

## NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Engineering Design - Ergonomics for beginners: Industrial design perspective

Subject Co-ordinator - Prof. Debkumar Chakrabarti

Co-ordinating Institute - IIT - Guwahati

- Lecture 1 - Introduction
- Lecture 2 - Design today - human aid to lifestyle
- Lecture 3 - Journey, fitting task to man
- Lecture 4 - Domain, philosophy and objective
- Lecture 5 - Mutual task comfort
- Lecture 6 - Ergonomics/ human factors fundamentals
- Lecture 7 - Physiology, (work physiology) and stress
- Lecture 8 - Human body - structure and function, anthropometrics
- Lecture 9 - Anthropometry
- Lecture 10 - Static and dynamic anthropometry
- Lecture 11 - Anthropometry landmark
- Lecture 12 - Anthropometry
- Lecture 13 - Measuring techniques
- Lecture 14 - Statistical treatment of data and
- Lecture 15 - Human body-structure and function
- Lecture 16 - Posture and job relation
- Lecture 17 - Posture and body supportive devices
- Lecture 18 - Chair characteristics
- Lecture 19 - Vertical work surface
- Lecture 20 - Horizontal work surface
- Lecture 21 - Movement
- Lecture 22 - Work Counter
- Lecture 23 - Communication and cognitive issues
- Lecture 24 - Psycho-social behaviour aspects,
- Lecture 25 - Information processing and perception
- Lecture 26 - Cognitive aspects and mental workload
- Lecture 27 - Human error and risk perception
- Lecture 28 - Visual performance
- Lecture 29 - Visual displays
- Lecture 30 - Environmental factors influencing
- Lecture 31 - Ergonomics design methodology
- Lecture 32 - Ergonomics criteria/check
- Lecture 33 - Design process involving

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- Lecture 34 - Some checklist for task easiness
- Lecture 35 - Occupational safety and stress at workplace
- Lecture 36 - Workstation design
- Lecture 37 - Furniture support
- Lecture 38 - Vertical arm reach and relevant
- Lecture 39 - Humanising design
- Lecture 40 - Scope for exploration

# NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Engineering Design - NOC: System Design for Sustainability

Subject Co-ordinator - Prof. Sharmistha Banerjee

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

- Lecture 1 - Sustainability and Sustainable Development - Understanding Un-sustainability and need for Sustainability
- Lecture 2 - Sustainability and Sustainable Development - Definitions
- Lecture 3 - Sustainability and Sustainable Development - Pathway
- Lecture 4 - Systems Approach to Design
- Lecture 5 - Evolution of sustainability within Design
- Lecture 6 - Diverse Approaches to Design for Sustainability - Part A
- Lecture 7 - Diverse Approaches to Design for Sustainability - Part B
- Lecture 8 - Relationship between approaches to Design for Sustainability and the application context
- Lecture 9 - Product Life Cycle Design - Methods and Strategies
- Lecture 10 - Product Life Cycle Assessment - Part A
- Lecture 11 - Product Life Cycle Assessment - Part B
- Lecture 12 - Life Cycle Assessment using Software
- Lecture 13 - Design for Product Life Cycle
- Lecture 14 - Product-Service System Design - Definition and Types
- Lecture 15 - Sustainable Product-Service System Design - Definition and Examples
- Lecture 16 - Sustainable Product-Service System Design - Examples
- Lecture 17 - Khadi Movement as a precursor to PSS thinking
- Lecture 18 - Sustainable Product-Service System Design - Transition Paths, Strategy and Challenges
- Lecture 19 - Sustainable Product-Service System Design - Methods and Tools - Part A
- Lecture 20 - Sustainable Product-Service System Design - Methods and Tools - Part B
- Lecture 21 - Sustainable Product-Service System Design - Methods and Tools - Part C
- Lecture 22 - Sustainable Product-Service System Design - Methods and Tools - Part D
- Lecture 23 - Sustainable Product-Service System Design - Methods and Tools - Part E
- Lecture 24 - Sustainable Product-Service System Design - Methods and Tools - Part F
- Lecture 25 - Sustainable Product-Service System Design - Methods and Tools - Part G
- Lecture 26 - Sustainable Product-Service System Design - Methods and Tools (Summary)
- Lecture 27 - Sufficiency Economy Philosophy applied to Sustainable PSS Thinking
- Lecture 28 - LCA of PSS
- Lecture 29 - Sustainable Product-Service System Design Applied to Distributed Economy

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- Lecture 30 - Other Design for Sustainability Tools and approaches - Architecture
- Lecture 31 - Other Design for Sustainability Tools and approaches - Agriculture
- Lecture 32 - Other Design for Sustainability Tools and approaches - Cities and communities
- Lecture 33 - Other Design for Sustainability Tools and approaches - Carbon Footprint
- Lecture 34 - Co-design Session
- Lecture 35 - Design for Sustainability - Engineering Design Criteria and Guidelines
- Lecture 36 - Design for Sustainability - Engineering Design Criteria and Guidelines (ICS Toolkit)
- Lecture 37 - Design for Sustainability - Concluding Lecture - Part A
- Lecture 38 - Design for Sustainability - Concluding Lecture - Part B

## NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Engineering Design - NOC:Product Design and Innovation

Subject Co-ordinator - Prof. Debayan Dhar, Prof.Swati Pal, Prof. Supradip Das

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Innovation

Lecture 2 - Design Inspired Innovation and User Innovation

Lecture 3 - Product Design - Part I

Lecture 4 - Product Design - Part II

Lecture 5 - Product Design - Part III

Lecture 6 - Introduction to User study and Problem and need Identification

Lecture 7 - Contextual Enquiry

Lecture 8 - Physical model

Lecture 9 - Creative Techniques and tools for concept generation, concept evaluation

Lecture 10 - Importance and Overview of Human Factors/Ergonomics in Product Design

Lecture 11 - Physical Ergonomics Principles and Issues (Part 1) - Anthropometry

Lecture 12 - Physical Ergonomics Principles and Issues (Part 2) - Biomechanics

Lecture 13 - Cognitive and Emotional aspects of Human Factors with respect to Product Design and Innovation

Lecture 14 - Tools and Techniques for Prototyping

Lecture 15 - Evaluation Tools and Techniques for User-Product Interaction

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## NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Engineering Design - NOC:Interaction Design

Subject Co-ordinator - Prof.Abhishek Shrivastava

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic Definitions and Concepts in Interaction Design

Lecture 2 - Relevance of goals in Interaction Design

Lecture 3 - System model, mental model, and representation model

Lecture 4 - Interaction Models and Interaction Paradigms

Lecture 5 - Interaction paradigm

Lecture 6 - Overview of Goal Directed Design Process

Lecture 7 - The Research phase in Goal Directed Design Process - Part 1

Lecture 8 - The Research phase in Goal Directed Design Process - Part 2

Lecture 9 - The Research phase in Goal Directed Design Process - Part 3

Lecture 10 - The Modeling phase in Goal Directed Design Process

Lecture 11 - The Requirement definition phase in Goal Directed Design Process - Part 1

Lecture 12 - The Requirement definition phase in Goal Directed Design Process - Part 2

Lecture 13 - The Framework definition and refinement phase in Goal Directed Design Process - Interaction fram

Lecture 14 - The Framework definition and refinement phase in Goal Directed Design Process - Visual design an

Lecture 15 - Design evaluation and testing

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# NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Engineering Design - Principles of Engineering System Design

Subject Co-ordinator - Dr. T. Asokan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

- Lecture 1 - Introduction to system Design
- Lecture 2 - Engineering systems Classification & examples
- Lecture 3 - Modern System design processes
- Lecture 4 - Six functions of design process
- Lecture 5 - Tools for enabling creative development
- Lecture 6 - Team Development
- Lecture 7 - System Requirement Analysis
- Lecture 8 - Originating Requirements
- Lecture 9 - Functional Architecture Development
- Lecture 10 - Functional Decomposition
- Lecture 11 - Functional Decomposition
- 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
- 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 Dyanamic systems
- Lecture 29 - Decision making in System Design

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Lecture 30 - Decision making in System Design (Continued...)

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# NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Engineering Design - Vehicle Dynamics

Subject Co-ordinator - Dr. R. Krishnakumar

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

- 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

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- Lecture 30 - Vertical Dynamics - Quarter Car Model
- Lecture 31 - Noise, Vibration and Harshness - Random Processes
- Lecture 32 - Random Process and Conclusion (Continued...)

# NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Engineering Design - NOC:Control Systems

Subject Co-ordinator - Prof. C.S.Shankar Ram

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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

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- 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

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- 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