J. C. Bose University of Science and Technology, YMCA, Faridabad
Department of Mechanical Engineering

Lecture Plan of Subject: Automation in Manufacturing (ME72)

Subject Code: PCC-ME-701/21

Lecture No.	Topic to be covered
Unit 1: Introduction to Automation	
1	Automation in the production system
2	Principles and strategies of automation
3	Basic elements of an automated system
4	Advanced automation functions
5	Levels of automation
6	Introduction to automation productivity
Unit 2: Introduction to Industry 4.0 and Its Components	
7	Industry 4.0-features & working
8	Industry 4.0-applications, advantages
9	Programmable logic controllers (PLC) - components
10	PLC -working, programming
11	PLC-programming
12	IOT-its basic components
13	IOT-role in automation
Unit 3: Overview of Material Handling System	
14	Material handling system: rotary feeders, oscillating force feeder
15	Vibratory feeder, elevator type
16	Centrifugal type feeders
17	Principle and design consideration
18	Material transport system
19	Material storage system: manual
20	Material storage system: automatic
Unit 4: Automated Manufacturing Devices	
21	Components
22	Overview of Pneumatic systems
23	Overview of Hydraulic systems
24	Actuators
25	Valves
26	Valves-continued
27	Electric control devices
Unit 5: Sensors and Controllers	
28	Industrial control systems
29	Process industries vs discrete manufacturing
30	Industries: continuous vs discrete control
31	Computer control process and its forms
32	Sensors
33	Actuators

34	Other control system components
Unit 6: Artificial Intelligence and Applications	
35	Introduction and need for machine learning
36	Tools
37	Applications of AI in mechanical engineering
38	Comparison analysis of results using AI
39	Robots and applications of AI in robotics
40	Case studies on the use of AI using research papers
41	Case studies on the use of AI using research papers-continued

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