Lesson Plan

Discipline : Mechanical Engg.
Semester : 3rd
Subject : WT- II

Week	Theory	
	Lecture Day	Topic (including assignments /tests)
Week 1	1st	Welding Processes: Resistance welding
	2nd	Introduction to spot and seam welding
	3rd	Modern welding methods – TIG, MIG
Week 2	1st	Ultrasonic welding, laser beam welding, robotic welding
	2nd	Welding Defects: Types of welding defects, methods of controlling Welding defects,
	3rd	Inspection of welding defects
Week 3	1st	Pattern Making**:** Types of pattern, Pattern material, Pattern allowances, Pattern codes as per B.I.S.,
	2nd	Introduction to cores, core boxes and core materials
	3rd	Core making procedure, Core prints, positioning of cores
Week 4	1st	Moulding and Casting: Moulding Sand: Properties of moulding sand, their impact and control of properties
	2nd	Various types of moulding sand.
	3rd	Mould Making: Types of moulds, molding boxes, Hand tools used for mould making
Week 5	1st	Molding processes
	2nd	Molding machines: squeeze machine, jolt squeeze machine and sand slinger.
	3rd	Casting Processes:Charging a furnace,
Week 6	1st	Melting and pouring both ferrous and non-ferrous metals, Cleaning of castings
	2nd	Principle, working and applications of Die casting
	3rd	Gating and Risering System: Elements of gating system, Pouring basin, sprue, runner, gates
Week 7	1st	Types of risers, location of risers, Directional solidification
	2nd	Melting Furnaces: Construction and working of Pit furnace
	3rd	Cupola furnace, Crucible furnace – tilting type, Electric furnace
Week 8	1st	Casting Defects:Different types of casting defects
	2nd	Testing of defects through magnetic particle inspection.
	3rd	Working principle of shaper,slotting and planer , Type of shapers
Week 9	1st	Type of planers ,Quick return mechanism applied to shaper and planer machine Work holding devices used on shaper and planer
	2nd	Types of tools used and their geometry. ,Specification of shaper and planer
	3rd	Speeds and feeds in above processes.
	1st	Broaching Introduction, nomenclature of broach tool
	2nd	Types of broaching machines – Single ram and duplex ram horizontal

Week 10		type
	3rd	Vertical type pull up, pull down, push down.
Week 11	1st	Milling: Specification and working principle of milling machine
	2nd	Classification, brief description and applications of milling machines
	3rd	Details of column and knee type milling machine, Milling machine accessories and attachment – Arbors, adaptors, collets, vices, circular table
Week 12	1st	indexing head and tail stock, vertical milling attachment, rotary table
	2nd	Milling methods - up milling and down milling
	3rd	Identification of different milling cutters and work mandrels, Work holding devices
Week 13	1st	Milling operations – face milling, angular milling, form milling,
	2nd	Milling operations - straddle milling and gang milling
	3rd	Cutting speed and feed, simple numerical problems
Week 14	1st	Importance and use of jigs and fixture
	2nd	Principle of location
	3rd	Locating devices, Clamping devices
Week 15	1st	Types of Jigs – Drilling jigs, bushes, template jig, plate jig, channel jig, leaf jig
	2nd	Fixture for milling, turning, welding, grinding
	3rd	Advantages of jigs and fixtures