

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](#)

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](#)

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 & Aft 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](#)

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 Joukowski 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 \(Continued...\)](#)



- 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](#)

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

- 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](#)

- 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](#)

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 \(April 20, 2018\)](#)

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](#)

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](#)

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](#)

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](#)

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 “ 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 an Over View](#)

- 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 - Calculation 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 - Empirical relationship between spt and several soil properties

Lecture 48 - Model studies for a deep water port\_case study



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

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 Boies

Lecture 23 - Finite Amplitude Wave Theories

Lecture 24 - Hydrodynamic Testing Facility

Lecture 25 - Hydrodynamic Testing Facility at IITM

- 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



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

- 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](#)

[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](#)

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



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

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](#)

- 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](#)



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 Engineering - Part 1
- Lecture 66 - Application of SHM in Infrastructure Engineering - 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

- 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 - Euler'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



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

- 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 Separators - 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 Treatment: 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](#)

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 Refrigeration 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](#)