

Lesson Plan

Name of the Faculty : Sh. Abhay Tiwari
 Discipline : Mechanical Engineering
 Semester : 3rd
 Subject : Workshop Technology-II
 Lesson Plan duration : 15 weeks (01.09.2023 to 15.12.2023)
 Work load per week : Lecture – 03, Practical – 00

Week	Theory		EXECUTION	
	Lecture Day	Topic (Including assessment/test)	Date	Sign.
1 st	1 st	UNIT I Welding 1.1 Resistance welding: Principle, advantages, limitations, working and applications of spot welding and seam welding		
	2 nd	1.2 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.		
	3 rd	1.2 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.		
2 nd	4 th	1.3 Modern Welding Methods: Methods, Principle of operation, advantages, disadvantages and applications of, Tungsten inert gas (TIG) welding, Metal inert gas (MIG) welding, Thermit welding, Electro slag welding, Electron beam welding, Ultrasonic welding, Laser beam welding, Robotic welding		
	5 th	1.3 Modern Welding Methods: Methods, Principle of operation, advantages, disadvantages and applications of, Tungsten inert gas (TIG) welding, Metal inert gas (MIG) welding, Thermit welding, Electro slag welding, Electron beam welding, Ultrasonic welding, Laser beam welding, Robotic welding		
	6 th	1.3 Modern Welding Methods: Methods, Principle of operation, advantages, disadvantages and applications of, Tungsten inert gas (TIG) welding, Metal inert gas (MIG) welding, Thermit welding, Electro slag welding, Electron beam welding, Ultrasonic welding, Laser beam welding, Robotic welding		
3 rd	7 th	UNIT II Foundry Techniques 2.1. Pattern Making Types of pattern, Pattern material, Pattern allowances, Pattern codes as per B.I.S., Introduction to cores, core		

		boxes and core materials, Core making procedure, Core prints, positioning of cores		
	8 th	2.2. Moulding and Casting Moulding Sand: Properties of moulding sand, their impact and control of properties viz. permeability, refractoriness, adhesiveness, cohesiveness, strength, flowability, collapsibility, Various types of moulding sand, Testing of moulding sand.		
	9 th	2.2. Moulding and Casting Moulding Sand: Properties of moulding sand, their impact and control of properties viz. permeability, refractoriness, adhesiveness, cohesiveness, strength, flowability, collapsibility, Various types of moulding sand, Testing of moulding sand.		
4 th	10 th	2.3 Mould Making: Types of moulds, Step involved in making a mould, Molding boxes, hand tools used for mould making, Molding processes: Bench molding, floor molding, pit molding and machine molding.		
	11 th	2.3 Mould Making: Types of moulds, Step involved in making a mould, Molding boxes, hand tools used for mould making, Molding processes: Bench molding, floor molding, pit molding and machine molding.		
	12 th	2.4 Casting Processes: Charging a furnace, melting and pouring both ferrous and non ferrous metals, cleaning of castings, Principle, working and applications of Die casting: hot chamber and cold chamber, Centrifugal casting.		
5 th	13 th	2.4 Casting Processes: Charging a furnace, melting and pouring both ferrous and non ferrous metals, cleaning of castings, Principle, working and applications of Die casting: hot chamber and cold chamber, Centrifugal casting.		
	14 th	2.5 Gating and Riser System: Elements of gating system, Pouring basin, sprue, runner, gates, Types of risers, location of risers, Directional solidification		
	15 th	2.5 Gating and Riser System: Elements of gating system, Pouring basin, sprue, runner, gates, Types of risers, location of risers, Directional solidification		
6 th	16 st	2.6 Melting Furnaces: Construction and working of Pit furnace, Cupola furnace, Crucible furnace – tilting type, Electric furnace		
	17 th	2.6 Melting Furnaces: Construction and working of Pit furnace, Cupola furnace, Crucible furnace – tilting type, Electric furnace		
	18 th	1st sessional test (Tentative)		
7 th	19 th	2.7 Casting Defects: Different types of casting defects, Non destructive testing (NDT) of castings: die penetration test, radiography, magnetic particle inspection and ultrasonic inspection		
	20 th	UNIT III Shaping, Slotting and Planing 3.1 Working principle and construction of shaper, slotter and planer		

		3.2 Type of shapers and slotters		
	21 st	3.3 Type of planers		
8 th	22 nd	3.4 Quick return mechanism applied to shaper and planer machine.		
	23 rd	3.5 Work holding devices used on shaper and planer		
	24 th	3.6 Types of tools used and their geometry. 3.7 Specification of shaper and planer		
9 th	25 th	UNIT IV Broaching 4.1 Introduction to broaching		
	26 th	4.2 Nomenclature of broach tools, types and material		
	27 th	4.3 Types of broaching machines – single ram and duplex ram horizontal type, vertical type pull up, pull down and push down		
10 th	28 th	UNIT V Milling 5.1 Milling methods - up milling and down milling		
	29 th	5.2 Specification and working principle of milling machine 5.2 Classification, brief description and applications of milling machines		
	30 th	2nd sessional test (Tentative)		
11 th	31 st	5.3 Details of column and knee type milling machine		
	32 nd	5.4 Milling machine accessories and attachment – Arbors, adaptors, collets, vices, circular table, indexing head and tail stock, vertical milling attachment, rotary table		
	33 rd	5.5 Identification of different milling cutters and work mandrels		
12 th	34 th	5.7 Work holding devices		
	35 th	5.8 Milling operations – face milling, angular milling, form milling, straddle milling and gang milling.		
	36 th	5.9 Cutting parameters		
13 th	37 th	UNIT VI Jigs and Fixtures 6.1 Importance and use of jigs and fixtures, difference between jig and fixture.		
	38 th	6.2 Principal of location		
	39 th	6.3 Locating and clamping devices		
14 th	40 th	6.4 Types of jigs – drilling jig, template jig and plate jig		
	41 st	6.5 Types of fixtures – Milling and welding fixture		
	42 nd	3rd sessional test (Tentative)		
15 th	43 rd	Revision		
	44 th	Revision		
	45 th	Revision		

