

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

NPTEL Video Course - Management - NOC:Automation in Production Systems and Management

Subject Co-ordinator - Prof. Pradip Kumar Ray

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Basic Concepts of Manufacturing Systems, Evolution of Manufacturing Systems
- Lecture 2 - Types of Manufacturing Systems and Role of Automation
- Lecture 3 - Product-Process-Flexibility Matrices, Four-Plane Concept of Manufacturing
- Lecture 4 - Product Design and Manufacturing Systems
- Lecture 5 - Definitions and Design Criteria for Production Systems
- Lecture 6 - Manufacturing System Components - I
- Lecture 7 - Manufacturing System Components - II
- Lecture 8 - Industry 4.0
- Lecture 9 - Automation Principles and Strategies for Process Improvement
- Lecture 10 - Automated Production System Framework
- Lecture 11 - Product Development Process: Approaches and stages
- Lecture 12 - Mathematical Models for Interaction between Design and Manufacturing
- Lecture 13 - Sequential and Concurrent Engineering Approaches for Product Development
- Lecture 14 - Characterization of Concurrent Engineering Framework
- Lecture 15 - Concurrent Engineering Techniques
- Lecture 16 - Introduction to Concept and Application of Numerical Control (NC) Technology
- Lecture 17 - Basic Concepts of an NC System
- Lecture 18 - NC Coordinate System, NC Motion Control System
- Lecture 19 - Features of CNC, Configuration of CNC Machine Control System
- Lecture 20 - Numerical Examples
- Lecture 21 - Distributed Numerical Control (DNC) and its Configuration
- Lecture 22 - NC Part Programming-I (Manual, Computer-assisted)
- Lecture 23 - NC Part Programming-II (CAD/CAM, MDI)
- Lecture 24 - Interpolation and Part Programming
- Lecture 25 - Numerical Examples
- Lecture 26 - Group Technology (GT): Concept and Definition
- Lecture 27 - Methods and Implementation of GT for Automation
- Lecture 28 - Part Family Formation: Tools and Techniques
- Lecture 29 - Numerical Examples on Part Family Formation

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- Lecture 30 - Application of GT for Designing Flexible and Programmable Automation
- Lecture 31 - Concept and Definition of Cellular Manufacturing System (CMS)
- Lecture 32 - Cell Formation Approaches - I
- Lecture 33 - Cell Formation Approaches - II
- Lecture 34 - Evaluation of Cell Design, Numerical Examples
- Lecture 35 - Production Planning and Control in CMS, Assessment of Solution by Heuristics
- Lecture 36 - Types and Definitions of Flexibility in Manufacturing Systems
- Lecture 37 - Volume-Variety Relationships in Production Systems, What is FMS?
- Lecture 38 - Basic Features of FMS: Physical Subsystems
- Lecture 39 - Basic Features of FMS: Control Subsystems and Manufacturing Control Activities.
- Lecture 40 - Types of Problems in FMS
- Lecture 41 - Operational Problems in FMS: Tools and Techniques - 1, Problem Formulation
- Lecture 42 - Operational Problems in FMS: Tools and Techniques - 2, Numerical Examples
- Lecture 43 - Tool Allocation Policies in FMS, Numerical Examples
- Lecture 44 - Fixture and Pallet Selection Problems: Numerical Examples
- Lecture 45 - Types of FMS Layout, Relative Advantages
- Lecture 46 - Fundamentals of Robotics and its Applications
- Lecture 47 - Robot Movement and Precision
- Lecture 48 - Robot Motion Analysis, Robotic Joints and Links
- Lecture 49 - Robot Classification System, Industrial Robot Applications
- Lecture 50 - Numerical Examples
- Lecture 51 - Definition of Process Planning: Function of Process Plan
- Lecture 52 - Basic Steps in Process Plan Development
- Lecture 53 - Process Planning Approaches: Manual Experience-based Process Planning
- Lecture 54 - Process Planning Approaches: Computer-aided Process Planning
- Lecture 55 - CIN and CAPP, Process Optimization and CAPP
- Lecture 56 - Process Optimization and CAPP
- Lecture 57 - FMS and CAPP
- Lecture 58 - Process Optimization and CAPP: Numerical Examples
- Lecture 59 - Process Planning and Concurrent Engineering
- Lecture 60 - Automation (and other TPS Areas and Approaches)