - Ship Hydroelasticity

Lecture 53 - Hydroelasticity

Lecture 54 - Hydroelasticity (Continued...)

Lecture 55 - Hydroelasticity (Continued...)

Lecture 56 - Semi Analytic Method

Lecture 57 - Semi Analytic Method (Continued...)

Lecture 58 - Including Non linear Forces in BEM Code

Lecture 59 - Including Non linear Forces in BEM Code (Continued...)

Lecture 60 - Closer

NPTEL : NOC:Seakeeping of Ships and Offshore Structures (Ocean Engineering)

Co-ordinators : Prof. Ranadev Datta

Lecture 1 - Introduction

Lecture 2 - Basic Hydrodynamics - Part 1

Lecture 3 - Basic Hydrodynamics - Part 2

Lecture 4 - Basic Water Wave Theory

Lecture 5 - Water Wave - Part II

Lecture 6 - Non-linear Wave

Lecture 7 - Ir-regular Waves

Lecture 8 - Sea Spectrum

Lecture 9 - Encounter Frequency

Lecture 10 - Problem Solving

Lecture 11 - Coupled and Uncoupled Motion

Lecture 12 - Uncoupled Heave Motion - Part I

Lecture 13 - Uncoupled Heave Motion - Part II

Lecture 14 - Uncoupled Heave Motion - Part III

Lecture 15 - Uncoupled Heave Motion - Part IV

Lecture 16 - Uncoupled Heave Motion - Part V

Lecture 17 - Uncoupled Heave Motion - Part VI

Lecture 18 - Basic Strip Theory Code

Lecture 19 - Problem Discussion on Uncoupled Heave Motion

Lecture 20 - Uncoupled Pitch Motion

Lecture 21 - Uncoupled Pitch and Roll Motion

Lecture 22 - Discussion Uncoupled Roll Motion

Lecture 23 - Problem Solving

Lecture 24 - Coupled Equation of Motion

Lecture 25 - Brief Discussion on Industry Standards Commercial Software for Seakeeping

Lecture 26 - Loads Under Extreme Waves - Part 1

Lecture 27 - Loads Under Extreme Waves - Part 2

Lecture 28 - Motion Stabilizer

Lecture 29 - General Discussion on Various Offshore Structures

Lecture 30 - Morison's Equation - Part I

Lecture 31 - Morison's Equation - Part II

Lecture 32 - Mooring Analysis - Part I

Lecture 33 - Mooring Analysis - Part II

Lecture 34 - Mooring Analysis - Part III

Lecture 35 - Discussion on Orcaflex Software

Lecture 36 - Revision Ir-regular Waves

Lecture 37 - Problem Solving

Lecture 38 - Short Crested Wave

Lecture 39 - Encounter Wave Spectrum

Lecture 40 - Encounter Wave Spectrum (Continued...)

Lecture 41 - Response Spectrum - Part I

Lecture 42 - Response Spectrum - Part II

Lecture 43 - Problem Solving

Lecture 44 - Derived Motion - Part II

Lecture 45 - Vertical Bow Motion - Part II

Lecture 46 - Relative Bow Motion and Deck Wetness

Lecture 47 - Deck Wetness

Lecture 48 - Derived Responses : Slamming

Lecture 49 - Problem Solving

Lecture 50 - Sea Sickness and Others

Lecture 51 - 2nd Order Forces - Part I

Lecture 52 - 2nd Order Forces - Part II

Lecture 53 - Added Resistance and Sloshing

Lecture 54 - Dynamic Positioning - Part I

Lecture 55 - Dynamic Positioning - Part II

Lecture 56 - Seakeeping Design Consideration - Part I

Lecture 57 - Seakeeping Design Consideration - Part II

Lecture 58 - Discussion on Gate Paper

Lecture 59 - Problems Solving

Lecture 60 - Problem and Closer

NPTEL : Design of Offshore Structures (Ocean Engineering)

Co-ordinators : Dr. S. Nallayarasu

Lecture 1 - Loads On Offshore Structures - 1

Lecture 2 - Loads On Offshore Structures - 2

Lecture 3 - Loads On Offshore Structures - 3

Lecture 4 - Loads On Offshore Structures - 4

Lecture 5 - Loads On Offshore Structures - 5

Lecture 6 - Loads On Offshore Structures - 6

Lecture 7 - Loads On Offshore Structures - 7

Lecture 8 - Concepts of Fixed Offshore Platform Deck and Jacket - 1

Lecture 9 - Concepts of Fixed Offshore Platform Deck and Jacket - 2

Lecture 10 - Concepts of Fixed Offshore Platform Deck and Jacket - 3

Lecture 11 - Concepts of Fixed Offshore Platform Deck and Jacket - 4

Lecture 12 - Concepts of Fixed Offshore Platform Deck and Jacket - 5

Lecture 13 - Steel Tubular Member Design - 1

Lecture 14 - Steel Tubular Member Design - 2

Lecture 15 - Steel Tubular Member Design - 3

Lecture 16 - Steel Tubular Member Design - 4

Lecture 17 - Steel Tubular Member Design - 5

Lecture 18 - Tubular Joint Design for Static and Cyclic Loads - 1

Lecture 19 - Tubular Joint Design for Static and Cyclic Loads - 2

Lecture 20 - Tubular Joint Design for Static and Cyclic Loads - 3

Lecture 21 - Tubular Joint Design for Static and Cyclic Loads - 4

Lecture 22 - Tubular Joint Design for Static and Cyclic Loads - 5

Lecture 23 - Tubular Joint Design for Static and Cyclic Loads - 6

Lecture 24 - Tubular Joint Design for Static and Cyclic Loads - 7

Lecture 25 - Tubular Joint Design for Static and Cyclic Loads - 8

Lecture 26 - Tubular Joint Design for Static and Cyclic Loads - 9

Lecture 27 - Tubular Joint Design for Static and Cyclic Loads - 10

Lecture 28 - Tubular Joint Design for Static and Cyclic Loads - 11

Lecture 29 - Tubular Joint Design for Static and Cyclic Loads - 12

Lecture 30 - Jackup RIGS-Analysis and Design - 1

Lecture 31 - Jackup RIGS-Analysis and Design - 2

Lecture 32 - Jackup RIGS-Analysis and Design - 3

Lecture 33 - Jackup RIGS-Analysis and Design - 4

Lecture 34 - Jackup RIGS-Analysis and Design - 5

Lecture 35 - Design Against Accidental Loads - 1

Lecture 36 - Design Against Accidental Loads - 2

Lecture 37 - Design Against Accidental Loads - 3

Lecture 38 - Design Against Accidental Loads - 4

Lecture 39 - Design Against Accidental Loads - 5

Lecture 40 - Design Against Accidental Loads - 6

Lecture 41 - Design Against Accidental Loads - 7

Lecture 42 - Design Against Accidental Loads - 8

NPTEL : Foundation for Offshore Structures (Ocean Engineering)

Co-ordinators : Dr. S. Nallayarasu

Lecture 1 - Basics of Soil Mechanics - I

Lecture 2 - Basics of Soil Mechanics - II

Lecture 3 - Basics of Soil Mechanics - III

Lecture 4 - Basics of Soil Mechanics - IV

Lecture 5 - Basics of Soil Mechanics - V

Lecture 6 - Basics of Soil Mechanics - VI

Lecture 7 - Basics of Soil Mechanics - VII

Lecture 8 - Bearing Capacity of Foundations - I

Lecture 9 - Bearing Capacity of Foundations - II

Lecture 10 - Pile Foundation - I

Lecture 11 - Pile Foundation - II

Lecture 12 - Pile Foundation - III

Lecture 13 - Pile Foundation - IV

Lecture 14 - Pile Foundation - V

Lecture 15 - Pile Foundation - VI

Lecture 16 - Pile Installation - I

Lecture 17 - Pile Installation - II

Lecture 18 - Pile Driveability Analysis - I

Lecture 19 - Pile Driveability Analysis - II

Lecture 20 - Pile Driveability Analysis - III

Lecture 21 - Pile Driveability Analysis - IV

Lecture 22 - Pile Driveability Analysis - V

Lecture 23 - Onbottom Stability of Jackets - I

Lecture 24 - Onbottom Stability of Jackets - II

Lecture 25 - Pile Load Test - I

Lecture 26 - Pile Load Test - II

Lecture 27 - Pile Load Test - III

Lecture 28 - Special Topics

Lecture 29 - Special Foundations - I

Lecture 30 - Special Foundations - II

Lecture 31 - Special Foundations - III

Lecture 32 - Pile Group Effects

Lecture 33 - Two Pile Group Effect For Axial Load

NPTEL : Health,Safety and Environmental Management in Petroleum and Offshore Engineering (Ocean Engineering)

Co-ordinators : Dr. Srinivasan Chandrasekaran

Lecture 1 - Introduction and Terminologies

Lecture 2 - Introduction to HSE

Lecture 3 - Safety assurance and assessment

Lecture 4 - Safety assurance and assessment (Continued...)

Lecture 5 - Safety in design and operations

Lecture 6 - Organizing for safety

Lecture 7 - Hazard classification and assessment, Hazard evaluation and hazard control

Lecture 8 - HaZOP

Lecture 9 - HaZOP (Continued...)

Lecture 10 - Hazard evaluation and hazard control

Lecture 11 - Hazard Identification and Management in Oil & Gas Industry using HAZOP

Lecture 12 - FMEA

Lecture 13 - FMEA (Continued...)

Lecture 14 - Environmental Issues and Management

Lecture 15 - Impact of Oil and Gas Industry on Marine Environment

Lecture 16 - Oil Hydrocarbon in Marine Environment

Lecture 17 - Chemicals and Wastes from Offshore and Oil Industry

Lecture 18 - Dispersion Models â€“ Atmospheric Pollution

Lecture 19 - Atmospheric Pollution (Continued...)

Lecture 20 - Hazard Assessment and Accident Scenario

Lecture 21 - Dose Assessment, Safety Regulation

Lecture 22 - Toxic Release and Dispersion Modeling

Lecture 23 - Chemical Exposure Index (CEI)

Lecture 24 - Chemical Exposure Index (Continued.)

Lecture 25 - Quantitative Risk Assessment

Lecture 26 - Quantitative Risk Assessment (Liquid Release Models Case Study - Continued...)

Lecture 27 - Fire and Explosion Modeling

Lecture 28 - Fire and Explosion Modeling Flammability Diagrams

Lecture 29 - Explosion Modeling

Lecture 30 - Fire and Explosion Preventive Measures

Lecture 31 - Probabilistic Risk Analysis

Lecture 32 - Safety Measures in Design and Process Operations

Lecture 33 - Case Studies

Lecture 34 - Case Studies (Continued...)

Lecture 35 - Software Used in HSE â€“ an Over View

NPTEL : Port and Harbour Structures (Ocean Engineering)

Co-ordinators : Prof. R. Sundaravadivelu

Lecture 1 - Layout of ports

Lecture 2 - Continuation of layout of ports

Lecture 3 - Visakhapatnam port

Lecture 4 - Ships and size of ships

Lecture 5 - Port planning

Lecture 6 - Harbour layout

Lecture 7 - Site characteristics & navigation channel

Lecture 8 - Bathymetric survey

Lecture 9 - Tide, surge, tsunami and wave

Lecture 10 - Wave rose diagram

Lecture 11 - Breakwater

Lecture 12 - Design of breakwater - Part-1

Lecture 13 - Design of breakwater - Part-2

Lecture 14 - Berm breakwater

Lecture 15 - Dredging & methods of disposal

Lecture 16 - Berthing structures modelling

Lecture 17 - Berthing structures - analyses

Lecture 18 - Loads

Lecture 19 - Types of berthing structures

Lecture 20 - Design of berthing, structures-1

Lecture 21 - Design of offshore berthing, structures-1

Lecture 22 - Estimation of mooring, berthing and seismic forces

Lecture 23 - Estimation seismic forces

Lecture 24 - Active and passive earth pressure and differential water pressure

Lecture 25 - Load combinations and design

Lecture 26 - Fenders

Lecture 27 - Mechanical handling system

Lecture 28 - Single buoy mooring and open sea jetty - Part 1

Lecture 29 - Single buoy mooring and open sea jetty - Part 2

Lecture 30 - Slipway, drydock,floating dock, shiplift

Lecture 31 - Soil structure interaction

Lecture 32 - Calulation of fixity depth

Lecture 33 - Pile load test

Lecture 34 - Ground improvement techniques

Lecture 35 - Analysis of pile with spring support

Lecture 36 - UPV,Half cell potential, Low high Integrity Test

Lecture 37 - Mooring Dolphin at KPT

Lecture 38 - Coastal structures and environmental management

Lecture 39 - BOQ and Cost Estimate

Lecture 40 - Proposed Mega Terminal Chennai

Lecture 41 - Preliminary Project Report on Shipyard

Lecture 42 - Procedures & clearances before implementation of a project

Lecture 43 - Detailed project report

Lecture 44 - Environmental studies of a project

Lecture 45 - Design of pile

Lecture 46 - Design and construction of diaphragm wall

Lecture 47 - Emprical relationship between spt and several soil properties

Lecture 48 - Model studies for a deep water port_case study

NPTEL : Ship Resistance and Propulsion (Ocean Engineering)

Co-ordinators : Dr. P. Krishnankutty, Prof. V. Anantha Subramanian

Lecture 1 - Syllabus and Introduction

Lecture 2 - Seaway Effects on Resistance

Lecture 3 - Ship Types and Powering Aspects

Lecture 4 - Frictional Resistance and Turbulence Stimulation

Lecture 5 - Wave Making Resistance

Lecture 6 - Bulbous Bow on Ship Resistance

Lecture 7 - Air and Wind Resistance Dimensional Analysis - I

Lecture 8 - Dimensional Analysis - II, Model Tests and Ship Resistance Prediction Methods - I

Lecture 9 - Model Tests and Ship Resistance Prediction Methods - II

Lecture 10 - Model Tests and Ship Resistance Prediction Methods - III

Lecture 11 - Resistance in Shallow Water

Lecture 12 - Canal Effects on Resistance Holtrap-Mennen Method for Ship Resistance Prediction

Lecture 13 - Ship Resistance Prediction Methods - I

Lecture 14 - Ship Resistance Prediction Methods - II

Lecture 15 - Resistance of Advanced Marine Vehicles - I

Lecture 16 - Resistance of Advanced Marine Vehicles - II

Lecture 17 - Resistance of Advanced Marine Vehicles - III

NPTEL : Coastal Engineering (Ocean Engineering)

Co-ordinators : Prof. V. Sundar

Lecture 1 - Wave deformation - I

Lecture 2 - Wave deformation - II

Lecture 3 - wave deformation (problems - I)

Lecture 4 - wave deformation (problems - II)

Lecture 5 - wave deformation (problems - III)

Lecture 6 - Sediment charecteristics - I

Lecture 7 - Sediment charecteristics - II

Lecture 8 - Radiation stresses - I

Lecture 9 - Radiation stresses - II

Lecture 10 - Longshore sediment transport - I

Lecture 11 - Longshore sediment transport - II

Lecture 12 - Longshore sediment transport (problems - I)

Lecture 13 - Longshore sediment transport (problems - II)

Lecture 14 - Coastal erosion protection measures - I

Lecture 15 - Coastal erosion protection measures - II

Lecture 16 - Coastal erosion protection measures - III

Lecture 17 - Coastal erosion protection measures - IV

Lecture 18 - Coastal erosion protection measures - V

Lecture 19 - Coastal erosion protection measures - VI

Lecture 20 - Coastal erosion protection measures - VII

Lecture 21 - Coastal erosion protection measures - VIII

Lecture 22 - Coastal erosion protection measures - IX

Lecture 23 - Coastal erosion protection measures - X

Lecture 24 - Cheaper CEP methods - XI

Lecture 25 - Geosynthetics - I

Lecture 26 - Geosynthetics - II

Lecture 27 - Breakwaters - I

Lecture 28 - Breakwaters - II

Lecture 29 - Breakwaters - III

Lecture 30 - Breakwaters - IV

Lecture 31 - Forces on coastal structures - I

Lecture 32 - Forces on coastal structures - II

Lecture 33 - Scour under marine structures

Lecture 34 - Physical modelling of coastal structures - I

Lecture 35 - Physical modelling of coastal structures - II

Lecture 36 - Tsunami - I

Lecture 37 - Tsunami - II

NPTEL : Wave Hydrodynamics (Ocean Engineering)

Co-ordinators : Prof. V. Sundar

Lecture 1 - Basic Fluid Dynamics - I

Lecture 2 - Basic Fluid Dynamics - II

Lecture 3 - Introduction

Lecture 4 - Wave Motion - I

Lecture 5 - Wave Motion - II

Lecture 6 - Wave Motion - III

Lecture 7 - Wave Motion Problems

Lecture 8 - Standing Wave Theory

Lecture 9 - Wave Deformation - I

Lecture 10 - Wave Deformation - II

Lecture 11 - Wave Deformation and Problems

Lecture 12 - Random Waves

Lecture 13 - Random Waves and Problems - I

Lecture 14 - Random Waves and Problems - II

Lecture 15 - Random Waves and Problems - III

Lecture 16 - Simulation of Random Waves

Lecture 17 - Directional waves

Lecture 18 - Wave Loads on Structures - I

Lecture 19 - Wave Loads on Structures - II

Lecture 20 - Wave Loads on Structures and Problems - I

Lecture 21 - Wave Loads on Structures and Problems - II

Lecture 22 - Wave loads on Large Boides

Lecture 23 - Finite Amplitude Wave Theories

Lecture 24 - Hydrodynamic Testing Facility

Lecture 25 - Hydrodynamic Testing Facility at IITM

NPTEL : Ocean Structures and Materials (Ocean Engineering)

Co-ordinators : Dr. Srinivasan Chandrasekaran

Lecture 1 - Introduction and objectives

Lecture 2 - Fixed type offshore structures

Lecture 3 - Compliant type offshore structures - I

Lecture 4 - Compliant type offshore structures - II

Lecture 5 - Drill ships and basics of drilling

Lecture 6 - Subsea production systems

Lecture 7 - Environmental loads - I

Lecture 8 - Environmental loads - II

Lecture 9 - Types of coastal structures - I

Lecture 10 - Types of coastal structures - II

Lecture 11 - Summary of coastal structures

Lecture 12 - Tutorials on Module - I

Lecture 13 - Outline of planning of ocean structures

Lecture 14 - Introduction to design

Lecture 15 - Construction techniques

Lecture 16 - Dredging - I

Lecture 17 - Dredging - II

Lecture 18 - Uncertainties in analysis and design

Lecture 19 - Design adequacy - Example I

Lecture 20 - Design adequacy - Example II

Lecture 21 - Dredging equipments' specifications

Lecture 22 - Ocean Pollution

Lecture 23 - Foundation and sea bed anchors

Lecture 24 - Introduction to materials - I

Lecture 25 - Introduction to materials - II

Lecture 26 - Concrete in marine environment

Lecture 27 - Concrete: problems and solutions

Lecture 28 - Repair materials for marine structures

Lecture 29 - Corrosion in concrete - I

Lecture 30 - Corrosion in concrete - II

Lecture 31 - Material sin repair and rehabilitation

Lecture 32 - Materials for special repair

Lecture 33 - New materials for coastal embankments - I

Lecture 34 - New materials for coastal embankments - II

Lecture 35 - Non-destructive testing

Lecture 36 - Structural health monitoring

Lecture 37 - Wireless sensor networking

Lecture 38 - Repair and rehabilitation-Fenders

NPTEL : Dynamics of Ocean Structures (Ocean Engineering)

Co-ordinators : Dr. Srinivasan Chandrasekaran

Lecture 1 - Introduction to different types of ocean structures - I

Lecture 2 - Introduction to different types of ocean structures - II

Lecture 3 - Introduction to different types of ocean structures - III

Lecture 4 - Types of Compliant towers

Lecture 5 - New Generation offshore and Coastal structures

Lecture 6 - Environmental forces

Lecture 7 - Wave forces, Current

Lecture 8 - Introduction to Structural dynamics

Lecture 9 - Characteristics of single degree - of - freedom model

Lecture 10 - Methods of writing equation of motion

Lecture 11 - Free and forced vibration of single degree - of - freedom systems

Lecture 12 - Undamped and damped systems - I

Lecture 13 - Undamped and damped systems - II

Lecture 14 - Undamped and damped systems - III

Lecture 15 - Comparison of methods

Lecture 16 - Examples

Lecture 17 - Numerical problems in single degree - of - freedom systems

Lecture 18 - Two degrees - of - freedom systems

Lecture 19 - Eigenvalues and Eigenvectors

Lecture 20 - Orthogonality of modes

Lecture 21 - Study of Multi degrees - of - freedom systems

Lecture 22 - Equations of motion

Lecture 23 - Natural frequencies and mode shapes

Lecture 24 - Stodla, Rayleigh - Ritz and influence coefficient methods, Dunkerley

Lecture 25 - Continuous system

Lecture 26 - Structural action of offshore structures

Lecture 27 - Fluid - Structure interaction - I

Lecture 28 - Fluid - Structure interaction - II Dynamic analysis of offshore jacket platforms

Lecture 29 - Steps of analysis using software

Lecture 30 - Steps of analysis using software (Continued...)

Lecture 31 - Dynamic analysis of articulated towers

Lecture 32 - Iterative frequency domain - I

Lecture 33 - Iterative frequency domain - II

Lecture 34 - Multi - legged articulated towers

Lecture 35 - Response control of multi-legged articulated towers using tuned mass dampers Experimental and analytical studies on MLAT

Lecture 36 - Development of Tension Leg Platforms and geometric optimization

Lecture 37 - Dynamic analyses of TLPs

Lecture 38 - Development of Mass, stiffness and damping matrices of TLP from first principles

Lecture 39 - Estimate of classical damping

Lecture 40 - TLPs under seismic excitation

Lecture 41 - Direct Integration method

Lecture 42 - Development of new generation offshore structures

Lecture 43 - Introduction to stochastic dynamics of ocean structures

Lecture 44 - Response spectrum

Lecture 45 - Narrow band process

Lecture 46 - Return period, Fatigue prediction

Lecture 47 - Modal response method, Modal mass contribution

Lecture 48 - Missing mass correction, Example problems

Lecture 49 - Duhamel's integral

NPTEL : Advanced Marine Structures (Ocean Engineering)

Co-ordinators : Dr. Srinivasan Chandrasekaran

Lecture 1 - Introduction and Scope

Lecture 2 - Fixed type structures

Lecture 3 - Compliant type structures

Lecture 4 - New generation marine structures

Lecture 5 - Environmental loads - I

Lecture 6 - Environmental loads - II

Lecture 7 - Environmental loads - III

Lecture 8 - Environmental loads - IV

Lecture 9 - Other loads - I

Lecture 10 - Other loads - II

Lecture 11 - Ultimate load design principles - I

Lecture 12 - Ultimate Limit State - I

Lecture 13 - Ultimate Limit State - II

Lecture 14 - Ultimate Limit State - III

Lecture 15 - Partial safety factor

Lecture 16 - Plastic design - I

Lecture 17 - Plastic design - II

Lecture 18 - Plastic design - III

Lecture 19 - Plastic design - IV - Example problems - I

Lecture 20 - Plastic analysis - Example problems - II

Lecture 21 - Plastic analysis - Example problems - III

Lecture 22 - Theories of failure - I

Lecture 23 - Theories of failure - II

Lecture 24 - Theories of failure - III

Lecture 25 - Theories of failure - IV

Lecture 26 - Shear centre - I

Lecture 27 - Shear centre - II - Examples

Lecture 28 - Plastic capacity of sections under combined loads - I

Lecture 29 - Plastic capacity of sections under combined loads - II

Lecture 30 - Impact analysis- fundamentals - I

Lecture 31 - Impact analysis- fundamentals - II

Lecture 32 - Ultimate capacity of tubular joints

Lecture 33 - Fluid structure interaction - I

Lecture 34 - Fluid structure interaction - II

Lecture 35 - Fluid induced vibration - I

Lecture 36 - Fluid induced vibration - II

Lecture 37 - Flow through perforated members - I

Lecture 38 - Flow through perforated members - numerical studies - II

Lecture 39 - Flow through perforated members - III - Analytical studies

Lecture 40 - Introduction to Reliability - I

Lecture 41 - Introduction to Reliability - II

Lecture 42 - Introduction to Reliability - III

Lecture 43 - Reliability framework in Marine structures

Lecture 44 - Ultimate Limit state and Reliability approach - I

Lecture 45 - Ultimate limit state and Reliability approach - II

Lecture 46 - Levels of Reliability

Lecture 47 - FOSM and AFOSM methods of Reliability

Lecture 48 - Fracture and Fatigue

Lecture 49 - Fatigue failure

Lecture 50 - Fatigue loading and fatigue analysis

Lecture 51 - Deterministic fatigue analysis

Lecture 52 - Spectral fatigue analysis

Lecture 53 - Stress concentration and fatigue analysis

NPTEL : NOC:Dynamics of Ocean Structures (Ocean Engineering)

Co-ordinators : Dr. Srinivasan Chandrasekaran

Lecture 1 - Introduction to Offshore structures

Lecture 2 - Introduction to Offshore structures (Continued...)

Lecture 3 - Environmental Loads

Lecture 4 - Structural action of Ocean structures

Lecture 5 - Single Degree of Freedom

Lecture 6 - Equations of Motion

Lecture 7 - Free Vibration of SDOF systems

Lecture 8 - Damped and Undamped Forced Vibration

Lecture 9 - Damped Forced Vibration

Lecture 10 - Response building

Lecture 11 - Numerical Example (SDOF)

Lecture 12 - Numerical Example II

Lecture 13 - Numerical Example

Lecture 14 - Numerical Example - MDOF

Lecture 15 - Numerical Example - Eigen value problems

Lecture 16 - Orthogonality of modes - MDOF system models

Lecture 17 - Numerical Methods for MDOF systems

Lecture 18 - Influence Coefficient Method - MDOF

Lecture 19 - STODLA Method - MDOF

Lecture 20 - Stodla Method - Examples

Lecture 21 - Rayleighs Method

Lecture 22 - Modal Response Analysis for MDOF

Lecture 23 - Rayleigh Damping

Lecture 24 - Caughey Damping

Lecture 25 - Damping Matrix by Super Positioning Method

Lecture 26 - Duhamels Integral

Lecture 27 - Modal superposition and truncation

Lecture 28 - Modal participation and missing mass corrections

Lecture 29 - Fluid Structure Interaction

Lecture 30 - Fluid Structure Interaction - II

Lecture 31 - Retrofitting and Rehabilitation - Application through Dynamics

Lecture 32 - Drag and Earthquake Forces

Lecture 33 - Articulated Towers

Lecture 34 - Fluid Structure Interaction Application in Ocean Structure

Lecture 35 - Response Control of Compliant Structures (MLAT)

Lecture 36 - MLATs with Passive Dampers

Lecture 37 - Tension Leg Platforms

Lecture 38 - Tension Leg Platforms - II

Lecture 39 - Fluid Structure Interaction.

Lecture 40 - Dynamic Analysis of TLPs under Springing and Ringing Waves

Lecture 41 - Numerical Integration

Lecture 42 - Dynamic Analysis of Offshore Triceratops

Lecture 43 - Stochastic Process

Lecture 44 - Stochastic Process (Continued...)

Lecture 45 - Response Spectrum - I

Lecture 46 - Response Spectrum - II

Lecture 47 - Return Period and Fatigue Damage

NPTEL : NOC:Health, Safety and Environmental Management in Offshore and Petroleum Engineering (Ocean Engineering)

Co-ordinators : Dr. Srinivasan Chandrasekaran

Lecture 1

Lecture 2

Lecture 3

Lecture 4

Lecture 5

Lecture 6

Lecture 7

Lecture 8

Lecture 9

Lecture 10

Lecture 11

Lecture 12

Lecture 13

Lecture 14

Lecture 15

Lecture 16

Lecture 17

Lecture 18

Lecture 19

Lecture 20

Lecture 21

Lecture 22

Lecture 23

Lecture 24

Lecture 25

Lecture 26

Lecture 27

Lecture 28

Lecture 29

Lecture 30

Lecture 31

Lecture 32

Lecture 33

Lecture 34

Lecture 35

Lecture 36

Lecture 37

NPTEL : NOC:Risk and Reliability of offshore structures (Ocean Engineering)

Co-ordinators : Dr. Srinivasan Chandrasekaran

Lecture 1 - Introduction

Lecture 2 - Uncertainties

Lecture 3 - Uncertainties - II

Lecture 4 - Probability and Plausibility

Lecture 5 - Rules of Probability

Lecture 6 - Plausible Reasoning - I

Lecture 7 - Plausible Reasoning - Quantitative rules

Lecture 8 - Quantitative Rules

Lecture 9 - Probability Distribution

Lecture 10 - Random Variables

Lecture 11 - Random Variables - II

Lecture 12 - Sampling Estimates

Lecture 13 - Modelling of Environmental Loads

Lecture 14 - Exercises - I

Lecture 15 - Introduction

Lecture 16 - Components of Reliability analysis

Lecture 17 - Levels of Reliability

Lecture 18 - Error Estimation

Lecture 19 - Reliability methods - I

Lecture 20 - Reliability methods - II

Lecture 21 - Reliability methods - III

Lecture 22 - Reliability methods - IV

Lecture 23 - System Reliability - I

Lecture 24 - System Reliability - II

Lecture 25 - System Reliability - III

Lecture 26 - Failure domains

Lecture 27 - Failure domains II

Lecture 28 - Application Problem - I

Lecture 29 - Application Problem - I (Continued...)

Lecture 30 - Application Problem II

Lecture 31 - Application Problem II (Continued...)

Lecture 32 - Application Problem II (Continued...)

Lecture 33 - Risk and Reliability

Lecture 34 - Reliability analysis of structural systems

Lecture 35 - Codes on structural reliability

Lecture 36 - Variables in Reliability analysis

Lecture 37 - Mechanical models in Reliability analysis

Lecture 38 - Mechanical modes in Reliability analysis - II

Lecture 39 - Stochastic Process - I

Lecture 40 - Stochastic Process - II

Lecture 41 - Fatigue Reliability

Lecture 42 - Design SN curve

Lecture 43 - Simplified Fatigue Assessment

Lecture 44 - Short term fatigue damage

Lecture 45 - Behaviour of tubular joints

Lecture 46 - Tubular Joints - Experimental studies on T-Joints

Lecture 47 - Risk Assessment

Lecture 48 - Logical Risk analysis

Lecture 49 - Risk analysis of Mechanical Systems

Lecture 50 - FMEA II

Lecture 51 - Design FMEA for Offshore Triceratops

Lecture 52 - Fault Tree Analysis

Lecture 53 - Event Tree Analysis

Lecture 54 - Consequence Analysis

Lecture 55 - Risk Acceptability

Lecture 56 - Risk and Hazard assessment

Lecture 57 - Risk Picture

Lecture 58 - Risk Management

NPTEL : NOC:HSE for offshore and petroleum engineers-Practices (Ocean Engineering)

Co-ordinators : Dr. Srinivasan Chandrasekaran

Lecture 1 - Introduction

Lecture 2 - Drilling Operation and Consequences

Lecture 3 - Drilling Accidents

Lecture 4 - Oil Spills

Lecture 5 - Ecological Monitoring

Lecture 6 - Pollution Modeling - I

Lecture 7 - Pollution Modeling - II

Lecture 8 - Pollution Modeling - III

Lecture 9 - Hazard Management

Lecture 10 - Introduction

Lecture 11 - HSE Practices

Lecture 12 - Lessons learnt from accidents

Lecture 13 - HSE guidelines

Lecture 14 - HSE lessons

Lecture 15 - Risk Assessment - I

Lecture 16 - Financing Risk

Lecture 17 - Financing Risk Example Problem

Lecture 18 - Risk Assessment and Accident Analysis

Lecture 19 - Accident analysis

Lecture 20 - Hazard assessment - I

Lecture 21 - Hazard Analysis - I

Lecture 22 - Hazop - I

Lecture 23 - Hazop - II

Lecture 24 - Hazop - III

Lecture 25 - Hazop - IV

Lecture 26 - Hazop - V

Lecture 27 - Hazop (Case study)

Lecture 28 - Accidents in offshore platforms

Lecture 29 - Hazard Control

Lecture 30 - FMEA

Lecture 31 - FMEA Example

Lecture 32 - FMEA Example - II

Lecture 33 - Excercises

Lecture 34 - Dose Response Assessment

Lecture 35 - Flammability characteristics

Lecture 36 - Flammability diagram

Lecture 37 - Explosions

Lecture 38 - Chemical Explosions

Lecture 39 - Fire and Explosion Prevention - I

Lecture 40 - Explosion and Prevention

Lecture 41 - Fire Prevention Practices

Lecture 42 - Industrial Hygiene control

Lecture 43 - Chemical Risk Analysis

Lecture 44 - Chemical Risk Analysis - II

Lecture 45 - CEI - Examples

Lecture 46 - QRA Application

Lecture 47 - Hazard Identification Practices

Lecture 48 - Risk in Marine Systems - I

Lecture 49 - Risk in Marine Systems - II

Lecture 50 - Safety measures in design and operation

Lecture 51 - Safety measures in design and operation - II

Lecture 52 - Safety factors for confined spaces - I

Lecture 53 - Safety practices for confined spaces - II

Lecture 54 - Safety practices for Fire protection

Lecture 55 - Process safety management

NPTEL : NOC:Offshore Structures Under Special Loads Including Fire Resistance (Ocean Engineering)

Co-ordinators : Dr. Srinivasan Chandrasekaran

Lecture 1 - Introduction

Lecture 2 - Novelty of fixed platforms

Lecture 3 - Novelty of compliant platforms

Lecture 4 - Novelty of floating platforms

Lecture 5 - New generation offshore platforms - I

Lecture 6 - New generation offshore platforms - II

Lecture 7 - Offshore Triceratops

Lecture 8 - Offshore Regasification platforms

Lecture 9 - Environmental loads - I

Lecture 10 - Environmental loads - II

Lecture 11 - Wind loads

Lecture 12 - Ice loads - I

Lecture 13 - Ice loads - II

Lecture 14 - Response spectrum - I

Lecture 15 - Response spectrum - II

Lecture 16 - Uncertainties

Lecture 17 - Earthquake loads - I

Lecture 18 - Earthquake loads - II

Lecture 19 - Earthquake loads - III

Lecture 20 - General design requirements

Lecture 21 - Impact and Non-impact wave loads - I

Lecture 22 - Impact and Non-impact wave loads - II

Lecture 23 - Unsymmetrical bending - I

Lecture 24 - Unsymmetrical bending - II

Lecture 25 - Unsymmetrical bending - III

Lecture 26 - Shear centre - I

Lecture 27 - Shear centre - II

Lecture 28 - Shear centre - III

Lecture 29 - Shear centre - IV

Lecture 30 - Curved beams - I

Lecture 31 - Curved beams - II

Lecture 32 - Curved beams - III

Lecture 33 - Curved beams - IV

Lecture 34 - Curved beams - V

Lecture 35 - Rings and chain links - I

Lecture 36 - Rings and chain links - II

Lecture 37 - Marine risers

Lecture 38 - Marine risers under VIM

Lecture 39 - Fire safety overview

Lecture 40 - Explosion - I

Lecture 41 - Explosion and fire protection - I

Lecture 42 - Explosion and fire protection - II

Lecture 43 - Blast Resistance - I

Lecture 44 - Blast Resistance - II

Lecture 45 - Blast Resistance - III

Lecture 46 - Blast Resistance - IV

Lecture 47 - Material Strength - I

Lecture 48 - Material Strength - II

Lecture 49 - Material Strength - III

Lecture 50 - Fire resistant design overview

Lecture 51 - Types of fire

Lecture 52 - Design Approach - I

Lecture 53 - Design Approach - II

NPTEL : NOC:Computer Methods Of Structural Analysis of Offshore Structures (Ocean Engineering)

Co-ordinators : Dr. Srinivasan Chandrasekaran

Lecture 1 - Introduction to structural analysis - Part 1

Lecture 2 - Introduction to structural analysis - Part 2

Lecture 3 - System of linear equations - Part 1

Lecture 4 - System of linear equations - Part 2

Lecture 5 - Matrices - Part 1

Lecture 6 - Matrices - Part 2

Lecture 7 - Beam Element 1 - Part 1

Lecture 8 - Beam Element 1 - Part 2

Lecture 9 - Beam Element 2 - Part 1

Lecture 10 - Beam Element 2 - Part 2

Lecture 11 - Stiffness matrix of beam element - Part 1

Lecture 12 - Stiffness matrix of beam element - Part 2

Lecture 13 - Stiffness method of analysis of planar orthogonal structures - Part 1

Lecture 14 - Stiffness method of analysis of planar orthogonal structures - Part 2

Lecture 15 - Example on continuous beam - Part 1

Lecture 16 - Example on continuous beam - Part 2

Lecture 17 - Example - II - Part 1

Lecture 18 - Example - II - Part 2

Lecture 19 - Example - II (Continued...)

Lecture 20 - Example - III - Part 1

Lecture 21 - Example - III - Part 2

Lecture 22 - Planar non-orthogonal frame - Part 1

Lecture 23 - Planar non-orthogonal frame - Part 2

Lecture 24 - Non-orthogonal structures - II

Lecture 25 - Planar non-orthogonal frame

Lecture 26 - Non-orthogonal structures - III - Part 1

Lecture 27 - Non-orthogonal structures - III - Part 2

Lecture 28 - Example problem: planar non-orthogonal structure - Part 1

Lecture 29 - Example problem: planar non-orthogonal structure - Part 2

Lecture 30 - Planar non-orthogonal frame using computer code - Part 1

Lecture 31 - Planar non-orthogonal frame using computer code - Part 2

Lecture 32 - Planar non-orthogonal frame - Example 3 - Part 1

Lecture 33 - Planar non-orthogonal frame - Example 3 - Part 2

Lecture 34 - Planar truss system

Lecture 35 - Planar truss system examples - Part 1

Lecture 36 - Planar truss system examples - Part 2

Lecture 37 - 3D structures - analysis by stiffness method - Part 1

Lecture 38 - 3D structures - analysis by stiffness method - Part 2

Lecture 39 - 3D structures - transformation matrix - Part 1

Lecture 40 - 3D structures - transformation matrix - Part 2

Lecture 41 - Y-Z-X transformation for 3d analysis :

Lecture 42 - Z-Y-X transformation for 3d analysis - Part 1

Lecture 43 - Z-Y-X transformation for 3d analysis - Part 2

Lecture 44 - Analysis of space frames - Example 1 - Part 1

Lecture 45 - Analysis of space frames - Example 1 - Part 2

Lecture 46 - Analysis of space frames - Example 1 - Part 3

Lecture 47 - Analysis of space frame structures

Lecture 48 - 3d analysis of space frames - Example 1 - Part 1

Lecture 49 - 3d analysis of space frames - Example 1 - Part 2

Lecture 50 - 3d analysis - Example 2 - Part 1

Lecture 51 - 3d analysis - Example 2 - Part 2

Lecture 52 - 3d truss analysis

Lecture 53 - Special elements

Lecture 54 - Non-prismatic members - Part 1

Lecture 55 - Non-prismatic members - Part 2

Lecture 56 - Offshore structures - 1 - Part 1

Lecture 57 - Offshore structures - 1 - Part 2

Lecture 58 - Offshore structures - 2 - Part 1

Lecture 59 - Offshore structures - 2 - Part 2

Lecture 60 - Offshore structures - 3 - Part 1

Lecture 61 - Offshore structures - 3 - Part 2

Lecture 62 - Offshore compliant structures - 1 - Part 1

Lecture 63 - Offshore compliant structures - 1 - Part 2

Lecture 64 - Offshore compliant structures - 2 - Part 1

Lecture 65 - Offshore compliant structures - 2 - Part 2

Lecture 66 - New generation platforms - Part 1

Lecture 67 - New generation platforms - Part 2

Lecture 68 - Environmental loads - 1 - Part 1

Lecture 69 - Environmental loads - 1 - Part 2

Lecture 70 - Wave spectra - Part 1

Lecture 71 - Wave spectra - Part 2

Lecture 72 - Wind loads - Part 1

Lecture 73 - Wind loads - Part 2

Lecture 74 - Wind loads - 2 - Part 1

Lecture 75 - Wind loads - 2 - Part 2

Lecture 76 - Ice load and Earthquake load - Part 1

Lecture 77 - Ice load and Earthquake load - Part 2

Lecture 78 - Dynamic analysis - 1 - Part 1

Lecture 79 - Dynamic analysis - 1 - Part 2

Lecture 80 - Dynamic analysis - 2 - Part 1

Lecture 81 - Dynamic analysis - 2 - Part 2

Lecture 82 - Dynamic analysis - 3 - Part 1

Lecture 83 - Dynamic analysis - 3 - Part 2

Lecture 84 - Computer methods of dynamic analysis - Part 1

Lecture 85 - Computer methods of dynamic analysis - Part 2

Lecture 86 - Damping estimate - Part 1

Lecture 87 - Damping estimate - Part 2

Lecture 88 - Damping estimate - 2 - Part 1

Lecture 89 - Damping estimate - 2 - Part 2

Lecture 90 - Newmark's method - Part 1

Lecture 91 - Newmark's method - Part 2

Lecture 92 - Articulated towers - Part 1

Lecture 93 - Articulated towers - Part 2

Lecture 94 - Tension leg platforms - Part 1

Lecture 95 - Tension leg platforms - Part 2

Lecture 96 - Tension leg platforms - 2 - Part 1

Lecture 97 - Tension leg platforms - 2 - Part 2

Lecture 98 - New generation offshore structures - Part 1

Lecture 99 - New generation offshore structures - Part 2

Lecture 100 - Triceratops-2 - Part 1

Lecture 101 - Triceratops-2 - Part 2

Lecture 102 - Random process - 1 - Part 1

Lecture 103 - Random process - 1 - Part 2

Lecture 104 - Random process - 2 - Part 1

Lecture 105 - Random process - 2 - Part 2

Lecture 106 - Response spectrum - Part 1

Lecture 107 - Response spectrum - Part 2

Lecture 108 - Return period and Stochastic process - Part 1

Lecture 109 - Return period and Stochastic process - Part 2

Lecture 110 - Stochastic modelling - Part 1

Lecture 111 - Stochastic modelling - Part 2

Lecture 112 - Fatigue damage - 1 - Part 1

Lecture 113 - Fatigue damage - 1 - Part 2

Lecture 114 - Fatigue damage - 2 - Part 1

Lecture 115 - Fatigue damage - 2 - Part 2

Lecture 116 - Fatigue estimate of offshore platform - Part 1

Lecture 117 - Fatigue estimate of offshore platform - Part 2

Lecture 118 - Live Session

NPTEL : NOC:Structural Health Monitoring (Ocean Engineering)

Co-ordinators : Dr. Srinivasan Chandrasekaran

Lecture 1 - Introduction to SHM - Part 1

Lecture 2 - Introduction to SHM - Part 2

Lecture 3 - Necessity of SHM - Part 1

Lecture 4 - Necessity of SHM - Part 2

Lecture 5 - Components of SHM - Part 1

Lecture 6 - Components of SHM - Part 2

Lecture 7 - Challenges in SHM - Part 1

Lecture 8 - Challenges in SHM - Part 2

Lecture 9 - Advantages of SHM - Part 1

Lecture 10 - Advantages of SHM - Part 2

Lecture 11 - Components of SHM process - Part 1

Lecture 12 - Components of SHM process - Part 2

Lecture 13 - SHM issues applied to concrete structures - Part 1

Lecture 14 - SHM issues applied to concrete structures - Part 2

Lecture 15 - Level of uncertainties in SHM process - Part 1

Lecture 16 - Level of uncertainties in SHM process - Part 2

Lecture 17 - Short term and long term Structural Health Monitoring (SHM) - Part 1

Lecture 18 - Short term and long term Structural Health Monitoring (SHM) - Part 2

Lecture 19 - Local and Global Health Monitoring

Lecture 20 - Data Evaluation and Assessment

Lecture 21 - Estimation of Structural Health i.e. Structural Health Monitoring (SHM)

Lecture 22 - Estimation of Structural Health using Static SHM

Lecture 23 - Structural Health Monitoring (SHM) Planning and Management - Part 1

Lecture 24 - Structural Health Monitoring (SHM) Planning and Management - Part 2

Lecture 25 - Vibration based health monitoring scheme - Part 1

Lecture 26 - Vibration based health monitoring scheme - Part 2

Lecture 27 - Structural Health monitoring methods:1 - Part 1

Lecture 28 - Structural Health monitoring methods:1 - Part 2

Lecture 29 - Damage identification using lumped mass and Element modal stiffness - Part 1

Lecture 30 - Damage identification using lumped mass and Element modal stiffness - Part 2

Lecture 31 - Damage identification by visual Inspection method - Part 1

Lecture 32 - Damage identification by visual Inspection method - Part 2

Lecture 33 - Various vibration based method in SHM-1 - Part 1

Lecture 34 - Various vibration based method in SHM-1 - Part 2

Lecture 35 - Comparison of Damage Detection Method - II

Lecture 36 - Damage Detection Method - II

Lecture 37 - Structural Health Monitoring (SHM) and Statistical Pattern Recognition (SPR)

Lecture 38 - Long term SHM (Structural Health Monitoring)

Lecture 39 - Non-Destructive evaluation - I - Part 1

Lecture 40 - Non-Destructive evaluation - I - Part 2

Lecture 41 - Non-Destructive evaluation - II

Lecture 42 - Non-Destructive evaluation - III

Lecture 43 - Crack detection in Composites

Lecture 44 - Various sensor technologies - Part 1

Lecture 45 - Various sensor technologies - Part 2

Lecture 46 - Fibre Optic sensors - Part 1

Lecture 47 - Fibre Optic sensors - Part 2

Lecture 48 - Smart sensing for SHM - Part 1

Lecture 49 - Smart sensing for SHM - Part 2

Lecture 50 - Sensing requirements in special structures

Lecture 51 - The sensor requirements and Data acquisition - Part 1

Lecture 52 - The sensor requirements and Data acquisition - Part 2

Lecture 53 - Acquisition system and Networking for SHM - Part 1

Lecture 54 - Acquisition system and Networking for SHM - Part 2

Lecture 55 - Wireless Sensor Networking (WSN) - Part 1

Lecture 56 - Wireless Sensor Networking (WSN) - Part 2

Lecture 57 - SHM layout design of offshore structures

Lecture 58 - Vibration Based damage detection

Lecture 59 - SHM design - Part 1

Lecture 60 - SHM design - Part 2

Lecture 61 - Artificial Intelligence (AI) in structural health monitoring (SHM)

Lecture 62 - Plausibility of errors in SHM

Lecture 63 - Artificial Neural Network (ANN) in the SHM process.

Lecture 64 - Damage detection

Lecture 65 - Application of SHM in Infrastructure Engieering - Part 1

Lecture 66 - Application of SHM in Infrastructure Engieering - Part 2

Lecture 67 - Design of sensor layout for SHM - Part 1

Lecture 68 - Design of sensor layout for SHM - Part 2

Lecture 69 - SHM applied to BSLRP - Part 1

Lecture 70 - SHM applied to BSLRP - Part 2

Lecture 71 - SHM design for BSLRP - Part 1

Lecture 72 - SHM design for BSLRP - Part 2

Lecture 73 - SHM design-2 for BSLRP - Part 1

Lecture 74 - SHM design-2 for BSLRP - Part 2

Lecture 75 - SHM design by experimental investigations for lab scale model of TLP-I - Part 1

Lecture 76 - SHM design by experimental investigations for lab scale model of TLP-I - Part 2

Lecture 77 - SHM design by experimental investigations for lab scale model of TLP-II - Part 1

Lecture 78 - SHM design by experimental investigations for lab scale model of TLP-II - Part 2

Lecture 79 - Structural Health Monitoring (SHM) of lab scale model of TLP-III - Part 1

Lecture 80 - Structural Health Monitoring (SHM) of lab scale model of TLP-III - Part 2

Lecture 81 - Structural Health Monitoring (SHM) of lab scale model of TLP-IV - Part 1

Lecture 82 - Structural Health Monitoring (SHM) of lab scale model of TLP-IV - Part 2

Lecture 83 - Future Scope of SHM - Part 1

Lecture 84 - Future Scope of SHM - Part 2

NPTEL : NOC:Advanced Design of Steel Structures (Ocean Engineering)

Co-ordinators : Prof. Srinivasan Chandrasekaran

Lecture 1 - Form-dominant design - I

Lecture 2 - Form-dominant design - II

Lecture 3 - Failure theories - 1

Lecture 4 - Failure theories - 2

Lecture 5 - Failure theories - 3

Lecture 6 - Material properties - 1

Lecture 7 - Material properties - 2

Lecture 8 - Material properties - 3

Lecture 9 - FGM

Lecture 10 - FGM for marine application - 1

Lecture 11 - FGM for marine application - 2

Lecture 12 - Design methods - 1

Lecture 13 - Design methods - 2

Lecture 14 - Load combinations

Lecture 15 - Dynamic material strength

Lecture 16 - Material properties variations

Lecture 17 - Plastic design - 1

Lecture 18 - Plastic design - 2

Lecture 19 - Plastic design - 3

Lecture 20 - Shape factor examples

Lecture 21 - Plastic analysis - 1

Lecture 22 - Plastic analysis - 2

Lecture 23 - Plastic design - 1

Lecture 24 - Plastic design - 2

Lecture 25 - Plastic design - 2

Lecture 26 - Structural Stability

Lecture 27 - EulerÃ¢â‚¬â„¢s load

Lecture 28 - Rotation coefficients for stability functions

Lecture 29 - Stability functions - 1

Lecture 30 - Stability functions - 2

Lecture 31 - Stability functions - 3

Lecture 32 - Buckling and stability

Lecture 33 - Critical buckling load- Numerical examples

Lecture 34 - Stability problems- numerical examples

Lecture 35 - Stability of shells

Lecture 36 - Unsymmetric bending - 1

Lecture 37 - Unsymmetric bending - example problems

Lecture 38 - Shear center - 1

Lecture 39 - Shear center - 2

Lecture 40 - Shear center - 3

Lecture 41 - Curved section

Lecture 42 - Shear center for curved sections

Lecture 43 - Shear center for unsymmetric section

Lecture 44 - Curved beam - 1

Lecture 45 - Curved beam with large curvature - 1

Lecture 46 - Curved beam with large curvature - 2

Lecture 47 - Modified area factor for curved section

Lecture 48 - M factor for curved beams

Lecture 49 - Crane hook

Lecture 50 - Thin-walled section

Lecture 51 - Open thin-walled section

Lecture 52 - Lateral torsional buckling

Lecture 53 - Design for LTB-1

Lecture 54 - Design check for LTB-2

Lecture 55 - LTB example problem

Lecture 56 - Ice loads

Lecture 57 - Ice spectrum

Lecture 58 - Blast resistant design - 1

Lecture 59 - Blast resistant design - 2

Lecture 60 - Blast-resistant design - 3

Lecture 61 - Blast-resistant design - 4

Lecture 62 - Fire-resistant design - 1

Lecture 63 - Fire-resistant design - 2

Lecture 64 - Analysis under impact loads

NPTEL : Marine Instrumentation - Laboratory (Ocean Engineering)

Co-ordinators : Prof. Tharun

Lecture 1 - Oscilloscope, Function Generator and Tilt meter

Lecture 2 - Strain Gauges and Load Cells

Lecture 3 - Wheatstone Bridge Circuit and RC Circuits on a Breadboard Design and Testing of Wheat - 1

Lecture 4 - Wheatstone Bridge Circuit and RC Circuits on a Breadboard Passive Low Pass RC Filter - 2

Lecture 5 - Wheatstone Bridge Circuit and RC Circuits on a Breadboard Rc High Pass Filter Lab - 3

Lecture 6 - Opamps, Differentiator and Integrator Circuits Design and Testing Integrator and Differ - 1

Lecture 7 - Opamps, Differentiator and Integrator Circuits Design and Testing Integrated and Differ - 2

NPTEL : NOC:Surface Facilities for Oil and Gas Handling (Ocean Engineering)

Co-ordinators : Prof. Abdus Samad

Lecture 1 - Introduction to Oil and Gas - 1

Lecture 2 - Introduction to Oil and Gas - 2

Lecture 3 - Drilling and Completion - 1

Lecture 4 - Drilling and Completion - 2

Lecture 5 - Well Completion

Lecture 6 - Basics of Surface Facilities

Lecture 7 - Fluid Properties

Lecture 8 - Introduction to Separators - 1

Lecture 9 - Introduction to Seprataors - 2

Lecture 10 - Flow Control - 1

Lecture 11 - Flow Control - 2

Lecture 12 - Principle of Separation - 1

Lecture 13 - Principle of Separation - 2

Lecture 14 - Heat calculations for separation

Lecture 15 - Fluid Properties and Two-Phase Separator - 1

Lecture 16 - Fluid Properties and Two-Phase Separator - 2

Lecture 17 - Introduction to Separators

Lecture 18 - Horizontal Separator and Sizing - 1

Lecture 19 - Horizontal Separator and Sizing - 2

Lecture 20 - Horizontal Separator and Sizing: Numerical

Lecture 21 - Three Phase Separation - 1

Lecture 22 - Three Phase Separation - 2

Lecture 23 - Vertical Separator Sizing - 1

Lecture 24 - Vertical Separator Sizing - 2

Lecture 25 - Horizontal and Vertical Separator: Numerical

Lecture 26 - Heater Treater - 1

Lecture 27 - Heater Treater - 2

Lecture 28 - Gunbarrel

Lecture 29 - Gunbarrel: Numericals

Lecture 30 - Heat Calculation - 1

Lecture 31 - Heat Calculation - 2

Lecture 32 - Introduction to Electrostatic Treater - 1

Lecture 33 - Introduction to Electrostatic Treater - 2

Lecture 34 - Heater Treater and Gunbarrel - 1

Lecture 35 - Heater Treater and Gunbarrel - 2

Lecture 36 - Heater Treater and Gunbarrel: Numerical - Part 1

Lecture 37 - Heater Treater and Gunbarrel: Numerical - Part 2

Lecture 38 - Desalting of Crude Oil - 1

Lecture 39 - Desalting of Crude Oil - 2

Lecture 40 - Water Treatment - 1

Lecture 41 - Water Treatment - 2

Lecture 42 - Produced Water Treatment - 1

Lecture 43 - Produced Water Treatment - 2

Lecture 44 - Produced Water Treatment - 3

Lecture 45 - Produced Water Treament: Numerical

Lecture 46 - Natural Gas Processing - 1

Lecture 47 - Natural Gas Processing - 2

Lecture 48 - Acid Gas Treating

Lecture 49 - Amine System for Gas Sweetening - 1

Lecture 50 - Amine System for Gas Sweetening - 2

Lecture 51 - Gas Dehydration

Lecture 52 - Crude Oil Storage Facilities - 1

Lecture 53 - Crude Oil Storage Facilities - 2

Lecture 54 - Crude Oil Storage Facilities - 3

Lecture 55 - Flow Measurement Techniques - 1

Lecture 56 - Flow Measurement Techniques - 2

Lecture 57 - Heat Transfer Mechanisms

Lecture 58 - Thermodynamic Laws

Lecture 59 - Introduction to Heat Exchanger - 1

Lecture 60 - Introduction to Heat Exchanger - 2

Lecture 61 - Introduction to Heat Exchanger - 3

Lecture 62 - Introduction to Heat Exchanger - 4

Lecture 63 - Pressure Vessel - 1

Lecture 64 - Pressure Vessel - 2

Lecture 65 - Pressure Vessel - 3

Lecture 66 - Wall Thickness Criteria

Lecture 67 - Introduction to Pumps - 1

Lecture 68 - Introduction to Pumps - 2

Lecture 69 - Introduction to Pumps - 3

Lecture 70 - Introduction to Reciprocating Pumps

Lecture 71 - Introduction to Compressor

Lecture 72 - Introduction to IC/CI Engine - 1

Lecture 73 - Introduction to IC/CI Engine - 2

NPTEL : NOC:Marine Engineering (Ocean Engineering)

Co-ordinators : Prof. Abdus Samad

Lecture 1 - Course Overview

Lecture 2 - Basics of Thermodynamics

Lecture 3 - Work and Heat transfer

Lecture 4 - Second law of thermodynamics

Lecture 5 - Reversible Heat Engine

Lecture 6 - Basic mode of heat transfer

Lecture 7 - Conduction

Lecture 8 - Convection

Lecture 9 - Radiation

Lecture 10 - Concept of Resistance

Lecture 11 - Heat flow through pipes and walls

Lecture 12 - Heat Exchangers

Lecture 13 - Fins

Lecture 14 - LMTD

Lecture 15 - Pumps and its types

Lecture 16 - Centrifugal pump

Lecture 17 - Characteristic curves of pumps

Lecture 18 - Cavitation

Lecture 19 - Positive displacement pump

Lecture 20 - Pumps in series/parallel

Lecture 21 - Compressors

Lecture 22 - Intercooler

Lecture 23 - Rankine cycle

Lecture 24 - Injectors and Pumps

Lecture 25 - Numerical problem

Lecture 26 - Boilers

Lecture 27 - Fouling and Scaling

Lecture 28 - Fuel and method of firing

Lecture 29 - Boiler efficiency

Lecture 30 - Turbine Basics

Lecture 31 - Turbine aerodynamics

Lecture 32 - Cascade view and Meridional view

Lecture 33 - Impulse and Reaction Turbine

Lecture 34 - Steam Turbine

Lecture 35 - Regenerative thermal power plant

Lecture 36 - Mollier diagram

Lecture 37 - IC Engines

Lecture 38 - Otto/Diesel Cycle

Lecture 39 - Components of IC engines - Part 1

Lecture 40 - Components of IC engines - Part 2

Lecture 41 - Fuel Injection/Scavenging

Lecture 42 - IC engine: Numerical problems

Lecture 43 - IC Engine - Fuel

Lecture 44 - Marine Fuel and Properties

Lecture 45 - Combustion

Lecture 46 - Fuel Oil properties

Lecture 47 - Lubrication/Cooling

Lecture 48 - IC engine-Numerical Problems

Lecture 49 - Gas turbine - Basics

Lecture 50 - Gas turbine - Basics (Continued...)

Lecture 51 - Gas turbine, formula, calculations

Lecture 52 - Gas turbine: Regeneration, Reheat, Intercooling

Lecture 53 - Numerical Problems

Lecture 54 - Binary cycle/Rankine-Brayton cycle

Lecture 55 - Numerical problems

Lecture 56 - HVAC- Heating, ventilation, and air conditioning

Lecture 57 - Refrigerants

Lecture 58 - Vapor compression Reffrigeration system

Lecture 59 - HVAC - VCRC components

Lecture 60 - HVAC - Psychrometric

Lecture 61 - HVAC - Numerical problems

Lecture 62 - Fire Fighting Machinery

Lecture 63 - Desalination

Lecture 64 - Energy recovery device (ERD)

Lecture 65 - Desalination/Fire fighting/Numerical problems

Lecture 66 - Numerical problems

Lecture 67 - Steering gear/propeller/rudder/incin

Lecture 68 - Power transmission system, shafting, bearing, gear, lubrication, Electric propulsion

Lecture 69 - Stern Tube Bearings and Misalignment

Lecture 70 - Shaft

Lecture 71 - Shaft Design

Lecture 72 - Gears

Lecture 73 - Seals and Bearings

Lecture 74 - Oil water separation, electrical systems

Lecture 75 - Bilge water flocculant

Lecture 76 - Gravity OWS

Lecture 77 - Centrifuge

Lecture 78 - Membrane Technologies

Lecture 79 - Electrical systems

Lecture 80 - Motor