LESSON PLAN

Subject Name- Theory of Metal Forming	Branch- Production Engineering
Subject Code- BPE 06001	Semester- 6th

S/N	Module	Topic(s)	Period/ Hours
1	I	Review of 2-D stress and strain	1
2	I	State of stress in 3-D,Stress tensor, Invariants	2-3
3	I	Mohr's circle for 3-D State of Stress, Strain at a point-Mohr's circle for strain	4-5
4	I	Hydrostatic & Deviatory components of Stress	6
5	I	Elastic stress-strain relations	7
6	I	Tutorial	8
7	II	Elements of theory of plasticity: Flow curve, True stress & true strain,	9-10
8	II	Yield criteria for ductile metal,Von Misses & Tresca yield criteria, Combined stress tests	11-12
9	II	The yield locus, Anisotropy in yielding, Yield surface	13-14
10	II	Levy-Misses,Prandtl-Reuss Stress-Strain relation	15-16
11	II	Tutorial	17-18
12	III	Analysis of deformation processes-Method based on homogeneous compression slip line field theory	19-20
13	III	Haneky's theorem, hodograph for slip line field	21-22
14	III	Upper bounds & lower bounds	23-24
15	III	Slab method analysis	25-26
16	III	Tutorial	27-28

S/N	Module	Topic(s)	Period/ Hours
17	IV	Classification of forming processes variables in metal forming and their optimization	29
18	IV	Flow stress determination	30
19	IV	Hot working, Cold working, Strain rate effect	31
20	IV	Friction and lubrication, Deformation zone geometry,	32
21	IV	Workability, Residual stress.	33
22	IV	Tutorial	34
23	V	Analysis of metal forming processes,	35
24	V	Forging: Load calculation in plane strain forging	36
25	V	Rolling: Forces & geometrical relationship in rolling, Rolling load and torque in cold rolling,	37
26	V	Von-Karman work equation	38-39
27	V	Tutorial	40