

Lesson Plan

Name of Institute	: Ambala College of Engineering and Applied Research
Name of the Faculty member	: Dr. Ashwani Verma (Assistant Professor)
Discipline	: Mechanical Engineering
Semester	: 8 th
Subject	: Metal Forming and Finishing (ME-434 N)
Lesson Plan Duration	: 15 weeks (from February 2021 to May 2021)
Work Load	: L-4 T-0 P-0

Week	Theory		Practical	
	Lecture day	Topic (including assignment/test)	Practical day	Topic
1 st	1 st	UNIT-I Bulk Deformation Processes: Introduction Elastic and plastic deformation.	1 st	
	2 nd	Concept of strain hardening.	2 nd	
	3 rd	Hot and cold working processes -rolling, forging, extrusion, swaging, wire and tube drawing.	3 rd	
	4 th	Machines and equipment for the processes.	4 th	
2 nd	5 th	Parameters and force calculations (rolling process).	5 th	
	6 th	Parameters and force calculations (rolling process).	6 th	
	7 th	Parameters and force calculations (forging process).	7 th	
	8 th	Parameters and force calculations (forging process).	8 th	
3 rd	9 th	Parameters and force calculations (wire drawing process).	9 th	
	10 th	Parameters and force calculations (tube drawing process).	10 th	
	11 th	Parameters and force calculations (extrusion process).	11 th	
	12 th	Class Test-1	12 th	
4 th	13 th	Test methods for formability, Basics of plastic forming & forging.	13 th	
	14 th	Mechanics of metal working.	14 th	
	15 th	Temperature in metal working.	15 th	
	16 th	Strain rate effects, friction and lubrication, deformation zone geometry.	16 th	
5 th	17 th	Forging process, classification – equipment.	17 th	
	18 th	Calculation of forging loads.	18 th	
	19 th	Forging defects, residual stresses, Assignment.	19 th	
	20 th	TEST-1	20 th	
6 th	21 st	UNIT-II Sheet Metal Working: Applications of sheet formed products.	21 st	
	22 nd	Shearing mechanism.	22 nd	
	23 rd	Processes like blanking, piercing, punching, trimming etc.	23 rd	
	24 th	Forming processes like bending, cup drawing, coining, embossing, etc.	24 th	
7 th	25 th	Presses for sheet metal working.	25 th	
	26 th	Presses for sheet metal working.	26 th	
	27 th	Part feeding systems.	27 th	
	28 th	Elements of die.	28 th	
8 th	29 th	Elements of die.	29 th	
	30 th	Punch and die clearances.	30 th	

	31 st	Progressive die.	31 st	
	32 nd	Compound die.	32 nd	
9 th	33 rd	Combination die.	33 rd	
	34 th	Combination die.	34 th	
	35 th	High energy rate forming processes.	35 th	
	36 th	High energy rate forming processes, Assignment.	36 th	
10 th	37 th	Class Test-2	37 th	
	38 th	UNIT-III Metal finishing : Technological importance of metal finishing.	38 th	
	39 th	Effect of plating variables on electro deposits.	39 th	
	40 th	Effect of plating variables on electro deposits.	40 th	
11 th	41 st	TEST-3	41 st	
	42 nd	Electroplating techniques.	42 nd	
	43 rd	Methods of electroplating.	43 rd	
	44 th	Surface preparation.	44 th	
12 th	45 th	Metal finishing processes: diamond machining.	45 th	
	46 th	Honing.	46 th	
	47 th	Lapping.	47 th	
	48 th	Buffing, Assignment.	48 th	
13 th	49 th	Class Test-3	49 th	
	50 th	UNIT-IV Powder Metallurgy : Introduction.	50 th	
	51 st	Production of metal powders.	51 st	
	52 nd	Production of metal powders.	52 nd	
14 th	53 rd	Compaction and sintering processes.	53 rd	
	54 th	Compaction and sintering processes.	54 th	
	55 th	Secondary and finishing operations.	55 th	
	56 th	Secondary and finishing operations.	56 th	
15 th	57 th	Economics.	57 th	
	58 th	Advantages.	58 th	
	59 th	Applications of powder metallurgy, Assignment.	59 th	
	60 th	TEST-3	60 th	

(Signature of the teacher concerned with date)