AMBALA COLLEGE OF ENGINEERING AND APPLIED RESEARCH, AMBALA
Department of Mechanical Engineering

Lecture Plan

Name of Institute : Ambala College of Engineering and Applied Research
Name of the Faculty member : Sandeep Kumar
Discipline : Mechanical Engineering
Semester : 8th
Subject : Welding Technology (MEP -408A)
Lesson Plan Duration : 15 weeks (from Jan 2026 to May 2026)
Work Load : L-3

Week	Theory		Practical	
	Lecture day	Topic (including assignment/ test)		
1st	1	History of metal-working,		
	2	Early developments in welding, development ofmodern welding		
	3	Functions of welding in industries, application of welding in different industries		
2nd	4	Working principle of arc welding processes		
	5	Current rating and duty		
	6	Cycles classes of insulation, power factor		
3rd	7	Different types of AC and DC power sources		
	8	Arc welding transformers		
	9	Arc welding rectifiers comparison of power source, factors for selection of power sources.		
4th	10	Special power sources; universal type		
	11	Special power sources; multi-operator type		
	12	Solid state power source, Inverter based multi-process power source units.		
5th	13	Working principle of gas welding process		
	14	Gases used, welding flames pressure regulators, hoses, welding torch;		
	15	Setup and equipment, gas cylinders, handling fuel and oxygen cylinders		
6th	16	Selection of welding torch tip size, torch lighters,		

	17	Lighting equal pressure type torch, lighting injector type welding torch		
	18	Torch adjustments, shutting off torch, torch position and movements, puddling,.		
7th	19	Types of oxy-acetylene welds made without the use of welding rod and with the use of welding rod		
	20	Types of oxy-acetylene welds made without the use of welding rod and with the use of welding rod		
	21	Selection of welding rod size, welding positions		
8th	22	Trolleys, filler rod and fluxes, protective equipment and clothing.		
	23	Selection of welding rod size, welding positions		
	24	Revision		
9th	25	Non-destructive tests, destructive tests		
	26	Visual inspection, magnetic particle Inspection		
	27	Liquid particle inspection		
10th	28	Ultrasonic inspection, X-ray inspection, Eddy current inspection		
	29	Inspecting welds using pneumatic and hydraulic pressure		
	30	Bend tests, Impact tests, Laboratory methods of testing welds		
11th	31	TIG equipment for aluminium, clean the parts using caustic cleaners and scouring pads		
	32	Heat transfer in aluminium, aluminium arcing		
	33	Revision		
12th	34	Balling tungsten, welding machine settings, striking the arc		
	35	Aluminium weld procedure, square wave welders		
	36	Aluminium weld procedure, square wave welders		
13th	37	TIG welding magnesium		
	38	TIG welding aluminium cylinder heads, weld fixture.		
	39	Revision		
14th	40	Metal transfer modes, wire size,		

	41	Starting to MIG weld, aircraft seat welding,		
	42	MIG welding tips, MIG welding stainless steel		
15th	43	Revision		
	44	Stress relieving, backside protection		
	45	MIG welding titanium		

(Signature of the teacher concerned with date)