

<b>Lesson Plan</b>		
Name of Faculty : INDERJEET SINGH		
Discipline : Automobile		
Semester : 3rd ( SECTION A+B)		
Subject : WORKSHOP TECHNOLOGY-I		
Lesson Plan Duration : 15 Weeks		
Week	Theory	
	Lecture Day	Topic
1st	1st	Welding
	2nd	Welding Process Principle of welding,
	3rd	Classification of welding processes, Advantages and limitations of welding
	4th	Industrial applications of welding ,
2nd	5th	Welding positions and techniques
	6th	symbols. Safety precautions in welding.
	7th	Gas Welding Principle of operation,
	8th	Types of gas welding flames and their applications, Gas welding equipment - Gas welding torch, Oxygen cylinder, acetylene cylinder, cutting torch, Blow pipe
3rd	9th	, Pressure regulators, Filler rods and fluxes and personal safety equipment for welding.
	10th	Arc Welding Principle of operation, Arc welding machines and equipment.
	11th	A.C. and D.C. arc welding Effect of polarity, current regulation and voltage regulation
	12th	Electrodes: Classification, B.I.S. specification and selection, Flux for arc welding. Requirements of pre heating, post heating of electrodes and work piece..

4th	13th	Welding defects and their testing methods
	14th	Other Welding Processes
	15th	Resistance welding: Principle, advantages, limitations, working and applications of spot welding, seam welding,.
	16th	projection welding and percussion welding, Atomic hydrogen welding
5th	17th	Shielded metal arc welding, submerged arc welding
	18th	SESSIONAL TEST-I
	19th	Welding distortion, welding defects, methods of controlling welding defects and inspection of welded joints
	20th	Modern Welding Methods
6th	21st	Principle of operation, advantages, disadvantages and applications of
	22nd	Tungsten inert gas (TIG) welding, Metal inert gas (MIG) welding
	23rd	Thermit welding, Electro slag welding,
	24th	Electron beam welding, Ultrasonic welding, Laser beam welding, Robotic welding
7th	25th	<b>Foundry Techniques</b>
	26th	<b>Pattern Making</b> :-Types of pattern, Pattern material, Pattern allowances, Pattern codes as per B.I.S.,
	27th	Introduction to cores, core boxes and core materials
	28th	Core making procedure, Core prints, positioning of cores
8 <sup>th</sup>	29th	Moulding and Casting Moulding Sand
	30th	Properties of moulding sand,

	31st	their impact and control of properties viz. permeability
	32nd	refractoriness, adhesiveness, cohesiveness, strength flow ability, collapsibility
9 <sup>th</sup>	33rd	Various types of moulding sand, Testing of moulding sand. Safety precautions in foundry.
	34th	SESSIONAL TEST-II
	35th	Mould Making
	36th	Types of moulds, Step involved in making a mould, Molding boxes, hand tools used for mould making,
10 <sup>th</sup>	37th	Molding processes: Bench molding, floor molding, pit molding and machine molding, Molding machines squeeze machine, jolt squeeze machine and sand slinger.
	38th	Casting Processes
	39th	Charging a furnace, melting and pouring both ferrous and non ferrous metals, cleaning of castings
	40th	Principle, working and applications of Die casting: hot chamber and cold chamber, Centrifugal casting
11 <sup>th</sup>	41st	Gating and Riser System
	42nd	Elements of gating system, Pouring basin, sprue, runner, gates, Types of risers, location of risers, Directional solidification
	43	Melting Furnaces
	44	Construction and working of Pit furnace
12 <sup>th</sup>	45	Cupola furnace, Crucible furnace
	46	tilting type, Electric furnace

	47	Casting Defects
	48	Different types of casting defects, Testing of defects: radiography, magnetic particle inspection and ultrasonic inspection
13 <sup>th</sup>	49	Metal Forming Processes
	50	Press Working - Types of presses , type of dies, selection of press die, die material
	51	Press Operations-Shearing, piercing, trimming, punching, notching, shaving, gearing, embossing, stamping
	52	Forging - Open die forging, closed die forging, Press forging, upset forging, swaging, up setters, roll forging, Cold and hot forging
14 <sup>th</sup>	53	Rolling - Elementary theory of rolling, Types of rolling mills, Thread rolling, roll passes, Rolling defects and remedies
	54	Extrusion and Drawing - Type of extrusion
	55	Hot and Cold, Direct and indirect. Pipe drawing, tube drawing, wire drawing
	56	Plastic Processing
15 <sup>th</sup>	57	Industrial use of plastics, and applications- Advantages and limitations of use of plastics.
	58	Injection moulding-principle, working of injection moulding machine.
	59	Compression moulding-principle, and working of compression moulding machine
	60	SESSIONAL TEST-III