Lesson Plan

Name of the faculty: Sh. Kuldeep Singh & Sh. Sombir (Lecturer)

Discipline: Mechanical

Semester: 4th Mechanical A & B

Subject: Workshop Technology-III

Lesson Plan Duration: 15 weeks (January 2025 to May 2025)

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

Week	Theory		Practical	
	Lecture day	Topic (including assignment / test)	Practical Day	Topic
1st	1st	Gear materials and specifications, Gear manufacturing by Casting, Moulding		
	2nd	Stamping, Machining; Gear generating methods: Gear Shaping with pinion cutter & rack cutter		
	3rd	Revision		
2nd	1st	Gear hobbing; Description of gear hob; Operation of gear hobbing machine		
	2nd	Gear finishing processes		
	3rd	Revision		
3rd	1st	Principles of metal removal by Grinding; Abrasives – Natural & Artificial		
	2nd	Bonds and binding processes: Vitrified, silicate, shellac, rubber, bakelite		
	3rd	Revision		
4th	1st	Factors affecting the selection of grind wheels: size and shape of wheel		
	2nd	kind of abrasive, grain size, grade and strength of bond, structure of grain, spacing, kinds of bind material		
	3rd	Revision		
5th	1st	Standard marking systems: Meaning of letters & numbers sequence of marking, Grades of letters		
	2nd	Truing, dressing, balancing and mounting of wheel. Selection of		

		grinding wheel		
	3rd	Revision		
6th	1st	Grinding machines classification: Cylindrical, Surface		
	2nd	Tool & Cutter grinding machines; Construction details; Principle of centreless grinding		
	3rd	Revision		
7th	1st	Advantages & limitations of centreless grinding		
	2nd	Introduction – comparison with traditional machining; Ultrasonic Machining: principle, Description of equipment, applications; Electric Discharge Machining (EDM)		
	3rd	Revision		
8th	1st	Principle, Description of equipment, Dielectric fluid, tools (electrodes), Process parameters		
	2nd	Output characteristics, applications. Wire cut EDM		
	3rd	Revision		
9th	1st	Principle, Description of equipment, Controlling parameters; applications; Abrasive Jet Machining: principle		
	2nd	description of equipment, application; Laser Beam Machining: principle, description of equipment, application		
	3rd	Revision		
10th	1st	Electro Chemical Machining: description of equipment, application		
	2nd	Press Working - Types of presses, type of dies and punches, selection of press die, die material		
	3rd	Press Operations-Shearing, piercing, trimming, punching, notching, shaving, gearing, embossing, stamping		
11th	1st	Forging - Open die forging, closed die forging, Press forging, upset forging, swaging, up setters, roll forging, Cold and hot forging		
	2nd	Rolling - Elementary theory of rolling, Types of rolling mills,		

		Thread rolling, roll passes, Rolling defects and remedies		
	3rd	Extrusion and Drawing - Type of extrusion- Hot and Cold, Direct and indirect. Pipe drawing, tube drawing, wire drawing		
12th	1st	Purpose of finishing surfaces. Surface roughness-Definition and units, Honing Process, its applications, Description of hones		
	2nd	Brief idea of honing machines. Lapping process, its applications		
	3rd	Revision		
13th	1st	Description of lapping compounds and tools. Brief idea of lapping machines		
	2nd	Polishing, Buffing, Burnishing and super finishing		
	3rd	Revision		
14th	1st	Metal spraying – Wire process, powder coating process, applications, Electroplating		
	2nd	Basic principles, Plating metals, applications; Hot dipping		
	3rd	Revision		
15th	1st	Galvanizing, Tin coating, Parkerising, Anodizing. Organic coatings		
	2nd	Oil base Paint, Lacquer base, Enamels, Bituminous paints, rubber base coating; Finishing specifications		
	3rd	Revision		