

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

NPTEL Video Course - Engineering Design - NOC:Innovation by Design

Subject Co-ordinator - Dr. B.K. Chakravarthy

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - The Seven Concerns
- Lecture 2 - Design Thinking and Collaboration
- Lecture 3 - Challenges to Innovation
- Lecture 4 - Understanding Users
- Lecture 5 - Arriving at Design Insights
- Lecture 6 - Prototyping for User Feedback
- Lecture 7 - 1st C The Cause
- Lecture 8 - Crossing the First Pitfall
- Lecture 9 - Trial and Error
- Lecture 10 - User Feedback for Development
- Lecture 11 - New users, new needs to meet
- Lecture 12 - Knowing the Context
- Lecture 13 - 2nd C The Context
- Lecture 14 - The Basic Need
- Lecture 15 - Ingenious Attempts
- Lecture 16 - Further Insights
- Lecture 17 - The Working Rig
- Lecture 18 - Concepts generation
- Lecture 19 - Experiencing the Product
- Lecture 20 - Refinements
- Lecture 21 - 3rd C - The Comprehension
- Lecture 22 - Understanding Constraints
- Lecture 23 - Positioning the Product
- Lecture 24 - Exploring Possibilities
- Lecture 25 - More Experiments
- Lecture 26 - Understanding the Technology
- Lecture 27 - At the 2nd Valley of Death
- Lecture 28 - Finishing Touches
- Lecture 29 - The Check

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- Lecture 30 - The Cause
- Lecture 31 - The Product, the Users and the Context
- Lecture 32 - The Prototyping
- Lecture 33 - User needs
- Lecture 34 - The Crucial Step Missed
- Lecture 35 - 5th C The Conception
- Lecture 36 - Synchronic Studies
- Lecture 37 - One product, many problems
- Lecture 38 - Concept Clusters
- Lecture 39 - From idea to product
- Lecture 40 - Prototyping
- Lecture 41 - Materials and Technologies
- Lecture 42 - Collaborative Efforts
- Lecture 43 - 6th C - The Crafting
- Lecture 44 - Recap
- Lecture 45 - The Manufacturing Challenge
- Lecture 46 - The User Feedback
- Lecture 47 - The Iterative Process
- Lecture 48 - 7th C - The Connection
- Lecture 49 - The Seed for Innovation
- Lecture 50 - Pinnacle for Innovation
- Lecture 51 - The Innovation Timeline
- Lecture 52 - The Innovation Champions
- Lecture 53 - The Innovation Domains
- Lecture 54 - The Innovation Templates
- Lecture 55 - The Serial Innovation

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

NPTEL Video Course - Engineering Design - NOC:Understanding Design

Subject Co-ordinator - Dr. B.K. Chakravarthy

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - An Introduction to Design
- Lecture 2 - The many notions of design
- Lecture 3 - Design as a process and a product
- Lecture 4 - The evolution of design
- Lecture 5 - Design engages with many disciplines
- Lecture 6 - Design is concerned with the user
- Lecture 7 - Good design, bad design
- Lecture 8 - Users and Contexts
- Lecture 9 - Multiple users, differing contexts
- Lecture 10 - Understanding user experience
- Lecture 11 - Design for a meaningful impact
- Lecture 12 - Design and Society
- Lecture 13 - Community and Collaboration
- Lecture 14 - Understanding Contexts
- Lecture 15 - Knowledge and Access
- Lecture 16 - Meeting Needs
- Lecture 17 - Function, Context and Consequences
- Lecture 18 - Design and Sustainability
- Lecture 19 - The cost of looking the other way
- Lecture 20 - Sustainability practices in daily life
- Lecture 21 - The perspective of engineering
- Lecture 22 - Understanding embodied energy
- Lecture 23 - The user's role in sustainability
- Lecture 24 - Framing the world's future
- Lecture 25 - Design and industry
- Lecture 26 - Understanding varied user needs
- Lecture 27 - Success through new materials and manufacturing
- Lecture 28 - Pushing the boundaries of mass production
- Lecture 29 - A Classic chair for all times

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- Lecture 30 - Breaking familiar assumptions
- Lecture 31 - Design and Collaboration
- Lecture 32 - Team work
- Lecture 33 - Collaborating with unlikely partners
- Lecture 34 - Principles of collaboration
- Lecture 35 - Design thinking
- Lecture 36 - Feedback and assessment
- Lecture 37 - Innovation by Design
- Lecture 38 - Facilitating the reach of a traditional craft
- Lecture 39 - Pitfalls of innovation
- Lecture 40 - The seven concerns of innovation
- Lecture 41 - From a concern to a palki
- Lecture 42 - A little design goes a long way

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

NPTEL Video Course - Engineering Design - NOC:Design, Technology and Innovation

Subject Co-ordinator - Dr. B.K. Chakravarthy

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Jaipur Foot - A classic innovation - Part 1
- Lecture 2 - Jaipur Foot - A classic innovation - Part 2
- Lecture 3 - User Centred Helmet Design - Part 1
- Lecture 4 - User Centred Helmet Design - Part 2
- Lecture 5 - Challenges of Reaching a Million Users - Part 1
- Lecture 6 - Challenges of Reaching a Million Users - Part 2
- Lecture 7 - Challenges of Reaching a Million Users - Part 3
- Lecture 8 - Technology to Solution - Part 1
- Lecture 9 - Technology to Solution - Part 2
- Lecture 10 - A Collaborative Excellence - Part 1
- Lecture 11 - A Collaborative Excellence - Part 2
- Lecture 12 - Collaborative Innovation Methods - Part 1
- Lecture 13 - Collaborative Innovation Methods - Part 2
- Lecture 14 - Collaborative Innovation Methods - Part 3
- Lecture 15 - Learnings from Grassroot Innovation - Part 1
- Lecture 16 - Learnings from Grassroot Innovation - Part 2
- Lecture 17 - Systemic Approach to Biomed Innovations - Part 1
- Lecture 18 - Systemic Approach to Biomed Innovations - Part 2
- Lecture 19 - Systemic Approach to Biomed Innovations - Part 3
- Lecture 20 - Research to Innovation - Part 1
- Lecture 21 - Research to Innovation - Part 2
- Lecture 22 - Smartcane for the Blind - A Success Story - Part 1
- Lecture 23 - Smartcane for the Blind - A Success Story - Part 2

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

NPTEL Video Course - Engineering Design - NOC:Understanding Ethnography

Subject Co-ordinator - Prof. Nina Sabnani

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Introduction
Lecture 2 - Situating Ethnography
Lecture 3 - Engaging with the Other
Lecture 4 - Equality and Empathy
Lecture 5 - Notions of Reality
Lecture 6 - Objectivity and Subjectivity
Lecture 7 - Conclusion
Lecture 8 - Introduction
Lecture 9 - The Ethnographic Process
Lecture 10 - Ethnography
Lecture 11 - Fundamental Concepts
Lecture 12 - Fundamental Concepts (Continued...)
Lecture 13 - Conclusion
Lecture 14 - Introduction
Lecture 15 - The Research Question
Lecture 16 - Is Ethnography the Method?
Lecture 17 - Accessing Existing Knowledge
Lecture 18 - Designing Fieldwork
Lecture 19 - Case Studies
Lecture 20 - Case Studies
Lecture 21 - Case Studies
Lecture 22 - Case Studies
Lecture 23 - Conclusion
Lecture 24 - Access
Lecture 25 - Challenges of Access
Lecture 26 - Building Rapport
Lecture 27 - Gaining Trust
Lecture 28 - Limits to Access
Lecture 29 - Immersion

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- Lecture 30 - The Ethics of Engaging
- Lecture 31 - Conclusion
- Lecture 32 - Introduction
- Lecture 33 - Types of Observation
- Lecture 34 - (ALM) LxT 1
- Lecture 35 - What to Observe
- Lecture 36 - Participant Observation
- Lecture 37 - Degrees of Participation
- Lecture 38 - Ethnographic Records
- Lecture 39 - Conclusion
- Lecture 40 - Introduction
- Lecture 41 - Forms of Interviews
- Lecture 42 - (ALM) LxT 1
- Lecture 43 - Characteristics of Interviews
- Lecture 44 - Listening and Speaking
- Lecture 45 - Reflexivity in Interviewing
- Lecture 46 - Designing the Interview
- Lecture 47 - Designing the Core Discussion - I
- Lecture 48 - Designing the Core Discussion - II
- Lecture 49 - Doing the Interview - I
- Lecture 50 - Doing the Interview - II
- Lecture 51 - Conclusion
- Lecture 52 - Introduction
- Lecture 53 - Researching THE Visual - I
- Lecture 54 - Researching THE Visual - II
- Lecture 55 - Researching WITH the Visual
- Lecture 56 - Choosing the Visual Medium
- Lecture 57 - Representation through Visuals
- Lecture 58 - (ALM) LxT 1
- Lecture 59 - Reflexivity in Visual Ethnography - I
- Lecture 60 - Reflexivity in Visual Ethnography - II
- Lecture 61 - Conclusion
- Lecture 62 - Introduction
- Lecture 63 - Designing Information for HIV-AIDS Affected Persons - Prof. Anirudha Joshi
- Lecture 64 - A New Approach to Urban Housing - Prof. Uday Athavankar
- Lecture 65 - Cognitive Ethnography - Prof. Sahana Murthy
- Lecture 66 - Participative Design for Language Learning - Prof. Alka Hingorani
- Lecture 67 - Conclusion

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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 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 Course - Engineering Design - NOC:Ergonomics in Automotive Design

Subject Co-ordinator - Dr. Sougata Karmakar

Co-ordinating Institute - IIT - Guwahati

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

Lecture 1 - Introduction to Automotive Ergonomics

Lecture 2 - Driver Information Acquisition and Processing

Lecture 3 - Anthropometric and Biomechanical Data in Automotive Design

Lecture 4 - Occupant Packaging

Lecture 5 - Principles of Control and Display Design

Lecture 6 - Usability evaluation of In-vehicle control and displays

Lecture 7 - Human Fields of View and Driver's Fields of View

Lecture 8 - Vehicle Entry and Exit

Lecture 9 - Driver Distraction and Driving Performance Measurement

Lecture 10 - Driver Workload Measurement

Lecture 11 - Virtual Ergonomics Evaluation Technique and its application in Automotive Design

Lecture 12 - Automotive Craftsmanship

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NPTEL Video Course - Engineering Design - NOC:Ergonomics Workplace Analysis

Subject Co-ordinator - Prof. Urmi R. Salve

Co-ordinating Institute - IIT - Guwahati

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

- Lecture 1 - Introduction to Ergonomics Workplace Assessment - I
- Lecture 2 - Introduction to Ergonomics Workplace Assessment - II
- Lecture 3 - Task Analysis
- Lecture 4 - Physiological Fundamentals of Workplace Evaluation
- Lecture 5 - Biomechanics in Workplace Evaluation
- Lecture 6 - Assessment of Physical Job Demand
- Lecture 7 - Assessment of Physical and Cognitive Work with Psychophysiological Methods
- Lecture 8 - Assessment of Physical and Cognitive Work with Psychophysiological Methods
- Lecture 9 - Assessment of Mental Workload
- Lecture 10 - Neuroergonomics in Work Evaluation
- Lecture 11 - Psychosocial Aspect of Workplace Analysis
- Lecture 12 - Assessment of Thermal Environment
- Lecture 13 - Assessment of Visual Environment
- Lecture 14 - Analysis of Auditory Environment and Noise Pollution

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NPTEL Video Course - Engineering Design - NOC:Geographic Information System

Subject Co-ordinator - Prof. Bharath H Aithal

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to GIS
- Lecture 2 - Introduction (Continued...)
- Lecture 3 - Introduction (Continued...)
- Lecture 4 - Introduction (Continued...)
- Lecture 5 - Introduction (Continued...)
- Lecture 6 - Real World to Digital World Through GIS
- Lecture 7 - Real World to Digital World Through GIS (Continued...)
- Lecture 8 - Real World to Digital World Through GIS (Continued...)
- Lecture 9 - GIS Data (Continued...)
- Lecture 10 - Real World to Digital World Through GIS (Continued...)
- Lecture 11 - Representing the Real World
- Lecture 12 - Representing the Real World (Continued...)
- Lecture 13 - Representing the Real World (Continued...)
- Lecture 14 - Representing the Real World in Surface Models (Continued...)
- Lecture 15 - Representing the Real World (Continued...)
- Lecture 16 - Querying and Georeferencing
- Lecture 17 - Elevation, Relative and Discrete Referencing
- Lecture 18 - Coordinate Systems
- Lecture 19 - Maps and Numbering
- Lecture 20 - Map Projections
- Lecture 21 - Data Quality and Measures
- Lecture 22 - Positional Accuracy and Source of Errors
- Lecture 23 - Classification Accuracy and Pixel Errors
- Lecture 24 - Spatial Data Editing and Transformations
- Lecture 25 - Map Display and Visualization in GIS
- Lecture 26 - Introduction to GPS
- Lecture 27 - GPS
- Lecture 28 - GPS errors and DGPS
- Lecture 29 - GNSS and Applications

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- Lecture 30 - Introduction to QGIS
- Lecture 31 - Introduction to database
- Lecture 32 - DataBase Management System - Introduction
- Lecture 33 - DataBase Management System - (Continued...)
- Lecture 34 - DBMS models
- Lecture 35 - Normalization forms
- Lecture 36 - Creating and Maintaining a database
- Lecture 37 - Spatial Query using SQL - Introduction
- Lecture 38 - Spatial analysis
- Lecture 39 - Spatial analysis (Continued...)
- Lecture 40 - Basic Editing
- Lecture 41 - Introduction to Remote Sensing
- Lecture 42 - Basic spatial analysis
- Lecture 43 - Basic spatial analysis
- Lecture 44 - Advanced spatial analysis
- Lecture 45 - Advanced spatial analysis
- Lecture 46 - Introduction to QGIS and Data Import
- Lecture 47 - QGIS Plugins
- Lecture 48 - Georeferencing an Image
- Lecture 49 - Creating Vector Features
- Lecture 50 - Vector Functions and Querying
- Lecture 51 - Data Acquisition and Raster Functions - I
- Lecture 52 - Data Acquisition and Raster Functions - II
- Lecture 53 - Map composition
- Lecture 54 - Bhuvan geoportal and Google earth
- Lecture 55 - Introduction to R - Part I
- Lecture 56 - Introduction to R - Part II
- Lecture 57 - Open Source GIS Softwares
- Lecture 58 - Open Source GIS softwares
- Lecture 59 - PROS and CONS of open source
- Lecture 60 - GIS Data Standards
- Lecture 61 - Open Geospatial Consortium (OGC)
- Lecture 62 - National Spatial Data Infrastructure (NSDI)
- Lecture 63 - Introduction to Web GIS and Geoserver
- Lecture 64 - Geoserver - Raster and SLD Integration

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

- 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

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

NPTEL Video Course - Engineering Design - NOC:Fundamentals of Automotive 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 - 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

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- 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

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- 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

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

NPTEL Video Course - Engineering Design - NOC:Functional and Conceptual Design

Subject Co-ordinator - Dr. T Asokan

Co-ordinating Institute - IIT - Madras

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

- 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

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- 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

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

NPTEL Video Course - Engineering Design - NOC:Introduction to Robotics

Subject Co-ordinator - Dr. Krishna Vasudevan, Dr. Balaraman Ravindran, Dr. T Asokan

Co-ordinating Institute - IIT - Madras

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

- 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

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- Lecture 30 - Recursive State Estimation
- 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