SREE VIDYANIKETHAN ENGINEERING COLLEGE

(Autonomous)
Sree Sainath Nagar, A. Rangampet-517 102

Department of Mechanical Engineering

Lesson Plan

Name of the Subject : **Manufacturing Technology-I (14BT30304)**

Class & Semester : II B.Tech. I-Sem

Name of the faculty Member : Dr.B.K.C.Ganesh

S. No.	Topic	No. of periods	Book(s) followed	Topics for self-study
UNIT – I: METAL CASTING PROCESSES				
1	Classification of manufacturing processes, Introduction to casting process	1	T1, T2	
2	Sand moulding procedures, patterns, pattern allowances, pattern materials, Types of patterns	3	T1,T2	
3	Moulding materials, Types of moulding sands	1	T1,T2	
4	Testing sand properties	1	T1	
5	Types of sand moulds, moulding machines	1	T1,T2	
6	Types of cores, casting defects, design of gating systems	2	T1,T2	
Total periods required:		**09**		
UNIT – II: MELTING AND SPECIAL CASTING PROCESSES				
7	Types of Furnaces: Crucible, cupola, electric arc furnaces	3	T1 ,T2	
8	Shell moulding, precision investment casting,	2	T1, R1	
9	Permanent mould casting, die casting, low- pressure die casting,	2	T1 , R1	
10	Centrifugal casting, continuous casting and squeeze casting.	2	T1 , R1	
Total periods required:		**09**		
UNIT – III: INTRODUCTION TO JOINING PROCESSES				
11	Introduction to Joining processes, Adhesive bonding, Mechanical fastening	2	T1, T2, R1, R3	
12	Classification of welding processes, types of welds and welded joints and their characteristics	2	T1, R1,&R3	
13	Design of welded joints, Welding fluxes and filler rods	2	T1, T2	
14	Soldering and brazing processes.	1	T1, T2, R3	
15	Gas welding processes: Introduction, Oxy-fuel welding processes, Oxy-fuel gas cutting.	2	T1, T2	
Total periods required:		**09**		

UNIT –IV: ELECTRIC ARC AND RESISTANCE WELDING				
16	Electric arc welding: Principle of arc, Arc-welding equipment, Electrodes	2	T1 ,R2	
17	Manual metal arc welding (SMAW), Arc Blow, Carbon arc welding	2	T1 , T2, R1	
18	Inert-Gas shielded arc welding: TIG and MIG welding, shielding gases, submerged arc welding (SAW)	2	T1 , R2	
19	Resistance welding: Spot welding, Seam welding, Projection welding, upset welding and flash welding,	2	T1 , R3	
20	Thermit welding and Plasma arc welding	1	T1, T2	
	Total periods required:	**09**		
UNIT –V: ADVANCED FABRICATION PROCESSES				
21	Thermite welding, Electro slag welding, Electron beam welding	2	T1,T2, R3	
22	Laser beam welding, forge welding, friction welding, diffusion welding, explosion welding	3	T1,T2, R3	
23	Ultrasonic metal welding, brazing, braze welding and soldering	2	T1,T2, R3	
24	Destructive & Non-destructive testing of welds	2	T1,T2, R3	
	Total periods required:	**09**		
	Grand total periods required:	**45**		

TEXT BOOKS:

T1. P.N. Rao, *Manufacturing Technology*, Vol:1, TMH, 4th edition, 2013.

T2. Kalpakjian, Serope, *Manufacturing Engineering and Technology*, Pearson education, 7th edition, 2014.

REFERENCE BOOKS:

R1. R.K. Jain, *Production Technology*, Khanna Publishers, 17th edition, 2010.

R2. Rosenthal, *Principles of Metal Castings,* McGraw-Hill Professional Publishing, 3rd edition, 2013.

R3. R.S. Parma, *Welding Engineering and Technology*, Khanna Publishers, 1st edition, 2014