B.Tech 7th sem Robotics and Artificial Intelligence

Lesson Plan

Manufacturing Processes (PEC-RAI-723/21)

Lecture no.	Content to be Covered
Unit 1: Metal Casting Processes	
1	Introduction, Advantages, limitations and applications; Sand mould making procedure
2	Patterns: Pattern materials, types of patterns, pattern allowances
3	Moulding: Mould materials, properties of moulding sand, main constituents of moulding sand, classification of moulding sand
4	Preparation of moulding sand, testing of moulding sand, methods of moulding
5	Gating System: Requirements of a gating system, elements of gating system, chills
6	Cores: essential characteristics of good core, types of cores, core making, core print, core chaplets
7	Special casting processes: Permanent mould casting, Die casting
8	Centrifugal casting, Shell moulding
9	Precision investment casting, Continuous casting
10	Casting defects and their remedies
Unit 2: Metal Forming	
11	Nature of plastic deformation, Hot working and cold working
12	Rolling: Principle, Rolling stand arrangement
13	Forging: Forging operations, Smith Forging, Drop forging, Press forging and Machine forging
14	Extrusion: principle, Hot extrusion processes
15	Cold extrusion processes
16	Wire drawing
Unit 3: Machine Tools	
17	Introduction; Lathe: principal parts

18	Size and specifications, lathe accessories
19	Lathe operations
20	Shaper: principal parts, working principle, specifications of a shaper
21	Drilling machine: principal parts, working principle, size and specifications, drilling operations
22	Milling machine: principal parts, milling operations
Unit 4: Welding and Allied Processes	
23	Introduction, Classification of welding processes, Gas Welding: Principle, types of flames, equipment's
24	Resistance Welding: Principle and types spot welding, seam welding, projection welding
25	Arc Welding: principle, equipment's, Arc welding processes: Metal arc welding, Carbon arc welding
26	TIG, MIG
27	Submerged arc welding; Brazing and Soldering
28	Welding defects and their remedies
Unit 5: Advance Manufacturing Processes	
29	Electric Discharge Machining: Introduction, Principle
30	Dielectric Fluid, Electrodes
31	Process Characteristics, applications
32	Electro Chemical Machining: Principle of ECM, ECM Equipment
33	Electrolyte, Process Characteristics, Applications
34	Ultrasonic Machining
35	Laser Beam Machining
36	Abrasive Water Jet Machining: Principle, Equipment
37	Process Parameters, Applications
38	Electron Beam Machining