

LESSON PLAN

NAME OF FACULTY: SH. HITESH AGGARWAL

DISCIPLINE: MECHANICAL ENGINEERING

SEMESTER: 3rd

SUBJECT: WORKSHOP TECHNOLOGY-1

LESSON PLAN DURATION: From 07/09/2020 onwards

WORK LOAD (LECTURE/PRACTICAL) PER WEEK: (3 lectures)

WEEK	THEORY	
	LECTURE NOS	TOPIC
1 st	1	Unit-1- Welding Process 1.1- Principle of welding, Classification of welding processes, Advantages and limitations of welding, Industrial applications of welding
	2	Welding positions and techniques, symbols. Safety precautions in welding. 1.2- Gas Welding, Principle of operation, Types of gas welding flames and their applications
	3	Gas welding equipment - Gas welding torch, Oxygen cylinder, acetylene cylinder, cutting torch, Blow pipe, Pressure regulators,
2 nd	4	Filler rods and fluxes and personal safety equipment for welding. 1.3- Arc Welding, Principle of operation, Arc welding machines and equipment. A.C. and D.C. arc welding, Effect of polarity, current regulation and voltage regulation, Electrodes
	5	Classification, B.I.S. specification and selection, Flux for arc welding. Requirements of pre heating, post heating of electrodes and work piece. Welding defects and their testing methods. 1.4- Other Welding Processes
	6	Resistance welding: Principle, advantages, limitations working and applications of spot welding, seam welding, projection welding and percussion welding,
3 rd	7	Atomic hydrogen welding, Shielded metal arc welding, submerged arc welding, Welding distortion,
	8	welding defects, methods of controlling welding defects and inspection of welded joints
	9	1.5 Modern Welding Methods, Methods, Principle of operation,
4 th	10	Modern Welding advantages, disadvantages and applications ,Tungsten inert gas (TIG) welding
	11	Metal inert gas (MIG) welding, Thermit welding, Electro slag welding, Electron beam welding,
	12	Ultrasonic welding, Laser beam welding, Robotic welding
5 th	13	SESSIONAL TEST -I.
	14	Unit-2- Foundry Techniques ,2.1- Pattern Making, Types of pattern, Pattern material, Pattern allowances, Pattern codes as

		per B.I.S., Introduction to cores 2.2.. Moulding and Casting
	15	2.2.1. Moulding Sand, Properties of moulding sand, their impact and control of properties viz. permeability, refractoriness, adhesiveness
6 th	16	cohesiveness, strength, flow ability, collapsibility, Various types of moulding sand, Testing of moulding sand. Safety precautions in foundry.
	17	2.2.2. Mould Making-Types of moulds, Step involved in making a mould, Molding boxes, hand tools used for mould making,
	18	Molding processes: Bench molding, floor molding, pit molding and machine molding, Molding machines squeeze machine, jolt squeeze machine and sand slinger.
7 th	19	2.2.3 Casting Processes- Charging a furnace, melting and pouring both ferrous and non ferrous metals, cleaning of castings,
	20	Principle, working and applications of Die casting: hot chamber and cold chamber, Centrifugal casting
	21	2.2.4. Gating and Riser System --Elements of gating system, Pouring basin, sprue, runner, gates,
8 th	22	Types of risers, location of risers, Directional solidification
	23	2.2.5 Melting Furnaces --Construction and working of Pit furnace, Cupola furnace, Crucible furnace – tilting type, Electric furnace
	24	2.2.6 Casting Defects Different types of casting defects, Testing of defects: radiography, magnetic particle inspection and ultrasonic inspection
9 th	25	SESSIONAL TEST –II
	26	Unit-3- Metal Forming Processes-3.1 Press Working - Types of presses, type of dies, selection of press die, die material.
	27	Press Operations-Shearing, piercing, trimming, punching, notching, shaving, gearing, embossing, stamping
10 th	28	3.2 Forging - Open die forging, closed die forging, Press forging, upset forging,
	29	swaging, up setters, roll forging, Cold and hot forging 3.3 Rolling - Elementary theory of rolling
	30	Types of rolling mills, Thread rolling, roll passes, Rolling defects and remedies
11 th	31	3.4 Extrusion and Drawing - Type of extrusion- Hot and Cold, Direct and indirect.
	32	Pipe drawing, tube drawing, wire drawing
	33	Unit-4 Plastic Processing
12 th	34	4.1 Industrial use of plastics, and applications- Advantages and limitations of ,use of plastics.
	35	4.2 Injection moulding-principle, working of injection moulding machine.
	36	4.3 Compression moulding-principle, and working of compression moulding machine.

13th	37	SESSIONAL TEST –III
	38	Revised Sessional Test -1
	39	Revised Sessional Test -2
14th	40	Revised Sessional Test -3