Lesson Plan

Name of the faculty: Sh. Kuldeep Singh, Lecturer in Mechanical Engg.

Branch: Mechanical

Semester: 3rd Mechanical

Subject: Workshop Technology-II

Lesson Plan Duration: 15 weeks

Work Load (Lecture/ Practical) per week (in hours): Lectures- 03

Week	Theory		Practical	
	Lecture day	Topic (including assignment / test)	Practical Day	Topic
1st	1st	Resistance welding: Principle, advantages, limitations, working and applications of spot welding and seam welding		
	2nd	Other Welding Processes: Principle, advantages, limitations, working and applications of Shielded metal arc welding, submerged arc welding. Welding defects, methods of controlling welding defects and inspection of welded joints.		
	3rd	Modern Welding Methods: Methods, Principle of operation, advantages, disadvantages and applications of, ,		
2nd	1st	Tungsten inert gas (TIG) welding, Metal inert gas (MIG) welding.		
	2nd	Thermit welding, Electro slag welding, Electron beam welding, Ultrasonic welding, Laser beam welding, Robotic welding		
	3rd	Types of pattern, Pattern material, Pattern allowances, Pattern codes as per B.I.S.		
3rd	1st	Introduction to cores, core boxes and core materials,		
	2nd	Core making procedure, Core prints, positioning of cores		
	3rd	Moulding Sand: Properties of moulding sand, their impact and control of properties viz. permeability, refractoriness, adhesiveness, cohesiveness, strength, flowability, collapsibility,		
4th	1st	Various types of moulding sand, Testing of moulding sand		
	2nd	Mould Making: Types of moulds, Step involved in making a mould, Molding boxes, hand tools used for mould making,		
	3rd	Molding processes: Bench molding, floor molding, pit molding and machine molding.		
5th	1st	Sessional		

	2nd	Sessional		
	3rd	Casting Processes: Charging a furnace, melting and pouring both ferrous and non ferrous metals, cleaning of castings,		
6th	1st	Principle, working and applications of Die casting: hot chamber and cold chamber, Centrifugal casting		
	2nd	Gating and Risering System: Elements of gating system, Pouring basin, sprue, runner, gates, Types of risers, location of risers, Directional solidification.		
	3rd	Melting Furnaces: Construction and working of Pit furnace, Cupola furnace, Crucible furnace – tilting type, Electric furnace		
7th	1st	Casting Defects: Different types of casting defects, Non destructive testing (NDT) of castings: die penetration test, radiography, magnetic particle inspection and ultrasonic inspection.		
	2nd	Revision		
	3rd	Revision		
8th	1st	Working principle and construction of shaper, slotter and planer		
	2nd	Type of shapers and slotters Type of planers Quick return mechanism applied to shaper and planer machine.		
	3rd	Work holding devices used on shaper and planer Types of tools used and their geometry.		
9th	1st	Specification of shaper and planer. Speeds and feeds in above processes.		
	2nd	Introduction to broaching Nomenclature of broach tools, types and material		
	3rd	Types of broaching machines – single ram and duplex ram horizontal type, vertical type pull up, pull down and push down.		
10th	1st	2nd Sessional		
	2nd	2nd Sessional		
	3rd	2nd Sessional		
11th	1st	Milling methods - up milling and down milling Specification and working principle of milling machine		
	2nd	Classification, brief description and applications of milling machines Details of column and knee type milling machine		
	3rd	Milling machine accessories and attachment – Arbors, adaptors, collets, vices, circular table, indexing head and tail stock, vertical milling attachment, rotary table.		
12th	1st	Identification of different milling cutters and work mandrels Work holding devices		

	2nd	Milling operations – face milling, angular milling, form milling, straddle milling and gang milling. Cutting parameters		
	3rd	Revision		
13th	1st	Importance and use of jigs and fixtures, difference between jig and fixture.		
	2nd	Principal of location Locating and clamping devices		
	3rd	Types of jigs – drilling jig, template jig and plate jig Types of fixtures – Milling and welding fixture		
14th	1st	3rd Sessional		
	2nd	3rd Sessional		
	3rd	3rd Sessional		
15th	1st	Revision		
	2nd	Revision		
	3rd	Revision		