NPTEL : Advanced Geotechnical Engineering (Civil Engineering)

Co-ordinators : Dr. B.V.S. Viswanadham

NPTEL : Soil Dynamics (Civil Engineering)

Co-ordinators : Dr. Deepankar Choudhury

NPTEL : Structural Dynamics (Civil Engineering)

Co-ordinators : Dr. P. Banerji

NPTEL : Watershed Management (Civil Engineering)

Co-ordinators : Dr. T.I. Eldho

Lecture 1 - Introduction to Watershed Management

Lecture 2 - Watershed Management & Stakeholder Analysis

Lecture 3 - Watershed Management Policies

Lecture 4 - Sustainable Watershed Management

Lecture 5 - Agricultural Practices & Watershed Management

Lecture 6 - Soil Erosion & Conservation

Lecture 7 - Watershed Management in Arid Regions & Strategic Planning

Lecture 8 - Integrated Water Resources Management

Lecture 9 - Conjuctive Use of Water Resources

Lecture 10 - Rainwater Harvesting System

Lecture 11 - Rainwater Harvesting & Roof Catchment System

Lecture 12 - Watershed Characteristics

Lecture 13 - Watershed Delineation & Modeling

Lecture 14 - Hydrologic Processes

Lecture 15 - Watershed Modeling

Lecture 16 - Hydrologic Modeling

Lecture 17 - Numerical Watershed Modeling

Lecture 18 - Subsurface & Groundwater Flows

Lecture 19 - Social & Community Aspects of Watershed Management

Lecture 20 - Socio-economy, Private Sector Participation & Gender Issues

Lecture 21 - Integrated Development, Water Legislation & Implementation Issues

Lecture 22 - GIS & Applications in Watershed Management

Lecture 23 - Remote Sensing & Applications in Watershed Management

Lecture 24 - Decision Support Systems & Applications in Watershed Management

Lecture 25 - Integrated Watershed Modeling Using Numerical Methods, GIS & Remote Sensing

Lecture 26 - Applications of Knowledge Based Models in Watershed Management

Lecture 27 - Surface Water Quality & Pollution Issues

Lecture 28 - Groundwater Pollution Problems & Transport Processes

Lecture 29 - Water Quality Modeling

Lecture 30 - Environmental Guidelines for Water Quality Management

Lecture 31 - Storm Water Management

NPTEL : Fluid Mechanics (Civil Engineering)

Co-ordinators : Dr. T.I. Eldho

Lecture 1 - Fluid Mechanics

Lecture 2 - Fundamental Concepts of Fluid Flow & Fluid Statics

Lecture 3 - Fluid Statics

Lecture 4 - Fluid Statics

Lecture 5 - Fluid Statics

Lecture 6 - Kinematics of Fluid Flow

Lecture 7 - Kinematics of Fluid Flow

Lecture 8 - Kinematics of Fluid Flow

Lecture 9 - Kinematics of Fluid Flow

Lecture 10 - Kinematics of Fluid Flow

Lecture 11 - Kinematics & Dynamics of Fluid Flow

Lecture 12 - Dynamics of Fluid Flow

Lecture 13 - Dynamics of Fluid Flow

Lecture 14 - Dynamics of Fluid Flow

Lecture 15 - Dynamics of Fluid Flow

Lecture 16 - Dynamics of Fluid Flow

Lecture 17 - Laminar and Turbulent Flows

Lecture 18 - Laminar and Turbulent Flows

Lecture 19 - Laminar and Turbulent Flows

Lecture 20 - Laminar and Turbulent Flows

Lecture 21 - Laminar and Turbulent Flows

Lecture 22 - Laminar and Turbulent Flows

Lecture 23 - Dimensional Analysis

Lecture 24 - Dimensional Analysis

Lecture 25 - Dimensional Analysis

Lecture 26 - Navier-Stocks Equations and Applications

Lecture 27 - Navier-Stocks Equations and Applications

Lecture 28 - Navier-Stocks Equations and Applications

Lecture 29 - Navier-Stocks Equations and Applications

Lecture 30 - Boundary Layer Theory and Applications

Lecture 31 - Boundary Layer Theory and Applications

Lecture 32 - Boundary Layer Theory and Applications

Lecture 33 - Boundary Layer Theory and Applications

Lecture 34 - Boundary Layer Theory and Applications

Lecture 35 - Boundary Layer Theory and Applications

Lecture 36 - Pipe Flow Systems

Lecture 37 - Pipe Flow Systems

Lecture 38 - Pipe Flow Systems

Lecture 39 - Pipe Flow Systems

Lecture 40 - Pipe Flow Systems

Lecture 41 - Pipe Flow Systems

Lecture 42 - Pipe Flow Systems

NPTEL : Soil Mechanics (Civil Engineering)

Co-ordinators : Dr. B.V.S. Viswanadham

Lecture 32 - Soil Mechanics

Lecture 33 - Soil Mechanics

Lecture 34 - Soil Mechanics

Lecture 35 - Soil Mechanics

Lecture 36 - Soil Mechanics

Lecture 37 - Soil Mechanics

Lecture 38 - Soil Mechanics

Lecture 39 - Soil Mechanics

Lecture 40 - Soil Mechanics

Lecture 41 - Soil Mechanics

Lecture 42 - Soil Mechanics

Lecture 43 - Soil Mechanics

Lecture 44 - Soil Mechanics

Lecture 45 - Soil Mechanics

Lecture 46 - Soil Mechanics

Lecture 47 - Soil Mechanics

Lecture 48 - Soil Mechanics

Lecture 49 - Soil Mechanics

Lecture 50 - Soil Mechanics

Lecture 51 - Soil Mechanics

Lecture 52 - Soil Mechanics

Lecture 53 - Soil Mechanics

Lecture 54 - Soil Mechanics

Lecture 55 - Soil Mechanics

Lecture 56 - Soil Mechanics

Lecture 57 - Soil Mechanics

NPTEL : Structural Analysis II (Civil Engineering)

Co-ordinators : Dr. P. Banerji

NPTEL : Geotechnical Earthquake Engineering (Civil Engineering)

Co-ordinators : Dr. Deepankar Choudhury

NPTEL : Geosynthetics Engineering: In Theory and Practice (Civil Engineering)

Co-ordinators : Prof. J.N. Mandal

Lecture 1 - Introduction

Lecture 2 - Introduction to Reinforced Earth

Lecture 3 - Introduction to Reinforced Earth

Lecture 4 - Introduction to Reinforced Earth

Lecture 5 - Introduction to Reinforced Earth

Lecture 6 - An Overview of Geosynthetics - Part I

Lecture 7 - An Overview of Geosynthetics - Part II

Lecture 8 - An Overview of Geosynthetics - Part III

Lecture 9 - An Overview of Gosynthetics

Lecture 10 - Geosynthetic Properties and Test Methods

Lecture 11 - Geosynthetic Properties and Test Methods

Lecture 12 - Geosynthetic Properties and Test Methods

Lecture 13 - Geosynthetic Properties and Test Methods

Lecture 14 - Geosynthetic Properties and Test Methods

Lecture 15 - Geosynthetic in Filtration, Drainage and Erosion Control

Lecture 16 - Geosynthetic in Filtration, Drainage and Erosion Control

Lecture 17 - Geosynthetic in Filtration, Drainage and Erosion Control

Lecture 18 - Geosynthetic in Filtration, Drainage and Erosion Control

Lecture 19 - Geosynthetic in Filtration, Drainage and Erosion Control

Lecture 20 - Geosynthetic in pavements

Lecture 21 - Geosynthetic in pavements

Lecture 22 - Geosynthetic in pavements

Lecture 23 - Geosynthetic in pavements

Lecture 24 - Geosynthetic in pavements

Lecture 25 - Geosynthetic in pavements

Lecture 26 - Geosynthetics for Reinforced Soil Retaining Walls

Lecture 27 - Geosynthetics for Reinforced Soil Retaining Walls

Lecture 28 - Geosynthetics for Reinfroced Soil Retaining Walls

Lecture 29 - Geosynthetics for Reinforced Soil Retaining Walls

Lecture 30 - Geosynthetics for Reinforced Soil Retaining Walls

Lecture 31 - Geosynthetics for Reinforced Soil Retaining Walls

NPTEL : NOC:Geotechnical Engineering Laboratory (Civil Engineering)

Co-ordinators : Prof. J. N. Mandal

NPTEL : NOC:Geosynthetics Testing Laboratory (Civil Engineering)

Co-ordinators : Prof. J. N. Mandal

NPTEL : NOC:Environmental Geotechnics (Civil Engineering)

Co-ordinators : Prof. Devendra Narain Singh

Lecture 1 - Overview - 1

Lecture 2 - Overview - 2

Lecture 3 - Overview - 3

Lecture 4 - Civil Engineering

Lecture 5 - Recent Trends in civil engineering

Lecture 6 - Recent Trends and Subject organization

Lecture 7 - Civil Engineering and Soil Mechanics

Lecture 8 - Soil mechanics

Lecture 9 - Recent Trends in Soil mechanics

Lecture 10 - Soil contamination

Lecture 11 - Soil Improvement and wastes

Lecture 12 - Contaminant transport in soils

Lecture 13 - Soil- water- Environment Interaction

Lecture 14 - Basic concepts of analysis

Lecture 15 - Particle Energy Field Theory

Lecture 16 - Waste and types

Lecture 17 - Municipal and Industrial solid waste

Lecture 18 - Industrial non-hazardous and Hazardous wastes

Lecture 19 - Application of Industrial by-products

Lecture 20 - Introduction to Characterization of waste

Lecture 21 - Geomaterial characterization - 1

Lecture 22 - Geomaterial characterization - 2 (Morphological and physical characterization)

Lecture 23 - Geomaterial characterization - 3 (Chemical characterization)

Lecture 24 - Geomaterial characterization - 4 (Mercury Intrusive Porosimeter)

Lecture 25 - Geomaterial characterization - 5 (Specific Surface Area - I)

Lecture 26 - Geomaterial characterization - 6 (Specific surface area - II)

Lecture 27 - Geomaterial characterization - 7

Lecture 28 - Geomaterial characterization - 8 (Pore solution studies - I)

Lecture 29 - Geomaterial characterization - 9 (Pore solution studies - II)

Lecture 30 - Geomaterial characterization - 10 (Assessing soil contamination)

Lecture 31 - Geomaterial characterization - 11

NPTEL : NOC:Environmental Geomechanics (Civil Engineering)

Co-ordinators : Prof. Devendra Narain Singh

NPTEL : NOC:Geotechnical Engineering - 1 (Civil Engineering)

Co-ordinators : Prof. Devendra Narain Singh

NPTEL : NOC:Remote Sensing: Principles and Applications (Civil Engineering)

Co-ordinators : Prof. Eswar Rajasekaran

NPTEL : NOC:Dynamics of Structures (Civil Engineering)

Co-ordinators : Prof. Manish Kumar

NPTEL : NOC:Microwave Remote Sensing in Hydrology (Civil Engineering)

Co-ordinators : Prof. J. Indu

NPTEL : NOC:Groundwater Hydrology and Management (Civil Engineering)

Co-ordinators : Prof. Pennan Chinnasamy

Lecture 32 - Constructing aquifers using groundwater data - Part 2

Lecture 33 - Constructing aquifers using groundwater data - Part 3

Lecture 34 - Constructing aquifers using groundwater data - Part 4

Lecture 35 - Constructing aquifers using groundwater data - Part 5

Lecture 36 - Conceptual model for groundwater - Part 1

Lecture 37 - Conceptual model for groundwater - Part 2

Lecture 38 - Conceptual model for groundwater - Part 3

Lecture 39 - Conceptual model for groundwater - Part 4

Lecture 40 - Conceptual model for groundwater - Part 5

Lecture 41 - Groundwater data in India - Part 1

Lecture 42 - Groundwater data in India - Part 2

Lecture 43 - Groundwater data in India - Part 3

Lecture 44 - Groundwater data in India - Part 4

Lecture 45 - Groundwater data in India - Part 5

Lecture 46 - Application of Groundwater data in India - Part 1

Lecture 47 - Application of Groundwater data in India - Part 2

Lecture 48 - Application of Groundwater data in India - Part 2

Lecture 49 - Application of Groundwater data in India - Part 3

Lecture 50 - Application of Groundwater data in India - Part 3

Lecture 51 - Introduction to Groundwater modeling - Part 1

Lecture 52 - Introduction to Groundwater modeling - Part 2

Lecture 53 - Introduction to Groundwater modeling - Part 3

Lecture 54 - Introduction to Groundwater modeling - Part 4

Lecture 55 - Introduction to Groundwater modeling - Part 5

Lecture 56 - Case studies of Groundwater in India - Part 1

Lecture 57 - Case studies of Groundwater in India - Part 2

Lecture 58 - Case studies of Groundwater in India - Part 3

Lecture 59 - Case studies of Groundwater in India - Part 4

Lecture 60 - Case studies of Groundwater in India - Part 5

NPTEL : NOC:Rural Water Resources Management (Civil Engineering)

Co-ordinators : Prof. Pennan Chinnasamy

NPTEL : NOC:Geotechnical Engineering-II (Civil Engineering)

Co-ordinators : Prof. Devendra Narain Singh

NPTEL : NOC:Remote Sensing and GIS for Rural Development (Civil Engineering)

Co-ordinators : Prof. Pennan Chinnasamy

NPTEL : NOC:Stress and Strain Issues in Structural Geology (Civil Engineering)

Co-ordinators : Prof. Soumyajit Mukherjee

NPTEL : Concrete Technology (Civil Engineering)

Co-ordinators : Dr. B. Bhattacharjee

NPTEL : Seismic Analysis of Structures (Civil Engineering)

Co-ordinators : Dr. T.K. Datta, Dr. Ashok Gupta

NPTEL : Building materials and Construction (Civil Engineering)

Co-ordinators : Dr. B. Bhattacharjee

NPTEL : Water Management (Civil Engineering)

Co-ordinators : Dr. A.K. Gosain

NPTEL : NOC:Geoenvironmental Engineering (Environmental Geotechnology) Landfills, Slurry Ponds and Contaminated Sites (Civil Engineering)

Co-ordinators : Prof. Manoj Datta

NPTEL : NOC:Energy Efficiency, Acoustics and Daylighting in Building (Civil Engineering)

Co-ordinators : Dr. B. Bhattacharjee

Lecture 32 - Noise and Acoustic Fundamentals - 2

Lecture 33 - Noise and Acoustic Fundamentals - 3

Lecture 34 - Noise and Acoustic Fundamentals, Noise Outdoors

Lecture 35 - Noise outdoors

Lecture 36 - Sound within enclosure - 1

Lecture 37 - Sound within enclosure - 2

Lecture 38 - Sound within enclosure - 3

Lecture 39 - Sound within enclosure - 4

Lecture 40 - Sound within enclosure - 5

Lecture 41 - Sound within enclosure - 6

Lecture 42 - Sound within enclosure, isolation

Lecture 43 - Isolation - 1

Lecture 44 - Isolation - 2

Lecture 45 - Auditorium - 1

Lecture 46 - Auditorium - 2

Lecture 47 - Daylighting - 1

Lecture 48 - Daylighting - 2

Lecture 49 - Daylighting - 3

Lecture 50 - Daylighting - 4

Lecture 51 - Daylighting - 5

Lecture 52 - Daylighting - 6

Lecture 53 - Artificial Lighting

Lecture 54 - Design Sky models

Lecture 55 - Live Session

NPTEL : NOC:Fire Protection, Services and Maintenance Management of Building (Civil Engineering)

Co-ordinators : Dr. B. Bhattacharjee

Lecture 32 - Design of Water Supply Distribution System (Continued...) and Flow in Waste Water pipes

Lecture 33 - Electrical Systems (introduction)

Lecture 34 - Design of Electrical Systems

Lecture 35 - Intelligent Building

Lecture 36 - Life cycle cost and basics of building maintenance

Lecture 37 - Stages of maintenance management

Lecture 38 - Planning for building maintenance

Lecture 39 - Periodicity of maintenance management

Lecture 40 - Estimation of repair cycle

Lecture 41 - Cost profile of maintenance

Lecture 42 - Lamp replacement

Lecture 43 - Building inspection, Planned and Ad-hoc maintenance

Lecture 44 - Condition survey and health evaluation of buildings

Lecture 45 - Diagnosis of building by visual survey

Lecture 46 - Case studies of visual survey

Lecture 47 - Effect of corrosion and Alkali Aggregate Reaction

Lecture 48 - Sampling and choice of test location

Lecture 49 - Non Destructive Testing - 1

Lecture 50 - Non Destructive Testing - 2

Lecture 51 - Core strength test

Lecture 52 - Carbonation and Chloride measurement

Lecture 53 - Electrical methods of progress measurement

Lecture 54 - Repair, Rehabilitation and Retrofit

Lecture 55 - Periodicity and economics of condition survey

Lecture 56 - Interpretation of test results

NPTEL : NOC:Sustainable Materials and Green Buildings (Civil Engineering)

Co-ordinators : Dr. B. Bhattacharjee

NPTEL : NOC:Scheduling Techniques in Projects (Civil Engineering)

Co-ordinators : Prof. J. Uma Maheswari

NPTEL : NOC:Safety in Construction (Civil Engineering)

Co-ordinators : Prof. J. Uma Maheswari

NPTEL : Advanced Hydraulics (Civil Engineering)

Co-ordinators : Dr. Suresh A Kartha

NPTEL : Design of Steel Structures (Civil Engineering)

Co-ordinators : Prof. Damodar Maity

NPTEL : Hydraulics (Civil Engineering)

Co-ordinators : Prof. Arup Kumar Sharma

NPTEL : NOC:Higher Surveying (Civil Engineering)

Co-ordinators : Prof. Ajay Dashora

NPTEL : NOC:Unsaturated Soil Mechanics (Civil Engineering)

Co-ordinators : Dr. Tadikonda Venkata Bharat

NPTEL : NOC:Subsurface Exploration: Importance and Techniques Involved (Civil Engineering)

Co-ordinators : Prof. Abhishek Kumar

NPTEL : NOC:Fluid Mechanics (Civil Engineering)

Co-ordinators : Dr. Subhashisa Dutta

NPTEL : NOC:Remote Sensing and GIS (Civil Engineering)

Co-ordinators : Prof. Rishikesh Bharti

NPTEL : NOC:River Engineering (Civil Engineering)

Co-ordinators : Dr. Subhashisa Dutta

NPTEL : NOC:Municipal Solid Waste Management (Civil Engineering)

Co-ordinators : Prof. Ajay Kalamdhad

NPTEL : NOC:Construction Methods and Equipment Management (Civil Engineering)

Co-ordinators : Prof. Indu Siva Ranjani Gandhi

NPTEL : NOC:Advanced Soil Mechanics (Civil Engineering)

Co-ordinators : Prof. Sreedeep S

NPTEL : NOC:Plates and Shells (Civil Engineering)

Co-ordinators : Prof. Sudip Talukdar

NPTEL : NOC:Optimization methods for Civil engineering (Civil Engineering)

Co-ordinators : Prof. Rajib Kumar Bhattacharjya

NPTEL : NOC:Engineering Hydrology (Civil Engineering)

Co-ordinators : Prof. Sreeja Pekkat

NPTEL : NOC:Expansive Soil (Civil Engineering)

Co-ordinators : Prof. Anil Kumar Mishra

NPTEL : NOC:Vibration of Continuous Systems (Civil Engineering)

Co-ordinators : Prof. Sudip Talukdar

NPTEL : NOC:Reliability-Based Structural Design (Civil Engineering)

Co-ordinators : Dr. Arunasis Chakarborty

NPTEL : NOC:Applied Seismology for Engineers (Civil Engineering)

Co-ordinators : Prof. Abhishek Kumar

NPTEL : NOC:Structural Vibration (Civil Engineering)

Co-ordinators : Prof. Arunasis Chakarborty

NPTEL : Advanced Hydrology (Civil Engineering)

Co-ordinators : Dr. Ashu Jain

NPTEL : Concrete Engineering and Technology (Civil Engineering)

Co-ordinators : Dr. Sudhir Misra

NPTEL : Environmental Air Pollution (Civil Engineering)

Co-ordinators : Prof. Mukesh Sharma

NPTEL : Surveying (Civil Engineering)

Co-ordinators : Dr. Bharat Lohani

NPTEL : Water Resources Engineering (Civil Engineering)

Co-ordinators : Dr. Pranab K Mohapatra, Prof. Rajesh Srivastava

NPTEL : Geotechnical Measurements and Explorations (Civil Engineering)

Co-ordinators : Dr. Nihar Ranjan Patra

NPTEL : Application of Soil Mechanics (Civil Engineering)

Co-ordinators : Dr. Nihar Ranjan Patra

Lecture 32 - Application of Soil Mechanics

Lecture 33 - Application of Soil Mechanics

Lecture 34 - Application of Soil Mechanics

Lecture 35 - Application of Soil Mechanics

Lecture 36 - Application of Soil Mechanics

Lecture 37 - Application of Soil Mechanics

Lecture 38 - Application of Soil Mechanics

Lecture 39 - Application of Soil Mechanics

Lecture 40 - Application of Soil Mechanics

NPTEL : NOC:Geology and Soil Mechanics (Civil Engineering)

Co-ordinators : Dr. Priyanka Ghosh

Lecture 65 - Problems on Earth Pressure Theories - 4

NPTEL : NOC:Engineering Graphics (Civil Engineering)

Co-ordinators : Dr. Nihar Ranjan Patra

Lecture 32 - Development of Surfaces

NPTEL : NOC:Earth Sciences for Civil Engineering (Civil Engineering)

Co-ordinators : Prof. Javed N. Malik

NPTEL : NOC:Earth Sciences for Civil Engineering - Part 2 (Civil Engineering)

Co-ordinators : Prof. Javed N. Malik

Lecture 1 - Introduction to Geological Hazards and Enviromental Impact - Part 1

Lecture 2 - Introduction to Geological Hazards and Enviromental Impact - Part 2

Lecture 3 - Introduction to Geological Hazards and Enviromental Impact - Part 3

Lecture 4 - Active Faults and its Related Hazards in India - Part 1

Lecture 5 - Active Faults and its Related Hazards in India - Part 2

Lecture 6 - Active faults and its related hazards in India - Part 3

Lecture 7 - Active faults and its related hazards in India - Part 4

Lecture 8 - Active faults its related hazards in India - Part 5

Lecture 9 - Active faults its related hazards in India - Part 6

Lecture 10 - Active faults its related hazards in India - Part 7 and Civil Engineering applications - geological considerations in dams, tunnels - Part 1

Lecture 11 - Civil Engineering applications Â– geological considerations in dams, tunnels - Part 2

Lecture 12 - Civil Engineering applications Â– geological considerations in dams, tunnels - Part 3 and Tsunami and related hazard - Part 1

Lecture 13 - Tsunami and related hazard - Part 2

Lecture 14 - Tsunami and related hazard - Part 3

Lecture 15 - Landslide and subsidence - Part 1

Lecture 16 - Landslide and subsidence - Part 2

Lecture 17 - Landslide and subsidence - Part 3

Lecture 18 - Flood and related hazard - Part 1

Lecture 19 - Flood and related hazard - Part 2

Lecture 20 - Groundwater

NPTEL : NOC:Hydration, Porosity and Strength of Cementitious Materials (Civil Engineering)

Co-ordinators : Dr. Satyaki Roy, Dr. Sudhir Misra

Lecture 32 - Lecture 39 - Durability of concrete - II - Specifications

NPTEL : NOC:Mechanics of Solids (Civil Engineering)

Co-ordinators : Dr. Priyanka Ghosh

NPTEL : NOC:Principles of Construction Management (Civil Engineering)

Co-ordinators : Dr. Sudhir Misra

NPTEL : NOC:Foundation Design (Civil Engineering)

Co-ordinators : Dr. Nihar Ranjan Patra

NPTEL : NOC:Photogeology In Terrain Evaluation (Civil Engineering)

Co-ordinators : Prof. Javed N. Malik

Lecture 1 - Introduction to Remote Sensing - Photogeology

Lecture 2 - Introduction to Remote Sensing - Photogeology

Lecture 3 - Fundamental Principle in Remote Sensing

Lecture 4 - Aerial Photography

Lecture 5 - Stereo-photos and their Importance

Lecture 6 - Photo-interpretation Techniques

Lecture 7 - Photogrammetry and its Significance

Lecture 8 - Sensors, Cameras and Panchromatic Data

Lecture 9 - Stereoscopy and Methods

Lecture 10 - Relief Displacement on Aerial Photographs

Lecture 11 - Fluvial Processes and Landforms

Lecture 12 - Geomorphology of River Channels

Lecture 13 - Drainage Basins and their Features

Lecture 14 - Morphometric Parameters of Fluvial Channels

Lecture 15 - Drainage Patterns and their Morphology

Lecture 16 - Determination of Flightline (Lab)

Lecture 17 - Determination of Flightline (Lab)

Lecture 18 - Exercise on Relief Displacement

Lecture 19 - Exercise on Stereoscopic Parallax

Lecture 20 - Exercise on Stereoscopic Parallax

Lecture 21 - Generation of Digital Elevation Model and Anaglyph

NPTEL : NOC:Photogeology In Terrain Evaluation - Part 2 (Civil Engineering)

Co-ordinators : Prof. Javed N. Malik

Lecture 1 - Introduction to Geological Structures, Photo interpretation and Terrain evaluation

Lecture 2 - Photo interpretation/identification of Landforms associated with Folds - 1

Lecture 3 - Photo interpretation/identification of Landforms associated with Folds - 2

Lecture 4 - Identification of features related to ongoing Crustal Deformation and Mountain Building process

Lecture 5 - Identification of Fault Topography

Lecture 6 - Photogeology:Interpretations of Tectonic Landforms

Lecture 7 - Photo Interpretations: Demarcation of Faults and related Landforms - 1

Lecture 8 - Photo Interpretations

Lecture 9 - Photo Interpretations

Lecture 10 - Photo-Interpretations: Lithology and Geomorphic Mapping

Lecture 11 - Photo Interpretations: Lithology of Sedimentary and Intrusive Igneous Rocks

Lecture 12 - Photo Interpretations: Lithology of Metamorphic and Extrusive Igneous Rocks

Lecture 13 - Photo Interpretations: Coastal and Fluvial Landforms - 1

Lecture 14 - Photo Interpretations: Coastal and Fluvial Landforms - 2

Lecture 15 - Photo Interpretations: Aeolian Landforms and their Surface Expressions

Lecture 16 - Exercise on Identification of Geological Structures and related Landforms

Lecture 17 - Exercise on Identification of Geomorphic Features related to Various Environments

Lecture 18 - Exercise on Identification of Tectonic Features and Geomorphic Mapping using Satellite Data

Lecture 19 - Exercise on Identification of Geological Structures and Geomorphic Landforms on Aerial/Satellite Photos

Lecture 20 - Exercise on Morphometric Parameters and 3D observation of the Earth Surface Features

NPTEL : NOC:Introduction to Accounting and Finance for Civil Engineers (Civil Engineering)

Co-ordinators : Dr. Sudhir Misra

NPTEL : NOC:Natural Hazards - Part 1 (Civil Engineering)

Co-ordinators : Prof. Javed N. Malik

NPTEL : NOC:Structural Dynamics for Civil Engineers - SDOF Systems (Civil Engineering)

Co-ordinators : Prof. Riya Catherine George

NPTEL : NOC:Geomorphic Processes: Landforms and Landscapes (Civil Engineering)

Co-ordinators : Prof. Javed N. Malik

NPTEL : NOC:Structural Geology (Civil Engineering)

Co-ordinators : Prof. Santanu Misra

Lecture 32 - Stereonet Problem III: Pole to the Plane

Lecture 33 - Stereonet Problem IV: Fold axis and Axial plane

Lecture 34 - Stereonet Problem V: Fold geometry from pole data of two limbs

Lecture 35 - Fractures and Joints - I

Lecture 36 - Fractures and Joints - II

Lecture 37 - Faults and Faulting - I

Lecture 38 - Stereonet Problem VI - Fold geometry from interlimb angle and fold axes

Lecture 39 - Stereonet Problem VII - Fold geometry from pitch of the limbs on another plane

Lecture 40 - Faults and Faulting - II

Lecture 41 - Ductile Shear Zones - I

Lecture 42 - Ductile Shear Zones - II

Lecture 43 - Basic of Litho-Structural Mapping

Lecture 44 - Paleostress analysis

Lecture 45 - Graphical Problem

Lecture 46 - Three point problem

Lecture 47 - Construction of Topographic Profile

Lecture 48 - Construction of Geological Cross-section

NPTEL : NOC:Earthquake Geology: A tool for Seismic Hazard Assessment (Civil Engineering)

Co-ordinators : Prof. Javed N. Malik

NPTEL : NOC:Development and Applications of Special Concretes (Civil Engineering)

Co-ordinators : Prof. Sudhir Misra

Lecture 32 - Closing the Course

NPTEL : NOC:Introductory Field Structural Geology (Civil Engineering)

Co-ordinators : Prof. Santanu Misra

NPTEL : NOC:Earth Sciences for Civil Engineering (Hindi) (Civil Engineering)

Co-ordinators : Prof. Javed N Malik

Lecture 32 - Geological Structures - III

Lecture 33 - Geological Structures - IV

Lecture 34 - Sterographic Projection of Geological Strata

Lecture 35 - Faults and its Characteristics

Lecture 36 - Active Faults and Associated Hazard - I

Lecture 37 - Active Faults and Associated Hazard - II

Lecture 38 - Active Faults and Associated Hazard - III

Lecture 39 - Rivers and Associated Landforms - I

Lecture 40 - Rivers and Associated Landforms - II

Lecture 41 - Shear Strength of Soil and its Implications towards Hazard

Lecture 42 - Landslides and Associated Hazard

Lecture 43 - Rock Mass Classification System

Lecture 44 - Dam and Tunnels

NPTEL : NOC:Construction Management (Civil Engineering)

Co-ordinators : Prof. Sudhir Misra

NPTEL : NOC:Laboratory Practices in Earth Sciences: Landscape Mapping (Civil Engineering)

Co-ordinators : Prof. Javed N Malik

NPTEL : Advanced Foundation Engineering (Civil Engineering)

Co-ordinators : Dr. Kousik Deb

NPTEL : Ground Water Hydrology (Civil Engineering)

Co-ordinators : Dr. Anirban Dhar, Dr. V.R. Desaai

NPTEL : Numerical Methods in Civil Engineering (Civil Engineering)

Co-ordinators : Dr. A. Deb

NPTEL : Probability Methods in Civil Engineering (Civil Engineering)

Co-ordinators : Dr. Rajib Maity

NPTEL : Design of Reinforced Concrete Structures (Civil Engineering)

Co-ordinators : Prof. N. Dhang

NPTEL : Engineering Geology (Civil Engineering)

Co-ordinators : Dr. Debasis Roy

NPTEL : Introduction to Transportation Engineering (Civil Engineering)

Co-ordinators : Dr. K.S. Reddy, Dr. Bhargab Maitra

NPTEL : Strength of Materials (Civil Engineering)

Co-ordinators : Prof. S.K. Bhattacharyya

NPTEL : NOC:Probability Methods in Civil Engineering (Civil Engineering)

Co-ordinators : Dr. Rajib Maity

NPTEL : NOC:Visual Semiotics for Visual Communication (Civil Engineering)

Co-ordinators : Prof. Mainak Ghosh

NPTEL : NOC:Life Cycle Assessment (Civil Engineering)

Co-ordinators : Prof. Brajesh Kumar Dubey

Lecture 1 - Life Cycle Assessment - Introduction

Lecture 2 - Life Cycle Assessment - Introduction

Lecture 3 - LCA and Sustainability

Lecture 4 - LCA and Environmental Systems

Lecture 5 - LCA and Water, Food and Energy

Lecture 6 - RISK Assement and LCA Frameworks

Lecture 7 - RISK Assessment - Toxicology

Lecture 8 - RISK Assessment Methods

Lecture 9 - RISK Assessment Methods (Continued...)

Lecture 10 - Environmental Risk Assessment

Lecture 11 - Environmental Data Collection and LCA Methodology

Lecture 12 - Environmental Data Collection and LCA Methodology (Continued...)

Lecture 13 - Environmental Data Collection and LCA Methodology (Continued...)

Lecture 14 - Environmental Data Collection and LCA Methodology (Continued...)

Lecture 15 - LCA Methodology

Lecture 16 - LCA - A Detailed Methodology

Lecture 17 - LCA - A Detailed Methodology (Continued...)

Lecture 18 - LCA Benefits and Drawbacks

Lecture 19 - History of LCA

Lecture 20 - The ISO Framework

Lecture 21 - Unit Process, Data and LCI Databases

Lecture 22 - Unit Process and System Boundary (Continued...)

Lecture 23 - Inventory Data and LCIA

Lecture 24 - LCIA

Lecture 25 - LCA Interpretation

Lecture 26 - ISO 14040

Lecture 27 - Key Points of a Good LCA and Example LCA

Lecture 28 - Chemical Release in Environment

Lecture 29 - Green Sustainable Materials

Lecture 30 - Green Sustainable Materials (Continued...)

Lecture 31 - Design for Sustainability

NPTEL : NOC:Integrated Waste Management for a Smart City (Civil Engineering)

Co-ordinators : Prof. Brajesh Kumar Dubey

Lecture 32 - Biological Treatment of Waste (Continued...)

Lecture 33 - Biological Treatment of Waste (Continued...)

Lecture 34 - Thermal Treatment

Lecture 35 - Thermal Treatment (Continued...)

Lecture 36 - Thermal Treatment (Continued...)

Lecture 37 - Thermal Treatment (Continued...)

Lecture 38 - Thermal Treatment (Continued...)

Lecture 39 - Thermal Treatment (Continued...)

Lecture 40 - Landfill Disposal

Lecture 41 - Landfill Disposal (Continued...)

Lecture 42 - Landfill Disposal (Continued...)

Lecture 43 - Landfill Disposal (Continued...)

Lecture 44 - Landfill Disposal (Continued...)

Lecture 45 - Landfill Disposal (Continued...)

Lecture 46 - Landfill Disposal (Continued...)

Lecture 47 - Landfill Disposal (Continued...)

Lecture 48 - Construction and Demolition Waste Management

Lecture 49 - Construction and Demolition Waste Management (Continued...)

Lecture 50 - Construction and Demolition Waste Management (Continued...)

Lecture 51 - Construction and Demolition Waste Management (Continued...)

Lecture 52 - Construction and Demolition Waste Management (Continued...)

Lecture 53 - E-Waste Management

Lecture 54 - E-Waste Management (Continued...)

Lecture 55 - E-Waste Management (Continued...)

Lecture 56 - E-Waste Management (Continued...)

Lecture 57 - E-Waste Management (Continued...)

Lecture 58 - E-Waste Management (Continued...)

Lecture 59 - E-Waste Management (Continued...)

Lecture 60 - E-Waste Management (Continued...)

Lecture 61 - Tutorial - I

Lecture 62 - Tutorial - II

NPTEL : NOC:Computational Hydraulics (Civil Engineering)

Co-ordinators : Dr. Anirban Dhar

Lecture 1 - Introduction to Computational Hydraulics

Lecture 2 - Problem Definition and Governing Equations (GE)

Lecture 3 - Classification of Problems based on Initial Condition (IC) and/or Boundary Conditions (BC)

Lecture 4 - Classification of Differential Equations

Lecture 5 - Numerical Methods : Overview

Lecture 6 - Finite Difference Approximation

Lecture 7 - Ordinary Differential Equation : IVP

Lecture 8 - Ordinary Differential Equation : BVP

Lecture 9 - Partial Differential Equation : BVP

Lecture 10 - Partial Differential Equation : IBVP

Lecture 11 - Partial Differential Equation : Numerical Stability of IBVP

Lecture 12 - Partial Differential Equation : Numerical Stability of One Dimensional PDE

Lecture 13 - Finite Volume Method - Overview

Lecture 14 - Finite Volume Method - BVP

Lecture 15 - Finite Volume Method - IBVP

Lecture 16 - Finite Volume Method - Conservation Law

Lecture 17 - Upwind Approach

Lecture 18 - Godunov Approach

Lecture 19

Lecture 20

Lecture 21 - Mesh-Tree Method : Polynomial Interpolation Method

Lecture 22 - Mesh-Free Method : Moving Least Squares Method

Lecture 23 - Mesh-Free Method : Space-Time Moving Least Squares Method

Lecture 24 - Numerical Method : Matrix Structure and Scilab

Lecture 25 - Algebraic Equation : Gauss Elimination Method

Lecture 26 - Algebraic Equation : LU Decomposition Method

Lecture 27 - Algebraic Equation : Tri Diagonal Matrix Method

Lecture 28 - Algebraic Equation : Jacobis Method

Lecture 29 - Algebraic Equation : Gauss - Seidel Method

Lecture 30 - Algebraic Equation : Newton Raphson Method

Lecture 31 - One-Dimensional Flow

NPTEL : NOC:Design of Steel Structures (Civil Engineering)

Co-ordinators : Prof. Damodar Maity

NPTEL : NOC:Reinforced Concrete Road Bridges (Civil Engineering)

Co-ordinators : Prof. Nirjhar Dhang

NPTEL : NOC:Structural Analysis - I (Civil Engineering)

Co-ordinators : Prof. Amit Shaw

NPTEL : NOC:Soil Mechanics, Geotechnical Engineering-I (Civil Engineering)

Co-ordinators : Prof. Dilip Kumar Baidya

NPTEL : NOC:Electronic Waste Management - Issues and Challenges (Civil Engineering)

Co-ordinators : Prof. Brajesh Kumar Dubey

NPTEL : NOC:Mineral Resources - Geology, Exploration, Economics and Environment (Civil Engineering)

Co-ordinators : Prof. M.K.Panigrahi

NPTEL : NOC:Introduction to Mineral Processing (Civil Engineering)

Co-ordinators : Prof. Arun Kumar Majumder

NPTEL : NOC:Foundation Engineering (Civil Engineering)

Co-ordinators : Prof. Koushik Deb

NPTEL : NOC:Theory of Elasticity (Civil Engineering)

Co-ordinators : Prof. Biswanath Banjerjee, Prof. Amit Shaw

NPTEL : NOC:Wastewater Treatment and Recycling (Civil Engineering)

Co-ordinators : Prof. Manoj Kumar Tiwari

NPTEL : NOC:Fluid Inclusion in Mineral Principles, Methodology, Practice and Application (Civil Engineering)

Co-ordinators : Prof. M.K.Panigrahi

NPTEL : NOC:Matrix Method of Structural Analysis (Civil Engineering)

Co-ordinators : Prof. Biswanath Banjerjee, Prof. Amit Shaw

NPTEL : NOC:Plastic Waste Management (Civil Engineering)

Co-ordinators : Prof. Brajesh Kumar Dubey

NPTEL : NOC:Geotechnical Engineering-II Foundation Engineering (Civil Engineering)

Co-ordinators : Prof. Dilip Kumar Baidya

NPTEL : NOC:Mass, Momentum and Energy Balances in Engineering Analysis (Civil Engineering)

Co-ordinators : Prof. Pavitra Sandilya

NPTEL : NOC:Soil Structure Interaction (Civil Engineering)

Co-ordinators : Prof. Koushik Deb

Lecture 32 - Beams on Elastic Foundation (Continued...)

Lecture 33 - Beams on Elastic Foundation (Continued...)

Lecture 34 - Beams on Elastic Foundation (Continued...)

Lecture 35 - Beams on Elastic Foundation (Continued...)

Lecture 36 - Beams on Elastic Foundation (Continued...)

Lecture 37 - Beams on Elastic Foundation (Continued...)

Lecture 38 - Beams on Elastic Foundation (Continued...)

Lecture 39 - Beams on Elastic Foundation (Continued...)

Lecture 40 - Beams on Elastic Foundation (Continued...)

Lecture 41 - Plates on Elastic Foundation

Lecture 42 - Plates on Elastic Foundation (Continued...)

Lecture 43 - Plates on Elastic Foundation (Continued...)

Lecture 44 - Plates on Elastic Foundation (Continued...)

Lecture 45 - Use of Finite Difference Method for Soil Structure Interaction Problems

Lecture 46 - Use of Finite Difference Method for Soil Structure Interaction Problems (Continued...)

Lecture 47 - Use of Finite Difference Method for Soil Structure Interaction Problems (Continued...)

Lecture 48 - Use of Finite Difference Method for Soil Structure Interaction Problems (Continued...)

Lecture 49 - Use of Finite Difference Method for Soil Structure Interaction Problems (Continued...)

Lecture 50 - Use of Finite Difference Method for Soil Structure Interaction Problems (Continued...)

Lecture 51 - Use of Finite Difference Method for Soil Structure Interaction Problems (Continued...)

Lecture 52 - Soil Structure Interaction for Pile Foundation

Lecture 53 - Soil Structure Interaction for Pile Foundation (Continued...)

Lecture 54 - Soil Structure Interaction for Pile Foundation (Continued...)

Lecture 55 - Soil Structure Interaction for Pile Foundation (Continued...)

Lecture 56 - Soil Structure Interaction for Pile Foundation (Continued...)

Lecture 57 - Soil Structure Interaction for Pile Foundation (Continued...)

Lecture 58 - Soil Structure Interaction for Pile Foundation (Continued...)

Lecture 59 - Soil Structure Interaction for Pile Foundation (Continued...)

Lecture 60 - Soil Structure Interaction for Pile Foundation (Continued...)

Lecture 61 - Soil Structure Interaction for Pile Foundation (Continued...)

Lecture 62 - Soil Structure Interaction for Pile Foundation (Continued...)

Lecture 63 - Soil Structure Interaction for Pile Foundation (Continued...)

Lecture 64 - Soil Structure Interaction for Pile Foundation (Continued...)

NPTEL : NOC:Water Supply Engineering (Civil Engineering)

Co-ordinators : Prof. Manoj Kumar Tiwari

NPTEL : NOC:Geo Spatial Analysis in Urban Planning (Civil Engineering)

Co-ordinators : Prof. Saikat Kumar Paul

NPTEL : NOC:Hydraulic Engineering (Civil Engineering)

Co-ordinators : Prof. Mohammad Saud Afzal

Lecture 32 - Introduction to Open Channel Flow and Uniform Flow (Continued...)

Lecture 33 - Introduction to Open Channel Flow and Uniform Flow (Continued...)

Lecture 34 - Non-uniform flow and hydraulic jump

Lecture 35 - Non-uniform flow and hydraulic jump (Continued...)

Lecture 36 - Non-uniform flow and hydraulic jump (Continued...)

Lecture 37 - Non-uniform flow and hydraulic jump (Continued...)

Lecture 38 - Pipe flow

Lecture 39 - Pipe flow (Continued...)

Lecture 40 - Pipe flow (Continued...)

Lecture 41 - Pipe flow (Continued...)

Lecture 42 - Pipe flow (Continued...)

Lecture 43 - Pipe networks

Lecture 44 - Pipe networks (Continued...)

Lecture 45 - Pipe networks (Continued...)

Lecture 46 - Pipe networks (Continued...)

Lecture 47 - Pipe networks (Continued...)

Lecture 48 - Viscous fluid flow

Lecture 49 - Viscous fluid flow (Continued...)

Lecture 50 - Viscous fluid flow (Continued...)

Lecture 51 - Viscous fluid flow (Continued...)

Lecture 52 - Viscous fluid flow (Continued...)

Lecture 53 - Viscous fluid flow (Continued...)

Lecture 54 - Computational fluid dynamics

Lecture 55 - Computational fluid dynamics (Continued...)

Lecture 56 - Computational fluid dynamics (Continued...)

Lecture 57 - Computational fluid dynamics (Continued...)

Lecture 58 - Computational fluid dynamics (Continued...)

Lecture 59 - Introduction to wave mechanics

Lecture 60 - Introduction to wave mechanics (Continued...)

Lecture 61 - Introduction to wave mechanics (Continued...)

Lecture 62 - Introduction to wave mechanics (Continued...)

Lecture 63 - Introduction to wave mechanics (Continued...)

NPTEL : NOC:Introduction to Multimodal Urban Transportation Systems (Civil Engineering)

Co-ordinators : Prof. Arkopal Kishore Goswami

Lecture 32 - Non-Motorised Transportation (NMT) Planning: HCM 2010 Methodology for PLOS

Lecture 33 - Non-Motorised Transportation (NMT) Planning: HCM 2010 Methodology for PLOS (Continued...)

Lecture 34 - Non-Motorised Transportation (NMT) Planning: Bicycle Facilities and Level of Service (BLOS)

Lecture 35 - Non-Motorised Transportation (NMT) Planning: BLOS and Bicycle Compatibility Index (BCI)

Lecture 36 - Non-Motorised Transportation (NMT) Planning: NMT Design Principles

Lecture 37 - Non-Motorised Transportation (NMT) Planning: Design of Pedestrian Infrastructure

Lecture 38 - Non-Motorised Transportation (NMT) Planning: Design of Pedestrian Infrastructure (Continued...)

Lecture 39 - Non-Motorised Transportation (NMT) Planning: Design of Cycling Infrastructure

Lecture 40 - Non-Motorised Transportation (NMT) Planning: Design of Cycling Infrastructure (Continued...)

Lecture 41 - Urban Transport and Sustainability: Travel Demand Management (TDM) overview

Lecture 42 - Urban Transport and Sustainability: Push measures cases

Lecture 43 - Urban Transport and Sustainability: Pull measure cases

Lecture 44 - Urban Transport and Sustainability: Parking Studies

Lecture 45 - Urban Transport and Sustainability: Transit Oriented Development (TOD)

Lecture 46 - Urban Transport and Sustainability: Introduction to Intelligent Transportation Systems (ITS)

Lecture 47 - Urban Transport and Sustainability: ITS components, applications and communication

Lecture 48 - Urban Transport and Sustainability: ITS Architecture

Lecture 49 - Urban Transport and Sustainability: Electronic Toll Collection (ETC)

Lecture 50 - Urban Transport and Sustainability: Public Bicycle Sharing (PBS) System with ITS

Lecture 51 - Urban Transport and Sustainability: Multimodal transportation (MMT) environment

Lecture 52 - Urban Transport and Sustainability: Multimodal Level of Service (MMLOS)

Lecture 53 - Urban Transport and Sustainability: Multimodal Level of Service (MMLOS) (Continued...)

Lecture 54 - Urban Transport and Sustainability: Design of multimodal transfer facilities

Lecture 55 - Urban Transport and Sustainability: Park & Ride (P&R) Facility Planning

Lecture 56 - Urban Transport and Sustainability: An Introduction to Pedestrian Road Safety and associated Risk Factors

Lecture 57 - Urban Transport and Sustainability: Road crash estimation and elements of predictive methods

Lecture 58 - Urban Transport and Sustainability: Predicting Vehicle-Pedestrian and Vehicle-Bicycle conflicts

Lecture 59 - Urban Transport and Sustainability: Environmental Concerns of Urban Transport

Lecture 60 - Urban Transport and Sustainability: Sustainable strategies for Urban Transportation

NPTEL : NOC:Advanced Foundation Engineering (Civil Engineering)

Co-ordinators : Prof. Kousik Deb

Lecture 32 - Beams on Elastic Foundation - VI

Lecture 33 - Beams on Elastic Foundation - VII

Lecture 34 - Beams on Elastic Foundation - VIII

Lecture 35 - Beams on Elastic Foundation - IX

Lecture 36 - Design of Shallow Foundation - I

Lecture 37 - Design of Shallow Foundation - II

Lecture 38 - Design of Shallow Foundation - III

Lecture 39 - Design of Shallow Foundation - IV

Lecture 40 - Design of Shallow Foundation - V

Lecture 41 - Pile Foundation : Under Compressive Load - I

Lecture 42 - Pile Foundation : Under Compressive Load - II

Lecture 43 - Pile Foundation : Under Compressive Load - III

Lecture 44 - Pile Foundation : Under Compressive Load - IV

Lecture 45 - Pile Foundation : Under Compressive Load - V

Lecture 46 - Pile Foundation : Under Compressive Load - VI

Lecture 47 - Pile Foundation : Under Compressive Load - VII

Lecture 48 - Pile Foundation : Under Compressive Load - VIII

Lecture 49 - Pile Foundation : Under Compressive Load - IX

Lecture 50 - Pile Foundation : Under Compressive Load - X

Lecture 51 - Pile Foundation : Under Lateral Load and Uplift - I

Lecture 52 - Pile Foundation : Under Lateral Load and Uplift - II

Lecture 53 - Pile Foundation : Under Lateral Load and Uplift - III

Lecture 54 - Pile Foundation : Under Lateral Load and Uplift - IV

Lecture 55 - Pile Foundation : Under Lateral Load and Uplift - V

Lecture 56 - Pile Foundation : Under Lateral Load and Uplift - VI

Lecture 57 - Pile Foundation : Under Lateral Load and Uplift - VII

Lecture 58 - Pile Foundation : Under Lateral Load and Uplift - VIII

Lecture 59 - Pile Foundation : Under Lateral Load and Uplift - IX

Lecture 60 - Well Foundation - I

Lecture 61 - Well Foundation - II

Lecture 62 - Well Foundation - III

Lecture 63 - Well Foundation - IV

Lecture 64 - Well Foundation - V

NPTEL : NOC:Urban Transport Systems Planning (Civil Engineering)

Co-ordinators : Prof. Bhargab Maitra

NPTEL : NOC:Structural Reliability (Civil Engineering)

Co-ordinators : Prof. Baidurya Bhattacharya

Lecture 32 - Common Probability Distributions - Part 3

Lecture 33 - Common Probability Distributions - Part 4

Lecture 34 - Common Probability Distributions - Part 5

Lecture 35 - Common Probability Distributions - Part 6

Lecture 36 - Common Probability Distributions - Part 7

Lecture 37 - Common Probability Distributions - Part 8

Lecture 38 - Common Probability Distributions - Part 9

Lecture 39 - Common Probability Distributions - Part 10

Lecture 40 - Common Probability Distributions - Part 11

Lecture 41 - Common Probability Distributions - Part 12

Lecture 42 - Common Probability Distributions - Part 13

Lecture 43 - Common Probability Distributions - Part 14

Lecture 44 - Common Probability Distributions - Part 15

Lecture 45 - Common Probability Distributions - Part 16

Lecture 46 - Common Probability Distributions - Part 17

Lecture 47 - Common Probability Distributions - Part 18

Lecture 48 - Common Probability Distributions - Part 19

Lecture 49 - Common Probability Distributions - Part 20

Lecture 50 - Joint Probability Distributions - Part 1

Lecture 51 - Joint Probability Distributions - Part 2

Lecture 52 - Joint Probability Distributions - Part 3

Lecture 53 - Joint Probability Distributions - Part 4

Lecture 54 - Joint Probability Distributions - Part 5

Lecture 55 - Joint Probability Distributions - Part 6

Lecture 56 - Joint Probability Distributions - Part 7

Lecture 57 - Joint Probability Distributions - Part 8

Lecture 58 - Joint Probability Distributions - Part 9

Lecture 59 - Joint Probability Distributions - Part 10

Lecture 60 - Joint Probability Distributions - Part 11

Lecture 61 - Joint Probability Distributions - Part 12

Lecture 62 - Joint Probability Distributions - Part 13

Lecture 63 - Joint Probability Distributions - Part 14

Lecture 64 - Joint Probability Distributions - Part 15

Lecture 65 - Joint Probability Distributions - Part 16

Lecture 66 - Joint Probability Distributions - Part 17

Lecture 67 - Joint Probability Distributions - Part 18

Lecture 68 - Joint Probability Distributions - Part 19

Lecture 69 - Monte Carlo Simlulations - Part 1

Lecture 70 - Monte Carlo Simlulations - Part 2

Lecture 71 - Monte Carlo Simlulations - Part 3

Lecture 72 - Monte Carlo Simlulations - Part 4

Lecture 73 - Monte Carlo Simlulations - Part 5

Lecture 74 - Monte Carlo Simlulations - Part 6

Lecture 75 - Monte Carlo Simlulations - Part 7

Lecture 76 - Monte Carlo Simlulations - Part 8

Lecture 77 - Monte Carlo Simlulations - Part 9

Lecture 78 - Monte Carlo Simlulations - Part 10

Lecture 79 - Monte Carlo Simlulations - Part 11

Lecture 80 - Monte Carlo Simlulations - Part 12

Lecture 81 - Monte Carlo Simlulations - Part 13

Lecture 82 - Monte Carlo Simlulations - Part 14

Lecture 83 - History Definition and Scope - Part 1

Lecture 84 - History Definition and Scope - Part 2

Lecture 85 - History Definition and Scope - Part 3

Lecture 86 - History Definition and Scope - Part 4

Lecture 87 - History Definition and Scope - Part 5

Lecture 88 - History Definition and Scope - Part 6

Lecture 89 - Reliability Problem Formulatio - Part 1

Lecture 90 - Reliability Problem Formulatio - Part 2

Lecture 91 - Reliability Problem Formulatio - Part 3

Lecture 92 - Reliability Problem Formulatio - Part 4

Lecture 93 - Reliability Problem Formulatio - Part 5

Lecture 94 - Reliability Problem Formulatio - Part 6

Lecture 95 - Reliability Problem Formulatio - Part 7

Lecture 96 - Reliability Problem Formulatio - Part 8

Lecture 97 - Representation of systems - Part 1

Lecture 164 - Capacity Demand Component Reliability - Part 12

Lecture 165 - Capacity Demand Component Reliability - Part 13

Lecture 166 - Capacity Demand Component Reliability - Part 14

Lecture 167 - Capacity Demand Component Reliability - Part 15

Lecture 168 - Capacity Demand Component Reliability - Part 16

Lecture 169 - Capacity Demand Component Reliability - Part 17

Lecture 170 - Capacity Demand Component Reliability - Part 18

Lecture 171 - Capacity Demand Component Reliability - Part 19

Lecture 172 - Capacity Demand Component Reliability - Part 20

Lecture 173 - Capacity Demand Component Reliability - Part 21

Lecture 174 - Capacity Demand Component Reliability - Part 22

Lecture 175 - Capacity Demand Component Reliability - Part 23

Lecture 176 - Capacity Demand Component Reliability - Part 24

Lecture 177 - Capacity Demand Component Reliability - Part 25

Lecture 178 - Capacity Demand Component Reliability - Part 26

Lecture 179 - Capacity Demand Component Reliability - Part 27

Lecture 180 - Capacity Demand Component Reliability - Part 28

Lecture 181 - Capacity Demand Component Reliability - Part 29

Lecture 182 - Capacity Demand Component Reliability - Part 30

Lecture 183 - Capacity Demand Component Reliability - Part 31

Lecture 184 - Capacity Demand Component Reliability - Part 32

Lecture 185 - Capacity Demand Component Reliability - Part 33

Lecture 186 - Capacity Demand Component Reliability - Part 34

Lecture 187 - Capacity Demand Component Reliability - Part 35

Lecture 188 - Capacity Demand Component Reliability - Part 36

Lecture 189 - Capacity Demand Component Reliability - Part 37

Lecture 190 - Capacity Demand Component Reliability - Part 38

Lecture 191 - Capacity Demand Component Reliability - Part 39

Lecture 192 - Capacity Demand Time Component Reliability - Part 1

Lecture 193 - Capacity Demand Time Component Reliability - Part 2

Lecture 194 - Capacity Demand Time Component Reliability - Part 3

Lecture 195 - Capacity Demand Time Component Reliability - Part 4

Lecture 196 - Capacity Demand Time Component Reliability - Part 5

Lecture 197 - Capacity Demand Time Component Reliability - Part 6

Lecture 198 - Capacity Demand Time Component Reliability - Part 7

Lecture 199 - Capacity Demand Time Component Reliability - Part 8

Lecture 200 - Capacity Demand Time Component Reliability - Part 9

Lecture 201 - Capacity Demand Time Component Reliability - Part 10

Lecture 202 - Capacity Demand Time Component Reliability - Part 11

Lecture 203 - Capacity Demand Time Component Reliability - Part 12

Lecture 204 - Capacity Demand Time Component Reliability - Part 13

Lecture 205 - Capacity Demand Time Component Reliability - Part 14

Lecture 206 - Capacity Demand Time Component Reliability - Part 15

Lecture 207 - Capacity Demand Time Component Reliability - Part 16

Lecture 208 - Capacity Demand Time Component Reliability - Part 17

Lecture 209 - Capacity Demand Time Component Reliability - Part 18

Lecture 210 - Capacity Demand Systems Reliability - Part 1

Lecture 211 - Capacity Demand Systems Reliability - Part 2

Lecture 212 - Capacity Demand Systems Reliability - Part 3

Lecture 213 - Capacity Demand Systems Reliability - Part 4

Lecture 214 - Capacity Demand Systems Reliability - Part 5

Lecture 215 - Capacity Demand Systems Reliability - Part 6

Lecture 216 - Capacity Demand Systems Reliability - Part 7

Lecture 217 - Capacity Demand Systems Reliability - Part 8

Lecture 218 - Capacity Demand Systems Reliability - Part 9

Lecture 219 - Capacity Demand Systems Reliability - Part 10

Lecture 220 - Capacity Demand Systems Reliability - Part 11

Lecture 221 - Capacity Demand Systems Reliability - Part 12

Lecture 222 - Capacity Demand Systems Reliability - Part 13

Lecture 223 - Capacity Demand Systems Reliability - Part 14

Lecture 224 - Capacity Demand Systems Reliability - Part 15

Lecture 225 - Reliability Based Design Codes - Part 1

Lecture 226 - Reliability Based Design Codes - Part 2

Lecture 227 - Reliability Based Design Codes - Part 3

Lecture 228 - Reliability Based Design Codes - Part 4

Lecture 229 - Reliability Based Design Codes - Part 5

Lecture 230 - Reliability Based Design Codes - Part 6

Lecture 231 - Reliability Based Partial Safety Factors - Part 1

Lecture 232 - Reliability Based Partial Safety Factors - Part 2

Lecture 233 - Reliability Based Partial Safety Factors - Part 3

Lecture 234 - Reliability Based Design Code Development - Part 1

Lecture 235 - Reliability Based Design Code Development - Part 2

Lecture 236 - Reliability Based Design Code Development - Part 3

Lecture 237 - Reliability Based Design Code Development - Part 4

Lecture 238 - Target Reliabilities - Part 1

Lecture 239 - Target Reliabilities - Part 2

Lecture 240 - Target Reliabilities - Part 3

Lecture 241 - Target Reliabilities - Part 4

Lecture 242 - Target Reliabilities - Part 5

Lecture 243 - Target Reliabilities - Part 6

Lecture 244 - Target Reliabilities - Part 7

Lecture 245 - Target Reliabilities - Part 8

Lecture 246 - Target Reliabilities - Part 9

Lecture 247 - Target Reliabilities - Part 10

Lecture 248 - Target Reliabilities and General Conclusions - Part 1

Lecture 249 - Target Reliabilities and General Conclusions - Part 2

Lecture 250 - Target Reliabilities and General Conclusions - Part 3

Lecture 251 - Target Reliabilities and General Conclusions - Part 4

Lecture 252 - Target Reliabilities and General Conclusions - Part 5

NPTEL : NOC:Ground Improvement (Civil Engineering)

Co-ordinators : Prof. Dilip Kumar Baidya

NPTEL : NOC:Remote Sensing of Leaf Area Index and Primary Productivity (Civil Engineering)

Co-ordinators : Prof. MD Behera

NPTEL : NOC:Rock Mechanics and Tunneling (Civil Engineering)

Co-ordinators : Prof. Debarghya Chakraborty

NPTEL : NOC:Retrofitting and Rehabilitation of Civil Infrastructure (Civil Engineering)

Co-ordinators : Prof. Swati Maitra, Prof. Sriman Bhattacharya

Lecture 32 - Design Considerations

Lecture 33 - Design Approach for Flexural Strengthening

Lecture 34 - Design of Flexural Strengthening

Lecture 35 - Design Approach for Shear Strengthening

Lecture 36 - Design of Shear Strengthening

Lecture 37 - Design Approach for Axial Strengthening

Lecture 38 - Design of Axial Strengthening

Lecture 39 - Concepts of Concrete Overlay

Lecture 40 - Distresses in Existing Pavement

Lecture 41 - Evaluation of Pavement

Lecture 42 - Design Considerations for Concrete Overlay

Lecture 43 - Construction of Concrete Overlay

Lecture 44 - Introduction

Lecture 45 - Retrofitting Steps

Lecture 46 - Review of Materials and Test Methods

Lecture 47 - Review of Analysis Method

Lecture 48 - Some aspects of Seismic Retrofitting

Lecture 49 - Introduction

Lecture 50 - A Few Retrofitting Techniques

Lecture 51 - A Few Seismic Retrofitting Techniques

Lecture 52 - Introduction

Lecture 53 - Retrofitting steps and Techniques

Lecture 54 - Retrofitting Techniques for Structural Elements

Lecture 55 - Retrofitting Techniques for structural elements (Continued...)

Lecture 56 - Retrofitting Techniques for structural elements (Continued...)

Lecture 57 - Retrofitting Techniques for structural elements (Continued...)

Lecture 58 - Seismic Strengthening of structural elements

Lecture 59 - Introduction and Overview

Lecture 60 - Retrofitting of Structural Members

Lecture 61 - Introduction

Lecture 62 - A case study of Retrofitting

Lecture 63 - A case study of Retrofitting (Continued...)

NPTEL : NOC:Surface Water Hydrology (Civil Engineering)

Co-ordinators : Prof. Rajib Maity

NPTEL : NOC:Traffic Engineering (Civil Engineering)

Co-ordinators : Prof. Bhargab Maitra

Lecture 1 - Traffic Engineering Objectives and Role of Transportation Demand and Land-Use

Lecture 2 - Mobility and Accessibility, Traffic Engineering Elements and Components of Traffic

Lecture 3 - Road Users

Lecture 4 - Vehicles, Roadways and Traffic Control Devices

Lecture 5 - Traffic Signs, Delineators and Signals

Lecture 6 - Traffic Facilities and Traffic Stream Parameters

Lecture 7 - Traffic Volumes and Time Headways

Lecture 8 - Traffic Density and Relationships among Macroscopic Parameters

Lecture 9 - Single Regime Traffic Stream Models

Lecture 10 - Multi-Regime Models and Characteristics of Interrupted Flow

Lecture 11 - Analysis of Shock Waves - I

Lecture 12 - Analysis of Shock Waves - II

Lecture 13 - Analysis of Shock Waves - III

Lecture 14 - Queueing Analysis - I

Lecture 15 - Queueing Analysis - II

Lecture 16 - Basic Concepts

Lecture 17 - Analysis of Basic Freeway and Multi-Lane Highway Segments (as per HCM, 2016) - I

Lecture 18 - Analysis of Basic Freeway and Multi-Lane Highway Segments (as per HCM, 2016) - II

Lecture 19 - Analysis of Basic Freeway and Multi-Lane Highway Segments (As per HCM, 2016) - III

Lecture 20 - Analysis of Two-Lane Highway Segments (As per HCM, 2016) - I

Lecture 21 - Analysis of Two-Lane Highway Segments (As per HCM, 2016) - II

Lecture 22 - Analysis of Urban street Segments (As per HCM, 2016) - I

Lecture 23 - Analysis of Urban street Segments (As per HCM, 2016) - II

Lecture 24 - Analysis of Urban street Segments (As per HCM, 2016) - III

Lecture 25 - Analysis of Single, Intermediate and Two-Lane Roads (As per Indo HCM, 2017)

Lecture 26 - Analysis of Multi Lane Highways (As per Indo HCM, 2017)

Lecture 27 - Intersection Control and Critical Aspects of Operation - I

Lecture 28 - Intersection Control and Critical Aspects of Operation - II

Lecture 29 - Intersection Control and Critical Aspects of Operation - III

Lecture 30 - Intersection Control and Critical Aspects of Operation - IV

Lecture 31 - Intersection Control and Critical Aspects of Operation - V

NPTEL : NOC:Bridge Engineering (Civil Engineering)

Co-ordinators : Prof. Piyali Sengupta

NPTEL : NOC:Elastic Stability of Structures (Civil Engineering)

Co-ordinators : Prof. Sarat Kumar Panda

Lecture 1 - Basic concepts of buckling and introduction to equilibrium approach

Lecture 2 - Introduction to energy and imperfection approach

Lecture 3 - Introduction to different types of buckling

Lecture 4 - Weighted residual methods in structual mechanics

Lecture 5 - Weighted residual methods in structual mechanics (Continued...)

Lecture 6 - Introduction to the strong and weak forms of GDE

Lecture 7 - Variational method: Derivation of Euler Lagrange equation

Lecture 8 - Delta opeator in variational method for finding GDE and Boundary conditions

Lecture 9 - Euler lagrange equation for functional having different dependent variables

Lecture 10 - Brachistochrone problem

Lecture 11 - Rayleigh-Ritz method

Lecture 12 - Extension of Rayleigh-Ritz method and Galerkinâ€™s method

Lecture 13 - Single DOF stability model

Lecture 14 - Single DOF stability model and model having imperfection

Lecture 15 - Large deflection theory for stability analysis of rigid body stability models

Lecture 16 - Two DOF rigid body stability models

Lecture 17 - Snap through stability model and model of imperfect geometry

Lecture 18 - Weak form solution for hinged-hinged and fixed-fixed column

Lecture 19 - Weak form solution for fixed-free and fixed-hinged column

Lecture 20 - Strong form solution for hinged-hinged column

Lecture 21 - Strong form solution for fixed-fixed and fixed-free column

Lecture 22 - Critical load for column with elastic support

Lecture 23 - Boundary conditions for column with general case of elastically supported ends

Lecture 24 - Critical load for portal frame with column hinged at base

Lecture 25 - Critical load for portal frame with column fixed at base

Lecture 26 - Element stiffness matrix for beam-column

Lecture 27 - Stability analysis of frames by matrix stiffness method

Lecture 28 - Critical load of Euler column: Large deflection theory

Lecture 29 - Critical load of Euler column with initial imperfection

Lecture 30 - Load deflection curve for beam-column: GDE approach

Lecture 31 - Load deflection curve for beam-column: Energy approach

NPTEL : NOC:Radiogenic Isotope Geology (Civil Engineering)

Co-ordinators : Prof. R. Anand

NPTEL : NOC:Availability and Management of Groundwater Resources (Civil Engineering)

Co-ordinators : Prof. Prasoon Kumar Singh

Lecture 32 - Estimation of Subsurface Runoff, Types of Wells, Well Hydraulics (Continued...)

Lecture 33 - Estimation of Subsurface Runoff, Types of Wells, Well Hydraulics (Continued...)

Lecture 34 - Estimation of Subsurface Runoff, Types of Wells, Well Hydraulics (Continued...)

Lecture 35 - Measurement of rainfall, Index of wetness, Infiltration rate

Lecture 36 - Measurement of rainfall, Index of wetness, Infiltration rate (Continued...)

Lecture 37 - Measurement of rainfall, Index of wetness, Infiltration rate (Continued...)

Lecture 38 - Measurement of rainfall, Index of wetness, Infiltration rate (Continued...)

Lecture 39 - Measurement of rainfall, Index of wetness, Infiltration rate (Continued...)

Lecture 40 - Estimation of Total Annual Replenishable Natural Groundwater Recharge

Lecture 41 - Estimation of Total Annual Replenishable Natural Groundwater Recharge (Continued...)

Lecture 42 - Estimation of Total Annual Replenishable Natural Groundwater Recharge (Continued...)

Lecture 43 - Estimation of Total Annual Replenishable Natural Groundwater Recharge (Continued...)

Lecture 44 - Estimation of Total Annual Replenishable Natural Groundwater Recharge (Continued...)

Lecture 45 - Groundwater resources planning and management

Lecture 46 - Groundwater Resources Planning and Management (Continued...)

Lecture 47 - Groundwater Resources Planning and Management (Continued...)

Lecture 48 - Groundwater Resources Planning and Management (Continued...)

Lecture 49 - Groundwater Resources Planning and Management (Continued...)

Lecture 50 - Rainwater Harvesting and Artificial Groundwater Recharge

Lecture 51 - Rainwater Harvesting and Artificial Groundwater Recharge (Continued...)

Lecture 52 - Rainwater Harvesting and Artificial Groundwater Recharge (Continued...)

Lecture 53 - Rainwater Harvesting and Artificial Groundwater Recharge (Continued...)

Lecture 54 - Rainwater Harvesting and Artificial Groundwater Recharge (Continued...)

Lecture 55 - Impact of climate change on water resources

Lecture 56 - Impact of climate change on water resources (Continued...)

Lecture 57 - Impact of climate change on water resources (Continued...)

Lecture 58 - Impact of climate change on water resources (Continued...)

Lecture 59 - Impact of climate change on water resources (Continued...)

Lecture 60 - Impact of climate change on water resources (Continued...)

NPTEL : NOC:Soil Dynamics (Civil Engineering)

Co-ordinators : Prof. Paramita Bhattacharya

NPTEL : NOC:Geotechnical Earthquake Engineering (Civil Engineering)

Co-ordinators : Prof. Kousik Deb

NPTEL : NOC:Earthquake Seismology (Civil Engineering)

Co-ordinators : Dr. Mohit Agrawal

NPTEL : NOC:Engineering Geology (Civil Engineering)

Co-ordinators : Prof. R. K. Dubey

NPTEL : NOC:Industrial Wastewater Treatment (Civil Engineering)

Co-ordinators : Prof Alok Sinha, Prof S K Gupta

NPTEL : NOC:Geoengineering (Civil Engineering)

Co-ordinators : Prof. R. K. Dubey

Lecture 32 - Geotechnical issues related to extraction of mineral resources

Lecture 33 - Mine fire and related geotechnical issues

Lecture 34 - Groundwater occurrences and exploration

Lecture 35 - 05:Geotechnical facets of groundwater extraction and saltwater intrusion

Lecture 36 - Concept, resources and classification of energy

Lecture 37 - Geoengineering view of geothermal energy

Lecture 38 - Concept and sources of green energy and associated geotechnical challenges

Lecture 39 - Water energy and geoengineering issues

Lecture 40 - Classification energy source reservoirs

Lecture 41 - Radioactive and strategic minerals gas hydrates as energy geotechnical constraints

Lecture 42 - Classification of energy source reservoirs and concept geomechanical characterization

Lecture 43 - Geomechanical characterization of hydrocarbon reservoir

Lecture 44 - Geomechanical characterization of Coal bed methane and shale gas reservoirs

Lecture 45 - Geomechanical characterization of geothermal reservoir

Lecture 46 - Climate change scenario

Lecture 47 - Impact of climate change

Lecture 48 - Nuclear power and generation of waste and related issues

Lecture 49 - Geotechnical facets of carbon dioxide capture and sequestration

Lecture 50 - Geotechnical issues and solutions in nuclear waste disposal

Lecture 51 - Mass wasting and landslide hazards zonation

Lecture 52 - Slope stability analysis of natural and engineered slopes

Lecture 53 - Earthquake hazards analysis and mitigation

Lecture 54 - Induced seismicity

Lecture 55 - Volcanic hazards, assessment and mitigation

Lecture 56 - Quaternary land forms and active neotectonics

Lecture 57 - River hydraulics and associate problems, geotechnical applications

Lecture 58 - Linking of river and expected geotechnical issues and possible measures

Lecture 59 - Seashore and wave dynamics

Lecture 60 - Wave dynamics, hazards, geotechnical issues and mitigation

NPTEL : Advanced Structural Analysis (Civil Engineering)

Co-ordinators : Prof. Devdas Menon

NPTEL : Finite Element Analysis (Civil Engineering)

Co-ordinators : Dr. B.N. Rao

NPTEL : Geosynthetics and Reinforced Soil Structures (Civil Engineering)

Co-ordinators : Dr. K. Rajagopal

NPTEL : Modern Construction Materials (Civil Engineering)

Co-ordinators : Dr. Ravindra Gettu

NPTEL : Urban transportation planning (Civil Engineering)

Co-ordinators : Dr. V. Thamizh Arasan

Lecture 32 - Transportation Surveys (Continued...)

Lecture 33 - Transportation Surveys (Continued...)

Lecture 34 - Transport Related Land-Use Models

Lecture 35 - Transport Related Land-Use Models (Continued...)

Lecture 36 - Transport Related Land-Use Models (Continued...)

Lecture 37 - Urban Structure

Lecture 38 - Urban Structure (Continued...)

Lecture 39 - Urban Goods Movement

Lecture 40 - Urban Goods Movement (Continued...)

NPTEL : Mechanics of Solids (Civil Engineering)

Co-ordinators : Prof. M.S. Sivakumar

NPTEL : Pre-stressed Concrete Structures (Civil Engineering)

Co-ordinators : Prof. Devdas Menon, Dr. Amlan Kumar Sengupta

NPTEL : Water and Waste Water Engineering (Civil Engineering)

Co-ordinators : Prof. B.S. Murty, Prof. C. Venkobachar, Prof. Ligy Philip

NPTEL : NOC:Sustainable River Basin Management (Civil Engineering)

Co-ordinators : Dr. Franziska Steinbruch

NPTEL : NOC:Project Planning and Control (Civil Engineering)

Co-ordinators : Dr. Koshy Varghese

NPTEL : NOC:Structural Dynamics (Civil Engineering)

Co-ordinators : Prof. Ramancharala Pradeep Kumar

NPTEL : NOC:Mechanics of Materials (Civil Engineering)

Co-ordinators : Dr. U. Saravanan

Lecture 1 - Why this course?

Lecture 2 - Concepts and equations in this course

Lecture 3 - Objectives and prerequisite

Lecture 4 - Linear Algebra

Lecture 5 - Vector Algebra

Lecture 6 - Representation of Vector

Lecture 7 - Concept of Force

Lecture 8 - Definition of a body

Lecture 9 - Motion and Displacement field

Lecture 10 - Traction

Lecture 11 - Properties of traction

Lecture 12 - Defnition of stress tensor and linear function

Lecture 13 - Tensor Algebra

Lecture 14 - Meaning of components of the stress tensor

Lecture 15 - Transformation of stress components

Lecture 16 - Mohr's Circle derivaion

Lecture 17 - Example 1: Construction of Mohr's circle

Lecture 18 - Example 2: Extremum normal and shear stress

Lecture 19 - Example 3: Transformation of stress components

Lecture 20 - Uniaxial stress

Lecture 21 - Hydrostatic, pure shear and deviatoric stress

Lecture 22 - Biaxial and Plane state of stress

Lecture 23 - Extreme stress for 3D stresses

Lecture 24 - Extremum shear stress

Lecture 25 - Stresses in the Octahedral plane

Lecture 26 - 2D Equilibrium equations

Lecture 27 - 3D Equilibrium equations

Lecture 28 - Stretch ratio and strain

Lecture 29 - Curves and arc Length

Lecture 30 - Gradient

Lecture 31 - Deformation and displacement Gradient

Lecture 32 - Right Cauchy Green Deformation tensor

Lecture 33 - Homogeneous deformation

Lecture 34 - Engineering strain

Lecture 35 - Change in Angle

Lecture 36 - Transformation of strain components/ Strain Rosette

Lecture 37 - Compatibility condition

Lecture 38 - Constitutive relation

Lecture 39 - Young's Modulus and Poisson's Ratio

Lecture 40 - Shear Modulus

Lecture 41 - Bulk Modulus

Lecture 42 - Restriction on material parameters

Lecture 43 - Thermal strain

Lecture 44 - Strain energy, load potential and total potential

Lecture 45 - Stepped shaft subjected to axial force

Lecture 46 - Inhomogeneous bar subjected to axial force

Lecture 47 - Stepped shaft subjected to raise in temperature

Lecture 48 - Traction in member subjected to bending

Lecture 49 - Governing equilibrium equations

Lecture 50 - Displacement field

Lecture 51 - Bending equation

Lecture 52 - Radius of curvature

Lecture 53 - Shear force and bending moment diagram

Lecture 54 - Variation of axial stress

Lecture 55 - Deflected shape and rotation of cross section

Lecture 56 - Expression to find shear stress

Lecture 57 - Finding centroid of a cross section

Lecture 58 - Parallel axis theorem and its application

Lecture 59 - Vertical shear stress in I section

Lecture 60 - Horizontal shear stress in I section

Lecture 61 - Connection design

Lecture 62 - Definition of shear center

Lecture 63 - Shear center of Channel section

Lecture 64 - Expression to find shear center

NPTEL : NOC:Advanced Concrete Technology (Civil Engineering)

Co-ordinators : Prof. Manu Santhanam

NPTEL : NOC:Glass in Buildings: Design and Application (Civil Engineering)

Co-ordinators : Prof. K.N. Satyanarayana

Lecture 1 - Introduction

Lecture 2 - Float Process for Manufacturing Glass - Part 1

Lecture 3 - Float Process for Manufacturing Glass - Part 2

Lecture 4 - Coatings on Glass - Need and Types - Part 2

Lecture 5 - Coatings on Glass - Need and Types - Part 2

Lecture 6 - Glass Design for Safety, Sustainability and Aesthetic - Part 1

Lecture 7 - Glass Design for Safety, Sustainability and Aesthetic - Part 2

Lecture 8 - Structural Control and Design for Energy Efficiency - Part I

Lecture 9 - Structural Control and Design for Energy Efficiency - Part II

Lecture 10 - Structural Control and Design for Energy Efficiency - Part III

Lecture 11 - Structural Control and Design for Energy Efficiency - Part IV

Lecture 12 - Structural Control and Design for Energy Efficiency - Part V

Lecture 13 - Design Tools for Glass Selection - Part I

Lecture 14 - Design Tools for Glass Selection - Part II

Lecture 15 - Modeling the Building Envelope - Part I

Lecture 16 - Modeling the Building Envelope - Part II

Lecture 17 - Modeling the Building Envelope - Part III

Lecture 18 - Innovations in Glass Future Facades - Part I

Lecture 19 - Innovations in Glass Future Facades - Part II

Lecture 20 - Standards Related to Glass

Lecture 21 - Introduction to Useful Daylighting in Buildings

Lecture 22 - Fundamentals of Daylighting - Part I

Lecture 23 - Fundamentals of Daylighting - Part II

Lecture 24 - Daylighting Strategies - Techniques - Part I - Video 1

Lecture 25 - Daylighting Strategies - Techniques - Part I - Video 2

Lecture 26 - Daylighting Strategies - Techniques - Part II - Video 1

Lecture 27 - Daylighting Strategies - Techniques - Part II - Video 2

Lecture 28 - Daylighting Strategies - Techniques - Part II - Video 3

Lecture 29 - ECBC and Green Building Requirements

Lecture 30 - Introduction to Daylight Simulation

Lecture 31 - Daylighting Controls - Part I

Lecture 32 - Daylighting Controls - Part II

Lecture 33 - Acheving Acoustics Through Glass

Lecture 34 - Glass Processing Overview - Part I

Lecture 35 - Glass Processing Overview - Part II

Lecture 36 - Interior Glazing Program - Part I

Lecture 37 - Interior Glazing Program - Part II

Lecture 38 - Interior Glazing Applications-Shower Enclosure - Part I

Lecture 39 - Interior Glazing Applications-Shower Enclosure - Part II

Lecture 40 - Interior Glazing Applications-Shower Enclosure - Part III

Lecture 41 - Interior Glazing Applications-Shower Enclosure - Part IV

Lecture 42 - Glass in Passive Fire Protection - Part I

Lecture 43 - Glass in Passive Fire Protection - Part II

Lecture 44 - Glass in Passive Fire Protection - Part III

Lecture 45 - Glazing Choices for Project Segment - Part I

Lecture 46 - Glazing Choices for Project Segment - Part II

Lecture 47 - National Building Code 2016 - Part I

Lecture 48 - National Building Code 2016 - Part II

Lecture 49 - National Building Code 2016 - Part III

Lecture 50 - National Building Code 2016 - Part IV

Lecture 51 - Facade Fundamentals - Part I

Lecture 52 - Facade Fundamentals - Part II

Lecture 53 - Facade Fundamentals - Part III

Lecture 54 - Facade Fundamentals - Part IV

Lecture 55 - Glass Application on Facades - Part I

Lecture 56 - Glass Application on Facades - Part II

Lecture 57 - Glass Application on Facades - Part III

Lecture 58 - Energy Efficiency Facade System

Lecture 59 - Structural Design of Facades - Part I

Lecture 60 - Structural Design of Facades - Part II

Lecture 61 - Silicone for Structural Glazing - Part - I

Lecture 62 - Silicone for Structural Glazing - Part - II

Lecture 63 - Silicone for Structural Glazing - Part - III

Lecture 64 - Facade Factory Operations - Part I

NPTEL : NOC:Glass Processing Technology (Civil Engineering)

Co-ordinators : Prof. K.N. Satyanarayana

Lecture 1 - Introduction

Lecture 2 - Glass as Building Material - Part I

Lecture 3 - Glass as Building Material - Part II

Lecture 4 - Float Glass Manufacturing - Part I

Lecture 5 - Float Glass Manufacturing - Part II

Lecture 6 - Glass Coating Technology - Part I

Lecture 7 - Glass Coating Technology - Part II

Lecture 8 - Safety in Industries - Part I

Lecture 9 - Safety in Industries - Part II

Lecture 10 - Safety in Glass Handling - Part I

Lecture 11 - Safety in Glass Handling - Part II

Lecture 12 - Process Flow- PPE

Lecture 13 - Serviceability-Sales - Production Planning in Solutions Business - Part I

Lecture 14 - Serviceability-Sales - Production Planning in Solutions Business - Part II

Lecture 15 - Serviceability-Sales - Production Planning in Solutions Business - Part III

Lecture 16 - Environment and Eco packaging

Lecture 17 - Glass Warehouse Management - Part I

Lecture 18 - Glass Warehouse Management - Part II

Lecture 19 - Cutting and Snapping

Lecture 20 - Pre-Processing-Drilling - Part I

Lecture 21 - Pre-Processing-Drilling - Part II

Lecture 22 - Grinding and Fabrication

Lecture 23 - Pre-Processing - Washing

Lecture 24 - Tempering - Part I

Lecture 25 - Tempering - Part II

Lecture 26 - Tempering - Part III

Lecture 27 - Tempering - Part IV

Lecture 28 - Tempering - Part V

Lecture 29 - Tempering - Part VI

Lecture 30 - Tempering - Part VII

Lecture 31 - Lamination - Part I

NPTEL : NOC:Advanced Topics in the Science and Technology of Concrete (Civil Engineering)

Co-ordinators : Prof. Manu Santhanam, Dr. Ravindra Gettu

NPTEL : NOC:Infrastructure Planning and Managements (Civil Engineering)

Co-ordinators : Dr. Ashwin Mahalingam

Lecture 1 - Introduction to infrastructure and the Transportation sector - Part 1A

Lecture 2 - Introduction to infrastructure and the Transportation sector - Part 1B

Lecture 3 - Introduction to infrastructure and the Transportation sector - Part 1C

Lecture 4 - Introduction to infrastructure and the Transportation sector - Part 1D

Lecture 5 - Introduction to Power and Telecom sectors - Part 2A

Lecture 6 - Introduction to Power and Telecom sectors - Part 2B

Lecture 7 - Urban and Rural Infrastructure - Part 1A

Lecture 8 - Urban and Rural Infrastructure - Part 1B

Lecture 9 - Urban and Rural Infrastructure - Part 1C

Lecture 10 - Phases and Players in Infrastructure Planning and Managements - Part 2A

Lecture 11 - Phases and Players in Infrastructure Planning and Managements - Part 2B

Lecture 12 - Infrastructure Economics and Finance

Lecture 13 - Public-Private Partnership for Infrastructure

Lecture 14 - Public-Private Partnership for Infrastructure - Case Studies - Part 1

Lecture 15 - Public-Private Partnership for Infrastructure - Case Studies - Part 2

Lecture 16 - Public-Private Partnership for Infrastructure - Case Studies - Part 3

Lecture 17 - Risks and Challenges in Infrastructure - Part 1

Lecture 18 - Risks and Challenges in Infrastructure - Part 2

Lecture 19 - Risks and Challenges in Infrastructure - Part 3

Lecture 20 - Economic Risk in Infrastructure - Part 1

Lecture 21 - Economic Risk in Infrastructure - Part 2

Lecture 22 - Political Risk in Infrastructure - Part 1

Lecture 23 - Political Risk in Infrastructure - Part 2

Lecture 24 - Social Environmental Risk in Infrastructure - Part 1

Lecture 25 - Social Environmental Risk in Infrastructure - Part 2

Lecture 26 - Actor Mapping and Social Network Analysis - Part 1

Lecture 27 - Actor Mapping and Social Network Analysis - Part 2

Lecture 28 - Fair Process and Negotiations - Part 1

Lecture 29 - Fair Process and Negotiations - Part 2

Lecture 30 - Design Thinking - Part 1

Lecture 31 - Design Thinking - Part 2

NPTEL : NOC:Design of Masonry Structures (Civil Engineering)

Co-ordinators : Prof. Arun Menon

NPTEL : NOC:Characterization of Construction Materials (Civil Engineering)

Co-ordinators : Prof. Manu Santhanam, Prof. Piyush Chaunsali

Lecture 32 - Optical and Scanning Microscopy- Introduction and specimen preperation - Part 1

Lecture 33 - Optical and Scanning Microscopy- Introduction and specimen preperation - Part 2

Lecture 34 - Optical and Scanning Microscopy- Features and functions - Part 1

Lecture 35 - Optical and Scanning Microscopy- Features and functions - Part 2

Lecture 36 - Types of optical microsopy - Part 1

Lecture 37 - Types of optical microsopy - Part 2

Lecture 38 - Scanning electron microscope Part 1- Parts and Functioning - Part 1

Lecture 39 - Scanning electron microscope Part 1- Parts and Functioning - Part 2

Lecture 40 - Scanning electron microscope Part 2- Working Principles - Part 1

Lecture 41 - Scanning electron microscope Part 2- Working Principles - Part 2

Lecture 42 - Scanning electron microscope Part 3 - Analysis of cementitious systems 1 - Part 1

Lecture 43 - Scanning electron microscope Part 3 - Analysis of cementitious systems 1 - Part 2

Lecture 44 - Scanning electron microscope Part 4 - Analysis of cementitious system 2 - Part 1

Lecture 45 - Scanning electron microscope Part 4 - Analysis of cementitious system 2 - Part 2

Lecture 46 - Application of characterization techniques to assess composite binder with limestone-calcined clay: what, why and how? - Part 1

Lecture 47 - Application of characterization techniques to assess composite binder with limestone-calcined clay: what, why and how? - Part 2

Lecture 48 - Image analysis - Introduction and image mapping - Part 1

Lecture 49 - Image analysis - Introduction and image mapping - Part 2

Lecture 50 - Image analysis - Basic operations - Part 1

Lecture 51 - Image analysis - Basic operations - Part 2

Lecture 52 - Spectroscopy Techniques - Part 1 AAS, AES - Part 1

Lecture 53 - Spectroscopy Techniques - Part 1 AAS, AES - Part 2

Lecture 54 - Spectroscopy Techniques - Part 2 UV and IR spectroscopy - Part 1

Lecture 55 - Spectroscopy Techniques - Part 2 UV and IR spectroscopy - Part 2

Lecture 56 - Spectroscopy Techniques - Part 3 FTIR and NMR spectroscopy - Part 1

Lecture 57 - Spectroscopy Techniques - Part 3 FTIR and NMR spectroscopy - Part 2

Lecture 58 - Spectrocopy techniques - Part 4 Principle of NMR spectroscopy

Lecture 59 - Porosity and pore structure - Intoduction, significance of pore distribution

Lecture 60 - Porosity and pore structure - Woking of mercury intrusion porosimeter - Part 1

Lecture 61 - Porosity and pore structure - Woking of mercury intrusion porosimeter - Part 2

Lecture 62 - Electrical Impedance analysis - Principle and different methods - Part 1

Lecture 63 - Electrical Impedance analysis - Principle and different methods - Part 2

NPTEL : NOC:Introduction to Civil Engineering Profession (Civil Engineering)

Co-ordinators : Dr. Ravindra Gettu, Prof. Subhadeep Banerjee

NPTEL : NOC:Maintenance and Repair of Concrete Structures (Civil Engineering)

Co-ordinators : Prof. Radhakrishna G. Pillai

NPTEL : NOC:Mechanical Characterization of Bituminous Materials (Civil Engineering)

Co-ordinators : Dr. J. Murali Krishnan, Prof. M. R. Nivitha, Prof. Neethu Roy, Prof. A. Padmarekha

Lecture 32 - Low-temperature PG

Lecture 33 - Modifiers for Bitumen - Part 1

Lecture 34 - Modifiers for Bitumen - Part 2

Lecture 35 - Modifiers for Bitumen - Part 3

Lecture 36 - Modifiers for Bitumen - Part 4

Lecture 37 - Mixing and Compaction Temperature - Part 1

Lecture 38 - Mixing and Compaction Temperature - Part 2

Lecture 39 - Mixing and Compaction Temperature - Part 3

Lecture 40 - Dynamic Modulus of Bituminous Mixtures - Part 1

Lecture 41 - Dynamic Modulus of Bituminous Mixtures - Part 2

Lecture 42 - Resilient Modulus of Bituminous Mixtures - Part 1

Lecture 43 - Resilient Modulus of Bituminous Mixtures - Part 2

Lecture 44 - Rutting Characterisation - Different approaches

Lecture 45 - Dry Rut Wheel Testing of Bituminous Mixtures

Lecture 46 - Laboratory investigation for rutting of bituminous mixtures - Part 1

Lecture 47 - Laboratory investigation for rutting of bituminous mixtures - Part 2

Lecture 48 - Fatigue of Bituminous mixtures - Part 1

Lecture 49 - Fatigue of Bituminous mixtures - Part 2

Lecture 50 - Fatigue of Bituminous mixtures - Part 3

Lecture 51 - Fatigue of Bituminous mixtures - Part 4

Lecture 52 - Fatigue of Bituminous mixtures - Part 5

Lecture 53 - Introduction to curve fitting using Matlab - Part 1

Lecture 54 - Introduction to curve fitting using Matlab - Part 2

Lecture 55 - MSCR Analysis using Matlab

Lecture 56 - Summary

NPTEL : NOC:Colloids and Surfaces (Chemical Engineering)

Co-ordinators : Prof. Basavaraj Madivala Gurappa

Lecture 1 - Introduction and motivation

Lecture 2 - Colloidal dispersions, terminology and classification

Lecture 3 - Stability in colloids

Lecture 4 - Source, synthesis and characterisation of colloids

Lecture 5 - Characterisation of colloidal particles - I

Lecture 6 - Characterisation of colloidal particles - II

Lecture 7 - Introduction to forces acting on an individual colloidal particle

Lecture 8 - Introduction to interaction between colloidal particles

Lecture 9 - Application of Brownian force: Measument of diffusivity and size

Lecture 10 - Radiation used to study colloidal systems

Lecture 11 - Radiation used to study colloidal systems

Lecture 12 - Molecular origin of Van der waals forces

Lecture 13 - Vanderwaal interactions between particles

Lecture 14 - Problem on scaling of Vanderwaal interactions

Lecture 15 - Calculation of Vanderwaal's forces between semi-infinite blocks and Hamaker constant - I

Lecture 16 - Calculation of Vanderwaal's forces between semi-infinite blocks and Hamaker constant - II

Lecture 17 - Theories of Vanderwaal forces based on bulk properties and calculation of Hamaker constant using bulk properties

Lecture 18 - Effect of medium on Vanderwaal's interactions - I

Lecture 19 - Effect of medium on Vanderwaal's interactions - II

Lecture 20 - Colloid Polymer mixtures

Lecture 21 - Colloid polymer mixtures: colloid-solvent interactions and colloid-polymer interactions

Lecture 22 - Colloid polymer mixtures: Depletion flocculation

Lecture 23 - Colloid polymer mixtures: Depletion stabilisation

Lecture 24 - Depletion interactions

Lecture 25 - Steric interactions/osmotic repulsion

Lecture 26 - Tutorial problem on depletion interactions

Lecture 27 - Colloidal Interactions: Introduction to electrostatic interactions/electrical double layer interactions

Lecture 28 - Introduction to models of electrical double layer: Helmholtz model/capacitor model

Lecture 29 - Review and summary of Helmholtz model (or capacitor model) of electrical double layer

Lecture 30 - Models of electrical double layer: Diffuse double layer model/Gouy-Chapman model

Lecture 31 - Potential distribution near planar surfaces: Derivation of the Poisson-Boltzmann equation

NPTEL : NOC:Polymers: Concepts, Properties, Uses and Sustainability (Chemical Engineering)

Co-ordinators : Dr. Abhijit P. Deshpande

Lecture 32 - Stress strain response

Lecture 33 - Additives for polymeric systems

Lecture 34 - Blends/composites in recycling

Lecture 35 - Physical/chemical crosslinking

Lecture 36 - Mechanical properties - I

Lecture 37 - Mechanical properties - II

Lecture 38 - Physical and chemical aging

Lecture 39 - Solutions: properties

Lecture 40 - Conducting polymers

Lecture 41 - Dielectric response - I

Lecture 42 - Dielectric response - II

Lecture 43 - Plasticity

Lecture 44 - Properties of composites

Lecture 45 - Viscoelasticity: introduction

Lecture 46 - Thermal response

Lecture 47 - Viscoelasticity: characterization

Lecture 48 - Viscoelasticity: simple models

Lecture 49 - Dynamic Mechanical analysis

Lecture 50 - Damping Applications

Lecture 51 - Time Temperature superposition

Lecture 52 - Impact and energy absorption

Lecture 53 - Testing for applications

Lecture 54 - Properties of blends

Lecture 55 - Biomimetic polymers

Lecture 56 - Advanced mechanics

Lecture 57 - Viscoelastic response: examples

Lecture 58 - Polymer packaging

Lecture 59 - Porous polymers/membranes

Lecture 60 - Polymer at interfaces

Lecture 61 - Diffusion in polymers

Lecture 62 - Compatibilizers

Lecture 63 - Biopolymer applications

Lecture 64 - Adhesives and Paints

NPTEL : NOC:Basic Construction Materials (Civil Engineering)

Co-ordinators : Prof. Radhakrishna G. Pillai, Prof. Manu Santhanam

NPTEL : NOC:Introduction to Lean Construction (Civil Engineering)

Co-ordinators : Prof. Koshy Varghese, Prof. N Raghavan

Lecture 32 - Sampling/ Surveying Techniques - Foreman delay survey - Implementation

Lecture 33 - Foreman delay survey - Illustrations; Comparison - PMS vs WS vs FDS - discussion

Lecture 34 - Value Stream, Value Stream Mapping (VSM), System vs Process, References

Lecture 35 - Illustration: Value and Value Stream in Food Delivery

Lecture 36 - Value, Value Stream, VSM/PM, Language, Basic VSM - current state and future state

Lecture 37 - Key steps for VSM, Work: Degrees of Granularity, Measurement Metrics

Lecture 38 - VSM - Example 1 (Reinforcement)

Lecture 39 - VSM - Example 2 (Blockwork); Summary

Lecture 40 - Flow Process Chart, Symbols, Process mapping - steps and timing, Measurement metrics

Lecture 41 - Process mapping - Illustration: Reinforcement shifting

Lecture 42 - VSM vs PM; Process Flow chart - variations; Swim-lane diagrams; Summary

Lecture 43 - Understand the Basics of 5S, Explanations and 5S Steps

Lecture 44 - Understand Each -S- in Detail - Sort, Set in Order, Shine

Lecture 45 - Understand Each -S- in Detail - Standardize, Sustain

Lecture 46 - 5S: Key Points, Benefits, Signs of a 5S Site

Lecture 47 - Experiment 5S with Yourself First, Project Implementation, Facilitations, Why 5S May Fail?, Recap

Lecture 48 - Understand the Applications of 5S through Case Studies_2 cases

Lecture 49 - Understand the Applications of 5S through Case Studies_3 cases

Lecture 50 - Understand the Applications of 5S through Case Study - Ms Diamond Barretto (Godrej Construction)

Lecture 51 - Current Project Performance, Workflow Variation, Traditional PM vs Lean Production Management

Lecture 52 - Some Key Lean Concepts, Focusing on frontline Execution, CPS - Collaborative Planning System

Lecture 53 - CPS Process, Overall Schedules (Master Schedule,Phase Schedule,LAP, Weekly Plan),Constraint Analysis

Lecture 54 - Collaborative -Pull- Planning, Percentage Plan Completed (PPC), Daily Huddle, Variance Analysis, RCA

Lecture 55 - Lean Work Structuring

Lecture 56 - Impact of PPC on Productivity, Key aspects,Advantages,The Necessary Conditions,Blocks - CPS,Summary

Lecture 57 - COLPLASSE: Look-Ahead Plan, Constraint Analysis, Weekly Plan, Summary

Lecture 58 - Lean Project Delivery System, Conclusion

Lecture 59 - Understand the Applications of CPS/LPS through Case Studies

Lecture 60 - CPS/LPS implementation in Construction Projects through a Panel of Experts - Part 1

Lecture 61 - CPS/LPS implementation in Construction Projects through a Panel of Experts - Part 2

Lecture 62 - CPS/LPS implementation in Construction Projects through a Panel of Experts - Part 3

Lecture 63 - Introduction of Big Room Approach, Some Requirements for Efficient Working, Virtual BR Meetings

Lecture 64 - Big Room Approach through Case Studies

Lecture 65 - Big Room Approach - Implementation case from URC Construction

Lecture 66 - Future Construction Site, Lean Tools and Processes, Automation strategies and impact, Programming

Lecture 67 - Document Management, Workflow Process, Communication/Collab./Authen., Sensing

Lecture 68 - Mechanisation/ Robots, Visualization, AI/ Analytics, BIM, CPS/ IOT/ Industry 4.0, Digital Twin

Lecture 69 - Challenges and Causes, Problem?, Lean, BIM?, Traditional vs BIM, Tools/Technology providers

Lecture 70 - BIM uses; Metrics

Lecture 71 - BIM and Lean, Implementation Framework, BIM Execution Plan, Evidence Cases, Key takeaway

Lecture 72 - How to Start Practicing Lean Tools in Project Sites-1: Work Sampling

Lecture 73 - How to Start Practicing Lean Tools in Project Sites-1: VSM

Lecture 74 - How to Start Practicing Lean Tools in Project Sites-1: 5S

Lecture 75 - How to Start Practicing Lean Tools in Project Sites-1: CPS/ LPS

Lecture 76 - How to Start Practicing Lean Tools in Project Sites-1: Big Room Approach

Lecture 77 - Acknowledgement

NPTEL : NOC:Design of Connections in Steel Structures (Civil Engineering)

Co-ordinators : Prof. Anil Agarwal

NPTEL : NOC:Analysis and Design of Bituminous Pavements (Civil Engineering)

Co-ordinators : A. Padmarekha, J. Murali Krishnan, M. R. Nivitha, Neethu Roy

NPTEL : NOC:FEM and Constitutive Modelling in Geomechanics (Civil Engineering)

Co-ordinators : Prof. K Rajagopal

NPTEL : NOC:The Evolution of the Earth and life (Civil Engineering)

Co-ordinators : Prof. Devapriya Chattopadhyay

Lecture 1 - Course Structure

Lecture 2 - Introduction to Google Earth

Lecture 3 - How Does Earth Science Work ?

Lecture 4 - What is a Mineral

Lecture 5 - Minerals and Rock Cycle

Lecture 6 - Continental Drift

Lecture 7 - Plate Tectonics

Lecture 8 - What are Igneous Rocks ?

Lecture 9 - Compositional Variation of Igneous Rocks

Lecture 10 - Why Does the Rock Melt ?

Lecture 11 - Igneous Activity and Plate Tectonics

Lecture 12 - Igneous Structures

Lecture 13 - Volcanoes

Lecture 14 - Discussion on Posted Questions

Lecture 15 - What are Metamorphic Rocks

Lecture 16 - Types of Metamorphism

Lecture 17 - Metamorphism and Plate Tectonics

Lecture 18 - Weathering and Erosion

Lecture 19 - Detrital Sedimentary Rocks

Lecture 20 - Chemical and Organic Sedimentary Rocks

Lecture 21 - Sedimentary Environment and Plate Tectonics

Lecture 22 - Discussion on Conceptual Questions

Lecture 23 - Discussion on Posted Questions

Lecture 24 - Diversity of Life

Lecture 25 - Why Do Groups Change ?

Lecture 26 - Nature of Paleontological Data

Lecture 27 - Introduction to PaleoDB

Lecture 28 - Relative Age

Lecture 29 - Correlation

Lecture 30 - Attempts to Estimate Absolute Age

Lecture 31 - Radiometric Dating

Lecture 65 - Discussion on Posted Questions_6

NPTEL : NOC:Advanced Reinforced Concrete Design (Civil Engineering)

Co-ordinators : Prof S. Suriya Prakash

NPTEL : NOC:Admixtures and Special Concretes (Civil Engineering)

Co-ordinators : Prof. Manu Santhanam

Lecture 1 - Overview of Cement Chemistry and concrete performance: Cement history and production

Lecture 2 - Overview of Cement Chemistry and concrete performance: Quality control and composition

Lecture 3 - Overview of Cement Chemistry: Composition of Cement and Classification of Cement

Lecture 4 - Overview of Cement Chemistry: Hydration of Cement

Lecture 5 - Overview of Concrete Performance: Curing and Hardened Concrete

Lecture 6 - Overview of Concrete Performance: Basics of Hardened Concrete

Lecture 7 - Chemical Admixtures: Introduction

Lecture 8 - Chemical Admixtures: Water reducers - Part 1

Lecture 9 - Chemical Admixtures: Water reducers - Part 2

Lecture 10 - Chemical Admixtures: Water reducers - Part 3

Lecture 11 - Chemical Admixtures: Water reducers - Part 4

Lecture 12 - Chemical Admixtures: Water reducers - Part 5

Lecture 13 - Chemical Admixtures: Water reducers - Part 6

Lecture 14 - Chemical Admixtures: Set controllers

Lecture 15 - Chemical Admixtures: Set controllers - Accelerators

Lecture 16 - Chemical Admixtures: Set controllers - Retarders

Lecture 17 - Chemical Admixtures: Standards

Lecture 18 - Chemical Admixtures: Air entrainers - Part 1

Lecture 19 - Chemical Admixtures: Air entrainers - Part 2

Lecture 20 - Chemical Admixtures: Understanding Concrete Rheology - Part 1

Lecture 21 - Chemical Admixtures: Understanding Concrete Rheology - Part 2

Lecture 22 - Chemical Admixtures: Viscosity Modifying Agents (VMA)

Lecture 23 - Chemical Admixtures: Mechanism of corrosion

Lecture 24 - Chemical Admixtures: Corrosion inhibitors, Shrinkage reducing admixtures

Lecture 25 - Chemical Admixtures: Other specialty admixtures

Lecture 26 - Chemical Admixtures: Curing compounds

Lecture 27 - Mineral Admixtures: Introduction

Lecture 28 - Mineral Admixtures: Types, Composition and Particle size distribution

Lecture 29 - Mineral Admixtures: Microstructure of SCMs and Pozzolonic reactions

Lecture 30 - Mineral Admixtures: Pozzolonic activity

Lecture 31 - Mineral Admixtures: Electrical Conductivity method, Frattini test and Lime saturation method

Lecture 32 - Mineral Admixtures: Strength Activity test, Lime reactivity test, Mixture Proportioning and R3 test

Lecture 33 - Mineral Admixtures: Flyash - Part 1: Introduction

Lecture 34 - Mineral Admixtures: Flyash - Part 2: Classification and structure

Lecture 35 - Mineral Admixtures: Flyash - Part 3: Effects on fresh concrete

Lecture 36 - Mineral Admixtures: Flyash - Part 4: Effects on hardened concrete

Lecture 37 - Mineral Admixtures: Silica fume - Part 1: Introduction

Lecture 38 - Mineral Admixtures: Silica fume - Part 2: Effects on fresh and hardened concrete

Lecture 39 - Mineral Admixtures: Silica fume - Part 3: Effects on Microstructure + GGBS - Part 1 : Introduction

Lecture 40 - Mineral Admixtures: GGBS - Part 2 : Properties

Lecture 41 - Mineral Admixtures: GGBS - Part 3 : Hydration of slag and Durability of slag cements

Lecture 42 - Mineral Admixtures: Metakaolin

Lecture 43 - Mineral Admixtures: LC3 - Part 1 : Introduction

Lecture 44 - Mineral Admixtures: LC3 - Part 2 : Comparision with other SCMs

Lecture 45 - Mineral Admixtures: LC3 - Part 3 : Durability Performance

Lecture 46 - Mineral Admixtures: Agricultural ashes - Part 1 : Sugarcane bagasse ash

Lecture 47 - Mineral Admixtures: Agricultural ashes - Part 2 : Rice husk ash

Lecture 48 - Mineral Admixtures: Calorimeter

Lecture 49 - Mineral Admixtures: Pore solution analysis

Lecture 50 - Mineral Admixtures: CASH analysis in blended system and Life cycle assessment of concrete - Part 1

Lecture 51 - Life cycle assessment of concrete - Part 2

Lecture 52 - Life cycle assessment of concrete - Part 3

Lecture 53 - Special concretes - High strength concrete - Definition, design and concept of particle packing

Lecture 54 - Special concretes - High strength concrete - Particle packing models

Lecture 55 - Special concretes - High strength concrete - Mix designs, strength and durability

Lecture 56 - Special concretes - High strength concrete - Design attributes, fresh and hardened properties

Lecture 57 - Special concretes - High strength concrete - Stress:strain relationships, applications

Lecture 58 - Special concretes - Ultra high performance concrete - Design principles, strength, durability

Lecture 59 - Special concretes: Self compacting concrete -Introduction, design requirements and plastic shrinkage

Lecture 60 - Special concretes: Self compacting concrete - Segregation and laboratory tests

Lecture 61 - Special concretes - Self Compacting Concrete - Workability test methods, classifications and issues

Lecture 62 - Special concretes - Self Compacting Concrete - Design principles, mix designs, concrete properties

Lecture 63 - Special concretes - Mass concrete - Introduction, materials, thermal cracking

Lecture 64 - Special concretes - Mass concrete - Design guidelines, temperature differential measurement

NPTEL : NOC:Advanced Topics in Science and Technology of Concrete (Civil Engineering)

Co-ordinators : Prof. Ravindra Gettu, Prof. Manu Santhanam

NPTEL : NOC:An Introduction to Climate Dynamics, Variability and Monitoring (Civil Engineering)

Co-ordinators : Prof. Sayak Banerjee

Lecture 32 - Advanced Atmospheric Heating and Heat Balance

Lecture 33 - Temperature Distribution for a Continuously Stratified Atmosphere in Radiative Equilibrium - Part 1

Lecture 34 - Temperature Distribution for a Continuously Stratified Atmosphere in Radiative Equilibrium - Part 2

Lecture 35 - Temperature Distribution and Greenhouse Effect in a Continuously Stratified Atmosphere

Lecture 36 - Atmospheric Circulation Systems - Basic Concepts

Lecture 37 - Atmospheric Circulation Systems - Coriolis Forces

Lecture 38 - Atmospheric Circulation Systems - Pressure Forces

Lecture 39 - Atmospheric Circulation Systems - Frictional Forces and Surface Level Winds

Lecture 40 - Atmospheric Circulation Systems - High Level Winds

Lecture 41 - Seasonal Shifts - Advanced Concepts

Lecture 42 - The Ocean and the Climate

Lecture 43 - Ocean Salinity and Mixing Layer

Lecture 44 - Importance of Mixing Layer and Wind Driven Surface Current

Lecture 45 - Ocean Circulation and Deep Oceanic thermohaline Circulation

Lecture 46 - Coupled Ocean Atmosphere Variability

Lecture 47 - Global Temperature Model, Radiative Forcing and Zero Dimensional Energy Balance Model

Lecture 48 - Zero Dimensional Energy Balance Model (Continued...)

Lecture 49 - Energy Balance Model and Temperature Responce to Radiative Forcing

Lecture 50 - Temperature Responce to Radiative Forcing (Continued...)

Lecture 51 - Planck Feedback or Blackbody Radiative Feedback, Simple Radiative Balance Model

Lecture 52 - Indirect Feedback: Water Vapour Feedback and Spectral Outgoing Longwave Radiation

Lecture 53 - Absorption of Outgoing Longwave Radiation By Atmospheric CO2

Lecture 54 - Introduction to Principles of Measurement and Instrumentation - Part 1

Lecture 55 - Introduction to Principles of Measurement and Instrumentation - Part 2

Lecture 56 - Introduction to Principles of Measurement and Instrumentation - Part 3

Lecture 57 - Automatic Weather Stations, Temperature Measurements and Humidity Measurements

Lecture 58 - Humidity Measurements and Pressure Measurements

Lecture 59 - Wind Measurements Techniques

Lecture 60 - Radiation and Temperature Measurements - Part 1

Lecture 61 - Radiation and Temperature Measurements - Part 2

Lecture 62 - Radiation and Precipitation Measurements

Lecture 63 - Upper Air Measurements

Lecture 64 - Remote Sensing: Climatological Applications

NPTEL : NOC:Indoor Air Pollution: Sources, Effects, Monitoring, Control and Modeling (Civil Engineering)

Co-ordinators : Prof. Asif Qureshi

Lecture 32 - Indoor air pollution monitoring of physico-chemical pollutants: Introduction and sampling methods

Lecture 33 - Indoor air pollution sampling and instruments

Lecture 34 - Indoor air pollutants analysis - 1

Lecture 35 - Indoor air pollutants analysis - 2

Lecture 36 - Indoor bioaerosol sampling methods - 1

Lecture 37 - Indoor bioaerosol sampling methods - 2

Lecture 38 - Methods for bioaerosol analysis - 1

Lecture 39 - Methods for bioaerosol analysis - 2

Lecture 40 - Guest lecture: Case study on comparison of two methdos for indoor bioaerosol sampling and analysis

Lecture 41 - Indoor Air Pollution/Quality in the Indian Context

Lecture 42 - Indoor Air Quality in India - Case studies 1

Lecture 43 - Indoor Air Quality in India - Case studies 2

Lecture 44 - Guest lecture: Case study on bioaerosols in Indian indoor environment

Lecture 45 - Indoor Air Quality in India - Overview and Gaps

Lecture 46 - Indoor air quality guidelines and control: Introduction

Lecture 47 - IAQ guidelines and control: Ventilation

Lecture 48 - IAQ control methods

Lecture 49 - Introduction to Contam

Lecture 50 - Indoor air pollution effects: sick building syndrome

Lecture 51 - Managing indoor air quality

Lecture 52 - Air pollution control methods

Lecture 53 - Modeling Example

NPTEL : Foundation Engineering (Civil Engineering)

Co-ordinators : Prof. Priti Maheswari, Prof. N.K. Samadhiya, Prof. Mahendra Singh

NPTEL : Modern Surveying Techniques (Civil Engineering)

Co-ordinators : Prof. S.K. Ghosh

NPTEL : Transportation Engineering II (Civil Engineering)

Co-ordinators : Prof. Rajat Rastogi

NPTEL : NOC:Introduction to Geographic Information Systems (Civil Engineering)

Co-ordinators : Dr.Arun K.Saraf

NPTEL : NOC:Principles and Applications of Building Science (Civil Engineering)

Co-ordinators : Dr. E. Rajasekar

NPTEL : NOC:GPS Surveying (Civil Engineering)

Co-ordinators : Dr.Jayanta Kumar Ghosh

NPTEL : NOC:Digital Land Surveying And Mapping (Civil Engineering)

Co-ordinators : Prof. Jayanta Kumar Ghosh

NPTEL : NOC:Digital Image Processing of Remote Sensing Data (Civil Engineering)

Co-ordinators : Dr.Arun K.Saraf

NPTEL : NOC:Applied Environmental Microbiology (Civil Engineering)

Co-ordinators : Dr. Gargi Singh

Lecture 1 - Introduction - I

Lecture 2 - Introduction - II

Lecture 3 - Cell Structure - I

Lecture 4 - Cell Structure - II

Lecture 5 - Central Dogma - I

Lecture 6 - Central Dogma - II

Lecture 7 - Microbial Energetics - I

Lecture 8 - Microbial Energetics - II

Lecture 9 - Microbial Energetics - III

Lecture 10 - Microbial Energetics - IV

Lecture 11 - Microbial Metabolism - I

Lecture 12 - Microbial Metabolism - II

Lecture 13 - Functional Diversity of Bacteria - I

Lecture 14 - Functional Diversity of Bacteria - II

Lecture 15 - Functional Diversity of Bacteria - III

Lecture 16 - Microbial Ecosystem - I

Lecture 17 - Microbial Ecosystem - II

Lecture 18 - Microbial Ecosystem - III

Lecture 19 - Microbial Ecosystem - IV

Lecture 20 - Microbial Ecosystem - V

Lecture 21 - Environmental Genomics - I

Lecture 22 - Environmental Genomics - II

Lecture 23 - Environmental Genomics - III

Lecture 24 - Environmental Genomics - IV

Lecture 25 - Environmental Genomics - V

Lecture 26 - Microbial Symbiosis - I

Lecture 27 - Microbial Symbiosis - II

Lecture 28 - Virus - I

Lecture 29 - Virus - II

Lecture 30 - Applied Environmental Microbiology

Lecture 31 - Techniques in Environmental Microbiology - I

Lecture 32 - Techniques in Environmental Microbiology - II

Lecture 33 - Bioremediation - I

Lecture 34 - Bioremediation - II

Lecture 35 - Bioremediation - III

Lecture 36 - Wastewater Microbiology - I

Lecture 37 - Wastewater Microbiology - II

Lecture 38 - Built Microbiology

Lecture 39 - Exposomes - I

Lecture 40 - Exposomes - II

Lecture 41 - Drinking Water Microbiology - I

Lecture 42 - Drinking Water Microbiology - II

Lecture 43 - Drinking Water Microbiology - III

Lecture 44 - Drinking Water Microbiology - IV

Lecture 45 - Drinking Water Microbiology - V

Lecture 46 - Solid Waste Microbiology - I

Lecture 47 - Solid Waste Microbiology - II

Lecture 48 - Solid Waste Microbiology - III

Lecture 49 - Antimicrobial Resistance - I

Lecture 50 - Antimicrobial Resistance - II

Lecture 51 - Epidemiology - I

Lecture 52 - Epidemiology - II

Lecture 53 - Biosensors - I

Lecture 54 - Biosensors - II

Lecture 55 - Biosensors - III

Lecture 56 - Bioinformatics - I

Lecture 57 - Bioinformatics - II

Lecture 58 - Bioinformatics - III

Lecture 59 - Bioinformatics - IV

Lecture 60 - Bioinformatics - V

NPTEL : NOC:Digital Elevation Models and Applications (Civil Engineering)

Co-ordinators : Prof. Arun K. Saraf

NPTEL : NOC:Environmental Engineering-Chemical Processes (Civil Engineering)

Co-ordinators : Prof. Bhanu Prakash Vellanki

NPTEL : NOC:Environmental Remediation of Contaminated Sites (Civil Engineering)

Co-ordinators : Prof. Bhanu Prakash Vellanki, Prof. Thomas Boving

NPTEL : NOC:Global Navigation Satellite Systems and Applications (Civil Engineering)

Co-ordinators : Prof. Arun K. Saraf

NPTEL : NOC:Geomorphology (Civil Engineering)

Co-ordinators : Prof. Pitambar Pati

NPTEL : NOC:Remote Sensing Essentials (Civil Engineering)

Co-ordinators : Dr.Arun K.Saraf

NPTEL : NOC:Earthquake Resistant Design of Foundations (Civil Engineering)

Co-ordinators : Prof. B. K. Maheshwari

NPTEL : NOC:Geographic Information Systems (Civil Engineering)

Co-ordinators : Prof. Arun K. Saraf

NPTEL : NOC:Water and Waste Water Treatment (Civil Engineering)

Co-ordinators : Prof. Bhanu Prakash Vellanki

NPTEL : NOC:Rock Engineering (Civil Engineering)

Co-ordinators : Prof. Priti Maheshwari

NPTEL : NOC:Finite Element Method and Computational Structural Dynamics (Civil Engineering)

Co-ordinators : Prof. Manish Shrikhande

NPTEL : NOC:Sustainable Transportation systems (Civil Engineering)

Co-ordinators : Prof. Bhola Ram Gurjar

Lecture 32 - Sustainable Transport Planning and Approaches-III: Management Strategies

Lecture 33 - Life Cycle Assessment (LCA): An Introduction

Lecture 34 - Life Cycle Assessment: Theory and Practice

Lecture 35 - LCA Case Study

Lecture 36 - Material Flow Analysis (MFA)

Lecture 37 - Material Flow Analysis: Case Study

Lecture 38 - Concept of Circular Economy

Lecture 39 - Circular Economy in Transport Sector

Lecture 40 - Modelling of Transport Emissions - I

Lecture 41 - Modelling of Transport Emissions - II

Lecture 42 - Dispersion Models for Transport Emissions

Lecture 43 - Traffic Noise Emission Models

Lecture 44 - Initiatives and Policies for Environmental Sustainability

Lecture 45 - National Clean Air Programme and Transport Sector

Lecture 46 - Decarbonizing the Transport Sector

Lecture 47 - Alternate Fuels and Sustainable Transportation

Lecture 48 - Electric Vehicles and Sustainability

Lecture 49 - Emerging Transport Technology - Hyperloop

Lecture 50 - Case Study-I: Bus Rapid Transit System (BRTS)

Lecture 51 - Case Study-II: Mass Rapid Transit (MRT) Systems

Lecture 52 - Case Study-III: Sustainability in Airports

Lecture 53 - Case Study-IV: Sustainable Water Transport

Lecture 54 - Case Study-V: Non-Motorized Transport (NMT)

Lecture 55 - openLCA - An LCA Tool

Lecture 56 - openLCA Application - Case Study

Lecture 57 - Material Flow Analysis Tool - STAN

Lecture 58 - Sustainability Indicators

Lecture 59 - Sustainable Transport Appraisal Rating (STAR)

Lecture 60 - Measuring Sustainability

NPTEL : NOC:Air Pollution and Control (Civil Engineering)

Co-ordinators : Prof. Bhola Ram Gurjar

NPTEL : NOC:Underground Space Technology (Civil Engineering)

Co-ordinators : Prof. Priti Maheshwari

Lecture 32 - Application of rock mass classification system: TerzaghiÃ¢s rock load theory - 2

Lecture 33 - Application of rock mass classification system: rock mass rating (RMR)

Lecture 34 - Tunnel hazards

Lecture 35 - Tunnel hazards: squeezing ground conditions

Lecture 36 - Application of rock mass classification system: rock mass quality system - 1

Lecture 37 - Application of rock mass classification system: rock mass quality system - 2, NATM, NMT

Lecture 38 - Modulus of deformation of rock mass using Q-system, rock mass number, plate loading test

Lecture 39 - Modulus of deformation of rock mass: uni-axial jacking/plate jacking test

Lecture 40 - Modulus of deformation of rock mass: radial jacking test and Goodman jack test

Lecture 41 - Rock mass support interaction analysis: ground response and support reaction curves - 1

Lecture 42 - Rock mass support interaction analysis: ground response and support reaction curves - 2

Lecture 43 - Rock mass support interaction analysis: influencing factors, LadanyiÃ¢s E-P analysis

Lecture 44 - LadanyiÃ¢s elasto-plastic analysis of tunnels: analysis of stresses and deformations

Lecture 45 - Rock-support interaction analysis: required support line, analysis of available support

Lecture 46 - Rock-support interaction analysis: for shotcrete/concrete lining and blocked steel sets

Lecture 47 - Rock-support interaction analysis: for ungrouted rock bolts, grouted rock bolts/cables

Lecture 48 - Calculation sequence for rock-support interaction analysis - 1

Lecture 49 - Calculation sequence for rock-support interaction analysis - 2

Lecture 50 - Calculation sequence for rock-support interaction analysis - example

Lecture 51 - Methods of tunnel excavation, various support systems: shotcrete

Lecture 52 - Shotcrete

Lecture 53 - Various support systems: rock bolts

Lecture 54 - Permeability and groutability - 1

Lecture 55 - Permeability and groutability - 2

Lecture 56 - Rock stress determination: flat jack test

Lecture 57 - Rock stress determination: hydraulic fracturing technique

Lecture 58 - Instrumentation and monitoring of tunnels - 1

Lecture 59 - Instrumentation and monitoring of tunnels - 2

Lecture 60 - Few case studies

NPTEL : NOC:Environmental Modeling and Simulation (Civil Engineering)

Co-ordinators : Prof. Gargi Singh

Lecture 32 - Bifurcations - I

Lecture 33 - Bifurcations - II

Lecture 34 - Bifurcations - III

Lecture 35 - Application of Empirical Approach - I

Lecture 36 - Application of Empirical Approach - II

Lecture 37 - Application of Empirical Approach - III

Lecture 38 - Gaussian Plumes - Air - I

Lecture 39 - Gaussian Plumes - Air - II

Lecture 40 - Gaussian Plumes - Air - III

Lecture 41 - Gaussian Plumes - Air - IV

Lecture 42 - Gaussian Plumes - Air - V

Lecture 43 - Gaussian Plumes - Air - VI

Lecture 44 - Ground Water - I

Lecture 45 - Ground Water - II

Lecture 46 - Environmental Transport Processes

Lecture 47 - Environmental Non-reactive and Reactive Processes - I

Lecture 48 - Environmental Non-reactive and Reactive Processes - II

Lecture 49 - Environmental Non-reactive and Reactive Processes - III

Lecture 50 - Homogeneous reactors

Lecture 51 - Heterogeneous Reactors - I

Lecture 52 - Heterogeneous Reactors - II

Lecture 53 - Ground Water Extraction

Lecture 54 - 2D Model Using MATLAB

Lecture 55 - Phase Portrait of 1D Models Using R

Lecture 56 - Phase Portrait of 2D Models Using R

Lecture 57 - Simulations - I

Lecture 58 - Simulations - II

Lecture 59 - Application: Climate change and GDP - I

Lecture 60 - Application: Climate change and GDP - II

NPTEL : NOC:Advanced Geomatics Engineering (Civil Engineering)

Co-ordinators : Prof. Pradeep Kumar Garg

NPTEL : NOC:Pavement Materials (Under Pavement Engineering) (Civil Engineering)

Co-ordinators : Prof. Nikhil Saboo

NPTEL : NOC:Geometric Design of Highways (Civil Engineering)

Co-ordinators : Prof. Rajat Rastogi

Lecture 32 - Alignment Design - 6

Lecture 33 - Alignment Design - 7

Lecture 34 - Alignment Design - 8

Lecture 35 - Alignment Design - 9

Lecture 36 - Alignment Design - 10

Lecture 37 - Alignment Design - 11

Lecture 38 - Alignment Design - 12

Lecture 39 - Alignment Design - 13

Lecture 40 - Alignment Design - 14

Lecture 41 - Alignment Design - 15

Lecture 42 - Alignment Design - 16

Lecture 43 - Intersection Layouts - 1

Lecture 44 - Intersection Layouts - 2

Lecture 45 - Intersection Layouts - 3

Lecture 46 - Intersection Layouts - 4

Lecture 47 - Intersection Layouts - 5

Lecture 48 - Intersection Layouts - 6

Lecture 49 - Intersection Layouts - 7

Lecture 50 - Intersection Layouts - 8

Lecture 51 - Intersection Layouts - 9

Lecture 52 - Intersection Layouts - 10

Lecture 53 - Design of Facilities - 1

Lecture 54 - Design of Facilities - 2

Lecture 55 - Design of Facilities - 3

Lecture 56 - Design of Facilities - 4

Lecture 57 - Design of Facilities - 5

Lecture 58 - Design of Facilities - 6

Lecture 59 - Design of Facilities - 7

Lecture 60 - Design of Facilities - 8

Lecture 61 - Design of Facilities - 9

Lecture 62 - Design of Facilities - 10

NPTEL : NOC:Plate Tectonics (Civil Engineering)

Co-ordinators : Prof. Pitambar Pati

Lecture 1 - Interior of Earth - I

Lecture 2 - Interior of Earth - II

Lecture 3 - Interior of Earth - III

Lecture 4 - Interior of Earth - IV

Lecture 5 - Interior of Earth - V

Lecture 6 - Interior of Earth - VI

Lecture 7 - Oceanic Crust - I

Lecture 8 - Oceanic Crust - II

Lecture 9 - Continental Crust - I

Lecture 10 - Continental Crust - II

Lecture 11 - Types of Plates and Plate Margins

Lecture 12 - Basic Assumption of Plate Tectonics

Lecture 13 - Relative Motion of Lithospheric Plates

Lecture 14 - Euler's Theory on Lithospheric Plate Motion

Lecture 15 - Constructive/Creative Plate Margin

Lecture 16 - Slow and Fast Spreading Ridges

Lecture 17 - Magma Chamber Properties at Mid-Oceanic Ridge

Lecture 18 - Age-Depth Relationship Around the Mid-Oceanic Ridge

Lecture 19 - Along Axis Segmentation of the Mid Oceanic Ridge

Lecture 20 - Propagating Rifts and Microplate Development

Lecture 21 - Conservative Plate Margin - I

Lecture 22 - Conservative Plate Margin - II, Continental Transform Faults

Lecture 23 - Conservative Plate Margin - III, Transform Continental Margins

Lecture 24 - Conservative Plate Margin - IV, Continental Transform Faults

Lecture 25 - Destructive Plate Margins - I

Lecture 26 - Destructive Plate Margins - II, The Oceanic Trench

Lecture 27 - Destructive Plate Margins - III, The Island Arc System

Lecture 28 - Destructive Plate Margins - IV, The Back Arc Basin and Accretionary Prism

Lecture 29 - Destructive Plate Margins - V, Seismicity in the Subduction Zone

Lecture 30 - Destructive Plate Margins - VI, Gravity Anomaly and Thermal Structure at Subduction Zone

Lecture 31 - Magmatism and Metamorphism at Different Plate Settings - I, Magmatism at Subduction Zone

NPTEL : NOC:Earthquake Geotechnical Engineering (Civil Engineering)

Co-ordinators : Prof. B.K. Maheshwari

NPTEL : NOC:Railway Engineering (Civil Engineering)

Co-ordinators : Prof. Rajat Rastogi

NPTEL : NOC:Groundwater Engineering (Civil Engineering)

Co-ordinators : Prof. Arun K. Saraf

Lecture 1 - Introduction to Groundwater Hydrology - 1

Lecture 2 - Introduction to Groundwater Hydrology - 2

Lecture 3 - Why to study groundwater

Lecture 4 - Hydrological Cycle - 1

Lecture 5 - Hydrological Cycle - 2

Lecture 6 - Surface water vs groundwater

Lecture 7 - Water Balance and its Components

Lecture 8 - Types of aquifers - 1

Lecture 9 - Types of aquifers - 2

Lecture 10 - Infiltration and Percolation

Lecture 11 - Porosity

Lecture 12 - Permeability

Lecture 13 - Surface Runoff

Lecture 14 - Darcy's Law - 1

Lecture 15 - Darcy's Law - 2

Lecture 16 - Darcy's Law - 3

Lecture 17 - Reynolds Number

Lecture 18 - Groundwater Flow and Flow Nets

Lecture 19 - Darcy's law applied to aquifers

Lecture 20 - Flow to a well

Lecture 21 - Transmissibility

Lecture 22 - Speed of Groundwater Movement

Lecture 23 - Drawdowns in the vicinity of discharging wells

Lecture 24 - Aquifer Boundaries

Lecture 25 - Flow nets near aquifer boundaries

Lecture 26 - Nonsteady state steady shape and steady shape conditions

Lecture 27 - Jacob Method

Lecture 28 - Field determination of transmissibility and storage coefficient - 1

Lecture 29 - Field determination of transmissibility and storage coefficient - 2

Lecture 30 - Theis Equation and example of superposition for solution

Lecture 31 - Theis Equation Theis Equation Assumptions and Applications - 1

Lecture 32 - Theis Equation Theis Equation Assumptions and Applications - 2

Lecture 33 - Geologic Formations as Aquifers - 1

Lecture 34 - Geologic Formations as Aquifers - 2

Lecture 35 - Geologic Formations as Aquifers - 3

Lecture 36 - Springs

Lecture 37 - Springs in India - 1

Lecture 38 - Springs in India - 2

Lecture 39 - Groundwater Exploration - 1

Lecture 40 - Groundwater Exploration - 2

Lecture 41 - Groundwater Exploration - 3

Lecture 42 - Groundwater Exploration - 4

Lecture 43 - Groundwater Exploration - 5

Lecture 44 - Groundwater Exploration - 6

Lecture 45 - Groundwater Exploration - 7

Lecture 46 - Groundwater Exploration - 8

Lecture 47 - Groundwater Exploration - 9

Lecture 48 - Groundwater Exploration - 10

Lecture 49 - Groundwater Exploration - 11

Lecture 50 - Groundwater Exploration - 12

Lecture 51 - Groundwater Exploration - 13 : Sampling

Lecture 52 - Groundwater Exploration - 14 : Hydrogeological Well Logging

Lecture 53 - Groundwater Exploration - 15 : Spontaneous potential logging

Lecture 54 - Groundwater Exploration - 16 : Selection of types of wells and Exploration for Art-Rec sites

Lecture 55 - Groundwater Exploration - 17 : Exploration for hot springs

Lecture 56 - Groundwater Exploration - 18 : Pollution related exploration

Lecture 57 - Groundwater Quality

Lecture 58 - Conjunctive use of ground and surface water

Lecture 59 - Groundwater Modelling - 1

Lecture 60 - Groundwater Modelling - 2

Lecture 61 - Groundwater Recharge Methods in India

Lecture 62 - Artificial Recharge Techniques and Designs

NPTEL : Ground Improvement Techniques (Civil Engineering)

Co-ordinators : Dr. G.L. Sivakumar Babu

NPTEL : Stochastic Hydrology (Civil Engineering)

Co-ordinators : Prof. P.P. Mujumdar

NPTEL : Stochastic Structural Dynamics (Civil Engineering)

Co-ordinators : Prof. C.S. Manohar

NPTEL : Water Resources Systems : Modeling Techniques and Analysis (Civil Engineering)

Co-ordinators : Prof. P.P. Mujumdar

Lecture 1 - Introduction

Lecture 2 - Definitions and types of systems

Lecture 3 - Optimization: Functions of a single variable

Lecture 4 - Optimization: Functions of multiple variables

Lecture 5 - Constrained optimization (1)

Lecture 6 - Constrained optimization (2)

Lecture 7 - Kuhn-Tucker conditions and Introduction to Linear Programming

Lecture 8 - Linear Programming: Graphical method

Lecture 9 - Linear Programming: Simplex method (1)

Lecture 10 - Linear Programming: Simplex method (2)

Lecture 11 - Linear Programming: Multiple solutions

Lecture 12 - Linear Programming: Unbounded and infeasible problems

Lecture 13 - Linear Programming: Dual problem

Lecture 14 - Introduction to Dynamic Programming

Lecture 15 - Dynamic Programming: Water allocation problem

Lecture 16 - Dynamic Programming: Reservoir operation problem

Lecture 17 - Dynamic Programming: Capacity expansion and shortest route problems

Lecture 18 - Simulation: Introduction to Multi-objective planning

Lecture 19 - Multi-objective planning

Lecture 20 - Reservoir sizing

Lecture 21 - Reservoir capacity using Linear Programming (1)

Lecture 22 - Reservoir capacity using Linear Programming (2)

Lecture 23 - Reservoir operation

Lecture 24 - Multi-reservoir systems

Lecture 25 - Stationary policy using Dynamic Programming

Lecture 26 - Hydropower generation

Lecture 27 - Basic probability theory (1)

Lecture 28 - Basic probability theory (2)

Lecture 29 - Chance constrained Linear Programming for reservoir operation and design (1)

Lecture 30 - Chance constrained Linear Programming for reservoir operation and design (2)

Lecture 31 - Stochastic Dynamic Programming for reservoir operation (1)

NPTEL : Finite Element method for vibration and Stability analyses (Civil Engineering)

Co-ordinators : Prof. C.S. Manohar

NPTEL : NOC:Introduction to Engineering Seismology (Civil Engineering)

Co-ordinators : Dr. P. Anbazhagan