LESSON PLAN

NAME OF FACULTY : Hardeep

DISCIPLINE : MECHANICAL ENGINEERING

SEMESTER : 3rd

SUBJECT : WORKSHOP TECHNOLOGY-I

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

Duration of LP: 15 Weeks(15 sept. 2022 to 16 January, 2023)

Week	THEORY	
	Lect. No.	TOPIC
1st	1	**Unit-1- Welding Process** 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. 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,
2nd	4	Filler rods and fluxes and personal safety equipment for welding. - 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
	5	Electrodes, Classification, B.I.S. specification and selection, Flux for arc welding. Requirements of preheating, post heating of electrodes and work piece. Welding defects and their testing methods. Other Welding Processes
	6	Resistance welding: Principle, advantages, limitations workingand applications of spot welding, seam welding, projection welding and percussion welding,
3rd	7	Atomic hydrogen welding, Shielded metal arc welding, submerged arc welding, Welding distortion,
	8	welding defects, methods of controlling welding defects andinspection of welded joints
	9	Modern Welding Methods, Methods, Principle of operation
4th	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
5th	13	**SESSIONAL TEST -I**.
	14	**Unit-2- Foundry Techniques** Pattern Making, Types of pattern, Pattern material, Pattern allowances, Pattern codes as

		per B.I.S., Introduction to cores Moulding and Casting
	15	Moulding Sand, Properties of moulding sand, theirimpact and control of properties viz. permeability, refractoriness, adhesiveness
6th	**16**	cohesiveness, strength, flow ability, collapsibility, Various types of moulding sand, Testing of moulding sand. Safety precautions in foundry.
	17	Mould Making-Types of moulds, Step involved inmaking a mould, Molding boxes, hand tools used for mouldmaking,
	18	Molding processes: Bench molding, floor molding, pit moldingand machine molding, Molding machines squeeze machine, jolt squeeze machine and sand slinger.
7th	**19**	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	Gating and Risering System-Elements of gating system, Pouring basin, sprue, runner, gates,
8th	**22**	Types of risers, location of risers, Directional solidification
	23	Melting Furnaces --Construction and working of Pit furnace, Cupola furnace
	24	Melting Furnaces --Construction and working, Crucible furnace – tilting type Electric furnace
9th	**25**	Casting Defects Different types of casting defects
	26	Testing of defects: radiography, magnetic particle inspection and ultrasonic inspection
	27	**SESSIONAL TEST –II**
10th	**28**	**Unit-3- Metal Forming Processes**-Press Working – Types of presses, type of dies, selection of press die, die material.
	29	Press Operations-Shearing, piercing, trimming, punching, notching, shaving, gearing, embossing, stamping
	30	Forging - Open die forging, closed die forging,
11th	**31**	Pressforging, upset forging,
	32	swaging, up setters, roll forging, Cold and hot forging
	33	Rolling Elementary theory of rolling
12th	**34**	Types of rolling mills, Thread rolling, roll passes
	35	Rolling defects and remedies
	36	Extrusion and Drawing - Type of extrusion- Hot and Cold
13th	**37**	Type of extrusion- Direct and indirect.
	38	Pipe drawing, tube drawing, wire drawing
	39	**Unit-4 Plastic Processing** Industrial use of plastics, and applications- Advantages and limitations of ,use of plastics.
14th	**40**	Injection moulding-principle, working of injection moulding machine.
	41	Compression moulding-principle and working ofcompression moudling machine.
	42	**SESSIONAL TEST –III**
15th	**43**	**Revised Sessional Test -1**
	44	**Revised Sessional Test -2**
	45	**Revised Sessional Test -3**