



VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY

LESSON PLAN

Semester >>5 th (B.Tech)	Year >> 2016	Contact Hours per week >>4	
Sub: Metal Forming Processes	Branch >> Mechanical Engineering	Total Credit >>4	
TEACHER	Dr.Pragyan Paramita Mohanty		
Period	July 2016- Dec 2016		
Recommended books >>	Text book: Text Books: 1. Manufacturing Technology, P. N. Rao Vol. 3 3rd Edition, TMH Publication 2. Manufacturing Engineering and Technology, S. Kalpakian, S. Schmid, Pearson Publication		
Sl. No.	Lecture No.	Topics to be covered	No. of Classes
		MODULE-1	10
1	Lecture-01	Introduction: Principle of plastic deformation and yield criteria,	
2	Lecture-02	Fundamental of hot and cold working processes, Effect of strain rate on forming process.	
3	Lecture-03	Forging: Open die forging, Drop forging	
4	Lecture-04	Press forging	
5	Lecture-05	Load estimation in forging	
6	Lecture-06	Forging design, allowances	
7	Lecture-07	Die design for drop forging	
8	Lecture-08	Design of flash and gutter	
9	Lecture-09	Upset forging die design	
10	Lecture-10	Forging defects and inspection.	
		MODULE-2	10
11	Lecture-11	Rolling: Principle of rolling	
12	Lecture-12	Rolling stand arrangement, Rolling load calculation	
13	Lecture-13	Roll passes, Flat rolling, Pipe rolling	
14	Lecture-14	Defects in rolled products.	
15	Lecture-15	Extrusion: Forward and backward extrusion	
16	Lecture-16	Hydrostatic Extrusion, Extrusion Forging	
17	Lecture-17	Load estimation in extrusion, Extrusion of tubes	

18	Lecture-18	Calculation of force in hot extrusion,	
19	Lecture-19	Effect of Extrusion Variables	
20	Lecture-20	Extrusion Defects.	
		MODULE-3	
20	Lecture-21	Drawing: Wire drawing, Rod and tube drawing	10
21	Lecture-22	Drawing forces, Drawing defects.	
22	Lecture-23	Sheet Metal Forming and bending: Sheet metal working-	
23	Lecture-24	Shearing, blanking piercing,	
24	Lecture-25	Deep drawing operation.	
25	Lecture 27	Die design for sheet metal operations	
26	Lecture 28	Progressive and compound die	
27	Lecture 29	Strippers, stops, strip layout.	
28	Lecture 28	Principle of bending, Spring back effect	
29	Lecture 29	Coining.	
		MODULE-4	
30	Lecture 30	Advanced forming processes: High energy rate forming,	10
31	Lecture 31	Explosive forming, electro hydro forming, electromagnetic forming,	
32	Lecture-32	Rubber die forming.	
33	Lecture-33	Powder Metallurgy Forming Process: Method of Powder production, Powder characteristic analysis	
34	Lecture-34	Powder annealing, Precompaction studies	
35	Lecture 35	Cold compaction Studies, Sintering and sintering atmosphere,	
36	Lecture-36	Post sintering operations (coining, infiltration, hot forging etc.)	
37	Lecture-37	Hot and cold iso-static pressing,	
38	Lecture-38	Properties of P/M products and applications.	
39	Lecture-39	Properties of P/M products and applications.	

Signature of Teacher