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Co-ordinators : Prof. Debayan Dhar, Prof.Swati Pal, Prof. Supradip Das

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Co-ordinators : Prof.Abhishek Shrivastava

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- Lecture 5 - Tools for enabling creative development
- Lecture 6 - Team Development : Group Exercises
- Lecture 7 - System Requirement Analysis
- Lecture 8 - Originating Requirements: Example System Engineering software -CORE
- Lecture 9 - Functional Architecture Development
- Lecture 10 - Functional Decomposition
- Lecture 11 - Functional Decomposition : Examples
- Lecture 12 - Physical Architecture Development
- Lecture 13 - Implementing Fault Tolerance in Physical Architecture
- Lecture 14 - Operational Architecture Development - Part I
- Lecture 15 - Operational Architecture Development - Part II
- Lecture 16 - Interface architecture Development
- Lecture 17 - Interface standards and Design process
- Lecture 18 - Integration and qualification
- Lecture 19 - Qualification planning and methods
- Lecture 20 - System Design Example: Autolink system
- Lecture 21 - System Design Examples
- Lecture 22 - System Design Examples (Continued...)
- Lecture 23 - Graphical Modelling Techniques
- Lecture 24 - Process modeling
- Lecture 25 - Behavior modeling
- Lecture 26 - Graphical Modelling Techniques (Continued...)
- Lecture 27 - System modeling and simulation
- Lecture 28 - Bondgraph modeling of Dynamic systems
- Lecture 29 - Decision making in System Design
- Lecture 30 - Decision making in System Design (Continued...)

NPTEL : Vehicle Dynamics (Engineering Design)

Co-ordinators : Dr. R. Krishnakumar

Lecture 1 - Introduction to Vehicle Dynamics

Lecture 2 - Longitudinal Dynamics

Lecture 3 - Vehicle Load Distribution - Acceleration and Braking

Lecture 4 - Brake Force Distribution, Braking Efficiency and Braking Distance

Lecture 5 - Tractor - Semi Trailer

Lecture 6 - Tire Mechanics - An Introduction

Lecture 7 - Mechanical Properties of Rubber

Lecture 8 - Slip, Grip and Rolling Resistance

Lecture 9 - Tire Construction and Force Development

Lecture 10 - Contact Patch and Contact Pressure Distribution

Lecture 11 - Tire Brush Model

Lecture 12 - Lateral Force Generation

Lecture 13 - Ply Steer and Conicity - Part 1

Lecture 14 - Ply Steer and Conicity - Part 2

Lecture 15 - Tire Models - Magic Formula

Lecture 16 - Classification of Tyre Models and Combined Slip

Lecture 17 - Lateral Dynamics - An Introduction

Lecture 18 - Lateral Dynamics - Bicycle Model

Lecture 19 - Lateral Dynamics - Stability and Steering Conditions

Lecture 20 - Understeer Gradient and State Space Approach

Lecture 21 - Handling Response of a Vehicle

Lecture 22 - Mimuro Plot for Lateral Transient Response - Part 1

Lecture 23 - Mimuro Plot for Lateral Transient Response - Part 2

Lecture 24 - Parameters affecting vehicle handling characteristics

Lecture 25 - Subjective and Objective Evaluation of Vehicle Handling - Part 1

Lecture 26 - Subjective and Objective Evaluation of Vehicle Handling - Part 2

Lecture 27 - Subjective and Objective Evaluation of Vehicle Handling and Rollover P

Lecture 28 - Rollover Prevention (Continued...) and Vertical Dynamics

Lecture 29 - Vertical Dynamics - An Introduction

Lecture 30 - Vertical Dynamics - Quarter Car Model

Lecture 31 - Noise, Vibration and Harshness - Random Processes

[Lecture 32 - Random Process and Conclusion \(Continued...\)](#)

Lecture 1 - Introduction to Control Systems - Part 1

Lecture 2 - Introduction to Control Systems - Part 2

Lecture 3 - Overview of Feedback Control Systems - Part 1

Lecture 4 - Overview of Feedback Control Systems - Part 2

Lecture 5 - Mathematical Preliminaries - Part 1

Lecture 6 - Mathematical Preliminaries - Part 2

Lecture 7 - Transfer Function - Part 1

Lecture 8 - Transfer Function - Part 2

Lecture 9 - System Response - Part 1

Lecture 10 - System Response - Part 2

Lecture 11 - BIBO Stability - Part 1

Lecture 12 - BIBO Stability - Part 2

Lecture 13 - Effect of Zeros - Part 1

Lecture 14 - Effect of Zeros - Part 2

Lecture 15 - Closed Loop System - Part 1

Lecture 16 - Closed Loop System - Part 2

Lecture 17 - First Order Systems - Part 1

Lecture 18 - First Order Systems - Part 2

Lecture 19 - Second Order Systems - Part 1

Lecture 20 - Second Order Systems - Part 2

Lecture 21 - Controllers - Part 1

Lecture 22 - Controllers - Part 2

Lecture 23 - Closed Loop Control - Part 1

Lecture 24 - Closed Loop Control - Part 2

Lecture 25 - Routh's Stability Criterion - Part 1

Lecture 26 - Routh's Stability Criterion - Part 2

Lecture 27 - Special Cases of Routh's Stability Criterion - Part 1

Lecture 28 - Special Cases of Routh's Stability Criterion - Part 2

Lecture 29 - Performance Specifications - Part 1

Lecture 30 - Performance Specifications - Part 2

Lecture 31 - Steady State Error Analysis - Part 1

[Lecture 32 - Steady State Error Analysis - Part 2](#)

[Lecture 33 - Root Locus 1 - Part 1](#)

[Lecture 34 - Root Locus 1 - Part 2](#)

[Lecture 35 - Root Locus 2 - Part 1](#)

[Lecture 36 - Root Locus 2 - Part 2](#)

[Lecture 37 - Root Locus 3 - Part 1](#)

[Lecture 38 - Root Locus 3 - Part 2](#)

[Lecture 39 - Root Locus 4 - Part 1](#)

[Lecture 40 - Root Locus 4 - Part 2](#)

[Lecture 41 - Case Study - Modelling - Part 1](#)

[Lecture 42 - Case Study - Modelling - Part 2](#)

[Lecture 43 - Case Study - Control Design - Part 1](#)

[Lecture 44 - Case Study - Control Design - Part 2](#)

[Lecture 45 - State Space Representation - Part 1](#)

[Lecture 46 - State Space Representation - Part 2](#)

[Lecture 47 - Frequency Response - Part 1](#)

[Lecture 48 - Frequency Response - Part 2](#)

[Lecture 49 - Bode Plot 1 - Part 1](#)

[Lecture 50 - Bode Plot 1 - Part 2](#)

[Lecture 51 - Bode Plot 2 - Part 1](#)

[Lecture 52 - Bode Plot 2 - Part 2](#)

[Lecture 53 - Bode Plot 3 - Part 1](#)

[Lecture 54 - Bode Plot 3 - Part 2](#)

[Lecture 55 - Bode Plot 4 - Part 1](#)

[Lecture 56 - Bode Plot 4 - Part 2](#)

[Lecture 57 - Nyquist Plot 1 - Part 1](#)

[Lecture 58 - Nyquist Plot 1 - Part 2](#)

[Lecture 59 - Nyquist Plot 2 - Part 1](#)

[Lecture 60 - Nyquist Plot 2 - Part 2](#)

[Lecture 61 - Nyquist Stability Criterion - Part 1](#)

[Lecture 62 - Nyquist Stability Criterion - Part 2](#)

[Lecture 63 - Relative Stability 1 - Part 1](#)

[Lecture 64 - Relative Stability 1 - Part 2](#)

[Lecture 65 - Relative Stability 2 - Part 1](#)

[Lecture 66 - Relative Stability 2 - Part 2](#)

[Lecture 67 - Lead Compensation - Part 1](#)

[Lecture 68 - Lead Compensation - Part 2](#)

[Lecture 69 - Lead Compensator Design - Part 1](#)

[Lecture 70 - Lead Compensator Design - Part 2](#)

[Lecture 71 - Lag and Lag-Lead Compensation - Part 1](#)

[Lecture 72 - Lag and Lag-Lead Compensation - Part 2](#)

Lecture 1 - Course Overview and Classification of Internal Combustion Engines - Part 1

Lecture 2 - Course Overview and Classification of Internal Combustion Engines - Part 2

Lecture 3 - Engine Components - Part 1

Lecture 4 - Engine Components - Part 2

Lecture 5 - Operation of Four Stroke Engines - Part 1

Lecture 6 - Operation of Four Stroke Engines - Part 2

Lecture 7 - Two Stroke Engine and Engine Cycles - Part 1

Lecture 8 - Two Stroke Engine and Engine Cycles - Part 2

Lecture 9 - Otto Cycle and Diesel Cycle - Part 1

Lecture 10 - Otto Cycle and Diesel Cycle - Part 2

Lecture 11 - Dual Cycle and Engine Performance - Part 1

Lecture 12 - Dual Cycle and Engine Performance - Part 2

Lecture 13 - Engine Performance - Part 1

Lecture 14 - Engine Performance - Part 2

Lecture 15 - Supercharging and Combustion in SI Engines - Part 1

Lecture 16 - Supercharging and Combustion in SI Engines - Part 2

Lecture 17 - Knocking in SI Engines - Part 1

Lecture 18 - Knocking in SI Engines - Part 2

Lecture 19 - Combustion in CI Engines and Carburetion - Part 1

Lecture 20 - Combustion in CI Engines and Carburetion - Part 2

Lecture 21 - Fuel Introduction Systems - Part 1

Lecture 22 - Fuel Introduction Systems - Part 2

Lecture 23 - Analysis of Carburetor - Part 1

Lecture 24 - Analysis of Carburetor - Part 2

Lecture 25 - Engine Emissions - Part 1

Lecture 26 - Engine Emissions - Part 2

Lecture 27 - Emission Control Systems - Part 1

Lecture 28 - Emission Control Systems - Part 2

Lecture 29 - Automotive Powertrain - Part 1

Lecture 30 - Automotive Powertrain - Part 2

Lecture 31 - Automotive Clutch - Part 1

- Lecture 32 - Automotive Clutch - Part 2
- Lecture 33 - Transmission - Part 1
- Lecture 34 - Transmission - Part 2
- Lecture 35 - Powertrain Analysis - Part 1
- Lecture 36 - Powertrain Analysis - Part 2
- Lecture 37 - Powertrain Analysis 2 - Part 1
- Lecture 38 - Powertrain Analysis 2 - Part 2
- Lecture 39 - Transmission Matching - Part 1
- Lecture 40 - Transmission Matching - Part 2
- Lecture 41 - Brake System - Part 1
- Lecture 42 - Brake System - Part 2
- Lecture 43 - Components of a Brake System and Drum Brake - Part 1
- Lecture 44 - Components of a Brake System and Drum Brake - Part 2
- Lecture 45 - Disc Brake and Introduction to Hydraulic Brake - Part 1
- Lecture 46 - Disc Brake and Introduction to Hydraulic Brake - Part 2
- Lecture 47 - Hydraulic Brake System - Part 1
- Lecture 48 - Hydraulic Brake System - Part 2
- Lecture 49 - Air Brake System - Part 1
- Lecture 50 - Air Brake System - Part 2
- Lecture 51 - Antilock Brake System 1 - Part 1
- Lecture 52 - Antilock Brake System 1 - Part 2
- Lecture 53 - Antilock Brake System 2 - Part 1
- Lecture 54 - Antilock Brake System 2 - Part 2
- Lecture 55 - Braking Analysis - Part 1
- Lecture 56 - Braking Analysis - Part 2
- Lecture 57 - Steering System - Part 1
- Lecture 58 - Steering System - Part 2
- Lecture 59 - Manual Steering Systems - Part 1
- Lecture 60 - Manual Steering Systems - Part 2
- Lecture 61 - Power Steering and Kinematic Steering Analysis - Part 1
- Lecture 62 - Power Steering and Kinematic Steering Analysis - Part 2
- Lecture 63 - Wheel Alignment - Part 1
- Lecture 64 - Wheel Alignment - Part 2

[Lecture 65 - Introduction to Suspension System - Part 1](#)

[Lecture 66 - Introduction to Suspension System - Part 2](#)

[Lecture 67 - Shock Absorbers and Independent Suspension - Part 1](#)

[Lecture 68 - Shock Absorbers and Independent Suspension - Part 2](#)

[Lecture 69 - Dependent Suspension and Suspension Analysis - Part 1](#)

[Lecture 70 - Dependent Suspension and Suspension Analysis - Part 2](#)

[Lecture 71 - Introduction to Electric and Hybrid Powertrain - Part 1](#)

[Lecture 72 - Introduction to Electric and Hybrid Powertrain - Part 2](#)

[Lecture 73 - Tyres - Part 1](#)

[Lecture 74 - Tyres - Part 2](#)

Lecture 1 - Introduction

Lecture 2 - Birth and Growth of a Product

Lecture 3 - Types of Design

Lecture 4 - Stage-Gate and Spiral Design

Lecture 5 - Stages in New Product Development

Lecture 6 - Laboratory Exercise - 1

Lecture 7 - Reverse Engg. and Redesign

Lecture 8 - Technical Questioning and Mission Statement

Lecture 9 - Mission Statement- Examples

Lecture 10 - Laboratory Exercise - 2

Lecture 11 - Identifying Customer Needs

Lecture 12 - Customer Need Analysis

Lecture 13 - Product Specifications

Lecture 14 - Laboratory Exercise - 3

Lecture 15 - Need - Metric Matrix

Lecture 16 - Establishing Target Specifications

Lecture 17 - HoQ

Lecture 18 - Laboratory Exercise - 4

Lecture 19 - Functional Decomposition

Lecture 20 - FAST Method

Lecture 21 - Laboratory Exercise - 5

Lecture 22 - Function Structure (Flow Method)

Lecture 23 - Flow Method Examples

Lecture 24 - Laboratory Exercise - 6

Lecture 25 - Product and Portfolio Architecture

Lecture 26 - Portfolio Architecture Selection

Lecture 27 - Laboratory Exercise - 7

Lecture 28 - Product Architecture

Lecture 29 - Identification of Modules

Lecture 30 - Laboratory Exercise - 8

Lecture 31 - Concept Development

[Lecture 32 - Intuitive Methods](#)

[Lecture 33 - Laboratory Exercise - 9](#)

[Lecture 34 - Logical Method- TRIZ](#)

[Lecture 35 - Concept Selection](#)

[Lecture 36 - Laboratory Exercise - 10](#)

[Lecture 37 - Concept Scoring](#)

[Lecture 38 - Laboratory Exercise - 11](#)

Lecture 1 - Introduction

Lecture 2 - Evolution of Robotics

Lecture 3 - Kinematics- Coordinate transformations

Lecture 4 - Homogeneous Transformation Matrix

Lecture 5 - Industrial Robot- Kinematic Structures

Lecture 6 - Robot Architectures

Lecture 7 - Kinematic Parameters

Lecture 8 - DH Algorithm

Lecture 9 - DH Algorithm- Examples

Lecture 10 - Forward Kinematics

Lecture 11 - Forward Kinematics- Examples

Lecture 12 - Inverse Kinematics

Lecture 13 - Inverse Kinematics- Examples

Lecture 14 - Differential Relations

Lecture 15 - Manipulator Jacobian and Statics

Lecture 16 - Overview of Electric Actuators and Operational Needs

Lecture 17 - Principles of DC Motor Operation

Lecture 18 - DC Motor Equations and Principles of Control

Lecture 19 - DC Motor Control Regions and Principles of Power Electronics

Lecture 20 - Power Electronic Switching and Current Ripple

Lecture 21 - The H-Bridge and DC Motor Control Structure

Lecture 22 - The Brushless DC Machine

Lecture 23 - Control of the Brushless DC Motor

Lecture 24 - The PM Synchronous Motor (PMSM) and SPWM

Lecture 25 - Principles of PMSM Control

Lecture 26 - Encoders for Speed and Position Estimation

Lecture 27 - Stepper Motors

Lecture 28 - Introduction to Probabilistic Robotics.

Lecture 29 - Recursive State Estimation: Bayes Filter

Lecture 30 - Recursive State Estimation: Bayes Filter Illustration

Lecture 31 - Probability basics

[Lecture 32 - Probability basics](#)

[Lecture 33 - Kalman Filter](#)

[Lecture 34 - Extended Kalman Filter](#)

[Lecture 35 - Particle Filter](#)

[Lecture 36 - Binary Bayes](#)

[Lecture 37 - Velocity Motion Model](#)

[Lecture 38 - Odometry Motion Model](#)

[Lecture 39 - Occupa Grid Mapping](#)

[Lecture 40 - Range Finder Measurement Model](#)

[Lecture 41 - Localization Taxonomy](#)

[Lecture 42 - Markov Localization](#)

[Lecture 43 - Path Planning](#)

- Lecture 1 - Introduction to the Course and Course Structure
- Lecture 2 - Understanding Graphic Design as a Field - 1
- Lecture 3 - Understanding Graphic Design as a Field - 2
- Lecture 4 - Visual Coherence and Various Facets of Graphic Design
- Lecture 5 - Understanding Design Process and Approach
- Lecture 6 - Introduction to Elements of Design
- Lecture 7 - Understanding Line as an Element of Design
- Lecture 8 - Understanding Shape as an Element of Design
- Lecture 9 - Understanding Form as an Element of Design
- Lecture 10 - Understanding Space as an Element of Design
- Lecture 11 - Understanding Value and Texture as an Element of Design
- Lecture 12 - Introduction Principles of Design
- Lecture 13 - Introduction Principles of Design
- Lecture 14 - Understanding Balance as a Principle of Design
- Lecture 15 - Understanding Emphasis as a Principle of Design
- Lecture 16 - Understanding Variety as a Principle of Design
- Lecture 17 - Understanding Contrast as a Principle of Design
- Lecture 18 - Understanding Repetition and Rhythm as a Principle of Design
- Lecture 19 - Exploring Gestalt Principles
- Lecture 20 - Understanding Closer
- Lecture 21 - Understanding Similarity
- Lecture 22 - Understanding Continuity
- Lecture 23 - Proximity and Pragnanz - Part 1
- Lecture 24 - Proximity and Pragnanz - Part 2
- Lecture 25 - Introduction to Typography
- Lecture 26 - Typography History
- Lecture 27 - Type Classification
- Lecture 28 - Type Construction
- Lecture 29 - Typographic Principles
- Lecture 30 - Environmental Typography
- Lecture 31 - Introduction to Identity Design - Part 1

[Lecture 32 - Introduction to Identity Design - Part 2](#)

[Lecture 33 - Brief about Branding and Visual Branding](#)

[Lecture 34 - Elements of Visual Branding](#)

[Lecture 35 - Types of Logo](#)

[Lecture 36 - Logo Design Proces - Part 1](#)

[Lecture 37 - Logo Design Proces - Part 2](#)

[Lecture 38 - Introduction to Print and Publication](#)

[Lecture 39 - Grid System](#)

[Lecture 40 - Print production Processes](#)

[Lecture 41 - Lino-cut Printing Process](#)

NPTEL : Design of Biophotonics Devices (Engineering Design)

Co-ordinators : Prof. Nilesh Jayantilal Vasa

- Lecture 1 - Biophotonics - Introduction - I
- Lecture 2 - Biophotonics - Introduction - II, Optics - Introduction
- Lecture 3 - Basic Principles of Light - I
- Lecture 4 - Basics of Optical Fiber - II
- Lecture 5 - Basics of Optical interferometry - I
- Lecture 6 - Basics of Optical interferometry - II
- Lecture 7 - Fiber Bragg Gratings and Hollow Fibers
- Lecture 8 - Optical Sources - I
- Lecture 9 - Optical Sources - II (Semiconductor Light Sources)
- Lecture 10 - Optical Sources - III (Basics of Lasers - Optical Resonator)
- Lecture 11 - Optical Sources - IV (Basics of Lasers - Amplification)
- Lecture 12 - Different Types of Lasers - I
- Lecture 13 - Different Types of Lasers - II
- Lecture 14 - Laser Characteristics - I
- Lecture 15 - Laser Characteristics - II
- Lecture 16 - Laser Characteristics - III and Optical Sensors - I
- Lecture 17 - Types of Lasers and Optical Sensors - II
- Lecture 18 - Optical Sensors - III
- Lecture 19 - Absorption Spectroscopy Based Devices
- Lecture 20 - Absorption Spectroscopy Based Measurements
- Lecture 21 - Pulse Oximetry
- Lecture 22 - Breath Analysis - I
- Lecture 23 - Breath Analysis - II
- Lecture 24 - Photoacoustic Spectroscopy Technique - I
- Lecture 25 - Photoacoustic Spectroscopy Technique - II
- Lecture 26 - Photoacoustic Tomography
- Lecture 27 - Evanescent Wave-Based Spectroscopy Technique
- Lecture 28 - Optical Coherence Tomography - I
- Lecture 29 - Optical Coherence Tomography - II
- Lecture 30 - Optical Coherence Tomography - III
- Lecture 31 - Optical Coherence Tomography - IV

[Lecture 32 - Light Tissue Interactions and Photo Therapy](#)

[Lecture 33 - Photo Therapeutic Approaches - I](#)

[Lecture 1 - Frugal Engineering - Class 1](#)

[Lecture 2 - Frugal Engineering - Class 2](#)

Lecture 1 - Introduction and Background

Lecture 2 - Definitions and Common Terminologies

Lecture 3 - Why Accessibility Matters ?

Lecture 4 - Understanding Disability and Impact of Bad Accessibility

Lecture 5 - Poor vs Good Accessibility

Lecture 6 - Aspects of Digital Interactions and Experiences of various disabilities

Lecture 7 - Aspects of Digital Interactions and Experiences of various disabilities

Lecture 8 - Universal Design Principles

Lecture 9 - Accommodations and CDE

Lecture 10 - Relooking at Existing Frameworks

Lecture 11 - Three Dimensions of Inclusive Design

Lecture 12 - Affordances and their role in access

Lecture 13 - Economic and Legal Aspects

Lecture 14 - Web Content Accessibility Guidelines

Lecture 15 - Web Content Accessibility Guidelines

Lecture 16 - Evaluation Tools - Pros and Cons + Intro

Lecture 17 - Evaluation Tools - Tutorial - Part 1

Lecture 18 - Evaluation Tools - Tutorial - Part 2

Lecture 19 - Mobile Accessibility Issues

Lecture 20 - Mobile Accessibility Issues (Continued...)

Lecture 21 - AI and Accessibility - Part 1

Lecture 22 - AI and Accessibility - Part 2

Lecture 23 - Emerging Input Technologies

Lecture 24 - Emerging Output Technologies

Lecture 25 - Special Focus (ELDERLY USERS)

Lecture 26 - Special Focus - Neurodivergent users

Lecture 27 - AR VR

Lecture 28 - Assistive Tech

Lecture 29 - Multi sensory interaction

Lecture 30 - Discussion - Sachin Tanwar Google India

Lecture 31 - Accessibility Testing - Part 1

- [Lecture 32 - Accessibility Testing - Part 2](#)
- [Lecture 33 - Accessibility Testing Tools - Part 1](#)
- [Lecture 34 - Accessibility Testing Tools - Part 2](#)
- [Lecture 35 - Student Discussion \(Priyankar\)](#)
- [Lecture 36 - Accessibility Optimization - Part 1](#)
- [Lecture 37 - Accessibility Optimization - Part 2](#)
- [Lecture 38 - Screen Readers - Part 1](#)
- [Lecture 39 - Screen Readers - Part 2](#)
- [Lecture 40 - Discussion - Anchal Sharma IIT Delhi](#)
- [Lecture 41 - Mobile Apps and Mobile As a powerful tool](#)
- [Lecture 42 - Mobile Accessibility-Deep Dive - Part 1](#)
- [Lecture 43 - Mobile Accessibility-Deep Dive - Part 2](#)
- [Lecture 44 - Bharath Mobile Testing tutorial](#)
- [Lecture 45 - Speech Recognition](#)
- [Lecture 46 - Computer Vision for accessibility](#)
- [Lecture 47 - Ashwin - Talktile](#)
- [Lecture 48 - Student Discussion \(Chandrama\)](#)
- [Lecture 49 - Discussion - Vikas Upadhyay, Iwayplus](#)
- [Lecture 50 - Discussion - Volker Sorge University of Birmingham](#)
- [Lecture 51 - SEO and Accessibility](#)
- [Lecture 52 - Case Study \(Chandrama\)](#)
- [Lecture 53 - Policy Advocacy - Part 1](#)
- [Lecture 54 - Policy Advocacy - Part 2](#)

DIGIMAT - The No.1 Learning Management Platform for Creative Learning

NPTEL : NOC:Augmenting Design Thinking with Human-Computer Interaction (Engineering Design)

Co-ordinators : Prof. Sonal Atreya

Lecture 1 - Introduction

Lecture 2 - Design Thinking Phases - Empathy

Lecture 3 - Design Thinking Phases - Define

Lecture 4 - Design Thinking Phases - Deliver

Lecture 5 - Design Thinking Applications - Part 1

Lecture 6 - Design Thinking Applications - Part 2

Lecture 7 - Components of HCI

Lecture 8 - Components of HCI - Human Ergonomics

Lecture 9 - Interface and Interaction

Lecture 10 - Principles of HCI - Part 1

Lecture 11 - Principles of HCI - Part 2

Lecture 12 - Divergent and Convergent Thinking

Lecture 13 - Convergent Thinking - AEIOU Framework

Lecture 14 - Planning and Implementation of Divergent and Convergent Thinking

Lecture 15 - Divergent and Convergent Thinking (Continued...)

Lecture 16 - Idea Generation and Selection - Overview

Lecture 17 - Techniques for Idea Generation - Part 1

Lecture 18 - Techniques for Idea Generation - Part 2

Lecture 19 - Techniques for Idea Generation - Part 3

Lecture 20 - Methods of Idea Selection

Lecture 21 - Need Analysis and Design for Experience

Lecture 22 - Design for Experience and Storytelling

Lecture 23 - Stakeholder Mapping and Customer Journey Mapping

Lecture 24 - Empathy Mapping and Context Mapping

Lecture 25 - Universal Design

Lecture 26 - Design for Accessibility

Lecture 27 - Design Research Methods - Part 1

Lecture 28 - Design Research Methods - Part 2

Lecture 29 - Questionnaire Design

Lecture 30 - Data Analysis

Lecture 31 - Card Sorting, Thematic Analysis and Conceptual Model

[Lecture 32 - Information Architecture](#)

[Lecture 33 - Design Elements and Principles](#)

[Lecture 34 - Colour Theory](#)

[Lecture 35 - Typography and Iconography](#)

[Lecture 36 - Controls and Menus](#)

[Lecture 37 - Visual Design Principles](#)

[Lecture 38 - Prototyping and Usability Testing](#)

[Lecture 39 - Case Study - Medical Bed](#)

[Lecture 40 - Case Study - Tourism Website](#)

NPTEL : NOC:Interior Design (Engineering Design)

Co-ordinators : Prof. Smriti Saraswat

Lecture 1 - Interior Design: Definition; Understanding; History of Interior Design; Scope

Lecture 2 - Interior Design: Interior Decoration; and Interior Architecture

Lecture 3 - Interior Design Projects: Overview on Costing and Career

Lecture 4 - Interior Design: Case Studies and Examples

Lecture 5 - Summary and Discourse of Week 1

Lecture 6 - Principles and Elements of Interior Design – Understanding Composition

Lecture 7 - Space Making Elements

Lecture 8 - Trends, Concepts and Schemes in Lighting, Colour, Furnishing, Finishes

Lecture 9 - Interior Design: Drawings and Representation Techniques

Lecture 10 - Summary and Discourse of Week 2

Lecture 11 - Interior Design: Understanding varied spaces

Lecture 12 - Interior-Design-Finishes, Materials and Specifications

Lecture 13 - Interior Design: Space-Making Crafts; Space-Surface Crafts

Lecture 14 - Interior Design: Space-Making Crafts; Space-Making Elements; Inter-relationships

Lecture 15 - Summary and Discourse of Week 3

Lecture 16 - Interior Design: Materials - Timber

Lecture 17 - Interior Design: Materials - Stone

Lecture 18 - Interior Design: Materials - Tiles

Lecture 19 - Interior Design: Materials - Paints

Lecture 20 - Summary and Discourse of Week 4

Lecture 21 - Green Interiors: Introduction to Rating Systems; Examples

Lecture 22 - Green Interiors: Attributes – IAQ, IEQ, Furniture

Lecture 23 - Green Interiors: Physics of Light - Day Light, Artificial Light, Chemistry of Colours

Lecture 24 - Green Interiors: Policies and Incentives; Materials and Finishes

Lecture 25 - Summary and Discourse of Week 5

Lecture 26 - Interior Design Technology: Innovative trends and technologies – Tiny Houses, Origami

Lecture 27 - Interior Design Technology: Experimental Finishes and Materials; Joinery

Lecture 28 - Interior Design Tech: Visual Merchandising, Modularity, Portability, Foldability, DIY

Lecture 29 - Interior Design Technology: New Concepts - Installations, Decor

Lecture 30 - Summary and Discourse of Week 6

Lecture 31 - Professional Practice: Interior Services, Functional Importance

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[Lecture 32 - Professional Practice: Bye-laws, Supervision](#)

[Lecture 33 - Building Material Costing; BoQ; Market Exposure; Product Catalogues](#)

[Lecture 34 - Important Organisations, Institutes, Firms, Designers, Avenues of Pedagogy and Practice](#)

[Lecture 35 - Summary and Discourse of Week 7](#)

[Lecture 36 - Trans-Disciplinary Interventions: Craft-Design Explorations - I](#)

[Lecture 37 - Trans-Disciplinary Interventions: Craft-Design Explorations - II](#)

[Lecture 38 - Creative and Cultural Industries: Focus on Visual Art and Interior Design \(Architecture\)](#)

[Lecture 39 - Interior Design: Future Roadmap; Opportunities and Challenges](#)

[Lecture 40 - Summary and Discourse](#)