PANIPAT INSTITUTE OF ENGINEERING AND TECHNOLOGY
PANIPAT
Department of Mechanical Engineering
LESSON PLAN

Subject Name: - Automation in Manufacturing

Branch/Semester: -7th. SEM   **Subject Code:-ME-401A**

S.No.	Lecture No.	Topics to be covered	Tentative Date	Mode of Teaching	Remarks
1.	L-1	**UNIT- I** Introduction:-Production System		On Whiteboard	
2.	L-2	Automation in production system		On Whiteboard	
3.	L-3	Manual labour in production system, automation principle and strategies		On Whiteboard	
4.	L-4	Manufacturing industries and products, manufacturing operations		On Whiteboard	
5.	L-5	Product/ production relationship, basic elements of an automation system		On Whiteboard	
6.	L-6	Advance automation function, level of automation.		PPT'S	
7.	L-7	**Industrial robotics:-** Robot anatomy and related attributes, joint and links,		You tube video	
8.	L-8	common robot configuration		You tube video	
9.	L-9	Joint drive system, sensors in robotics		PPT'S	
10.	L-10	Robot control system, end effectors, grippers and tools, applications of industrial robots		PPT'S	
11.	L-11	Material handling, processing operation, assembly and inspection, robot programming		On Whiteboard	
12.	L-12	**UNIT-II Group technology and cellular manufacturing:** Part families, parts classifications and coding		PPT'S	
13.	L-13	Production flow analysis, cellular Manufacturing-composite part concept		On Whiteboard	
14.	L-14	Machine cell design, applications of group technology		On Whiteboard	
15.	L-15	Grouping parts and machines by rank order clustering technique		On Whiteboard	

16.	L-16	Arranging machines in a G.T. cell		On Whiteboard	
17.	L-17	**Flexible manufacturing:** Introduction, FMS components		On Whiteboard	
18.	L-18	Flexibility in manufacturing – machine, product		On Whiteboard	
19.	L-19	Routing, operation, types of FMS		On Whiteboard	
20.	L-20	FMS layouts, FMS planning and control issues		PPT'S	
21.	L-21	Deadlock in FMS, FMS benefits and applications		On Whiteboard On Whiteboard	
22.	L-22	**Unit III- Process planning:** Introduction, manual process planning		On Whiteboard	
23.	L-23	Computer aided process planning – variant, generative		On Whiteboard	
24.	L-24	Decision logic decision tables, Decision trees, Introduction to artificial intelligence		PPT'S	
25.	L-25	**Shop floor control:** Introduction, shop floor control features , Major displays, major reports, phases of SFC, order release		On Whiteboard	
26.	L-26	Order scheduling, order progress, manufacturing control		On Whiteboard	
27.	L-27	Methodology, applications, shop floor data collections		On Whiteboard	
28.	L-28	Types of data collection system, data input techniques, automatic data, collection system		On Whiteboard	
29.	L-29	**Unit 4 :- CNC basics and part programming:** Introduction, historical, background, basic components of an NC		On Whiteboard	
30.	L-30	Steps in NC, verifications of numerical control machine tool programs		On Whiteboard	
31.	L-31	Classification of NC Machine tool, basics of motion control and feedback for NC M/C		PPT'S	
32.	L-32	NC part programming, part programming methods		On Whiteboard	
33.	L-33	Modern machining system, automatically programmed tools, DNC, adaptive control		On Whiteboard	
34.	L-34	**Automated guided vehicle and storage system:** Functions of AGV, types of AGV		You tube videos	

35.	**L-35**	safety consideration for AGV, design of AGV		You tube videos	
36.	**L-36**	Introduction to storage system, storage system performance,		On Whiteboard	
37.	**L-37**	storage location strategies, conventional storage method and equipment		You tube videos	
38.	**L-38**	automated storage system, fixed aisle automated storage/ retrieval system,		You tube videos	
39.	**L-39**	carousel storage systems		On Smart Board	
40.	**L-40**	**Revise Unit III- Process planning:** Introduction, manual process planning		On Smart Board	
41.	**L-41**	Computer aided process planning – variant, generative		On Smart Board	
42.	**L-42**	Decision logic decision tables, Decision trees, Introduction to artificial intelligence		On Smart Board	
43.	**L-43**	**Shop floor control:** Introduction, shop floor control features , Major displays, major reports, phases of SFC, order release		On Smart Board	
44.	**L-44**	Order scheduling, order progress, manufacturing control		On Smart Board	
45.	**L-45**	Methodology, applications, shop floor data collections		On Smart Board	
46.	**L-46**	Types of data collection system, data input techniques, automatic data, collection system		On Smart Board	
47.	**L-47**	**Revise Unit 4 :- CNC basics and part programming:** Introduction, historical, background, basic components of an NC		On Smart Board	
48.	**L-48**	Steps in NC, verifications of numerical control machine tool programs		On Smart Board	
49.	**L-49**	Classification of NC Machine tool, basics of motion control and feedback for NC M/C		On Smart Board	
50.	**L-50**	Previous Year Question paper		On Smart Board	
51.	**L-51**	Previous year Question paper		On Smart Board	

Course Incharge
(Gourve Goyal)