Lesson Plan

Name of the faculty: Sh. Vikash Dahiya Lecturer (Mechanical engineering)

Discipline: Mechanical

Semester: 2nd Mechanical A & B

Subject: Workshop Technology-I

Lesson Plan Duration: 15 weeks (From March 2022 to June 2022)

Work Load (Lecture/ Practical) per week (in hours): Lecturers- 01,

Week	Theory		Practical	
	Lecture day	Topic (including assignment / test)	Practical Day	Topic
1st	1st	Chisels – Types and uses of chisels, wood working chisels, metal working chisels – cold chisel, hard chisel, stone chisel, masonry chisel.		
	2nd	Hammers – Types, Basic design and variations, Physics of hammering, Hammer as force multiplier, effect of head's mass, effect of handle.		
	3rd	Saw – Saw terminology, types of saws, types of saw blades, material used for saw, Hacksaw frame and its types.		
2nd	1st	Pliers – Function and types. Wrenches/ Spanners – Common General wrenches/spanners, Specialized wrenches/spanners, Surface plate, V block, files, Surface Gauge.		
	2nd	Calipers – Types – Inside, outside, divider, Odd leg caliper.		
	3rd	Vernier Caliper- Parts, uses, checking error, least count, working principle.		
3rd	1st	Outside micrometer - Introduction, parts, Principle, Least count, Checking zero error.		
	2nd	Cutting Tools - Various types		

		of single point cutting tools and their uses,		
	3rd	Single point cutting tool geometry, tool signature and its effect, Heat produced during cutting and its effect, Cutting speed, feed and depth of cut and their effect.		
4th	1st	Cutting Tool Materials - Properties of cutting tool material, Study of various cutting tool materials viz.		
	2nd	High-speed steel, tungsten carbide, cobalt steel cemented carbides, stellite, ceramics and diamond.		
	3rd	Welding Process - Principle of welding, Classification of welding processes, Advantages and limitations of welding,		
5th	1st	Industrial applications of welding, Welding positions and techniques, symbols. Safety precautions in welding.		
	2nd	Gas Welding - Principle of operation, Types of gas welding flames and their applications, Gas welding equipment - Gas welding torch, Oxygen cylinder,		
	3rd	acetylene cylinder, cutting torch, Blow pipe, Pressure regulators, Filler rods and fluxes and personal safety equipment for welding.		
6th	1st	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: Classification,		
	2nd	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.		
	3rd	Principle of turning, Description and function of various parts of a lathe. Classification and specification of various types of lathe, Drives and transmission, Work holding devices.		
7th	1st	Lathe tools: Parameters/Nomenclature and applications. Lathe operations - Plain and step turning, facing, parting off, taper turning, eccentric turning, drilling, reaming, boring, threading and knurling, form turning, spinning.		
	2nd	Cutting parameters – Speed, feed and depth of cut for various materials and for various operations, machining time.		
	3rd	machining time. Speed ratio, preferred numbers of speed selection. Lathe accessories:-		
8th	1st	Centers, dogs, different types of chucks, collets, face plate, angle plate, mandrel, steady rest, follower		
	2nd	rest, taper turning attachment, tool post grinder, milling attachment, Quick change device for tools.		
	3rd	Brief description of capstan and turret lathe, comparison of capstan/turret lathe, work holding and tool guiding devices in capstan and turret lathe.		
9th	1st	Principle of drilling. Classification of drilling machines and their description. Various operation performed on drilling machine		
	2nd	– drilling, spot facing, reaming, boring, counter boring, counter sinking,		
	3rd	hole milling, tapping. Speeds and feeds during drilling,		

		impact of these parameters on drilling,		
10th	1st	machining time. Types of drills and their features, nomenclature of a drill.		
	2nd	Drill holding devices. Types of reamers.		
	3rd	Principle of boring, Classification of boring machines		
11th	1st	their brief description. Specification of boring machines.		
	2nd	Boring tools, boring bars and boring heads.		
	3rd	Description ofjig boring machine.		
12th	1st	Function of cutting fluid,		
	2nd	Types of cutting fluids,		
	3rd	Difference between cutting fluid and lubricant,		
13th	1st	Selection of cutting fluids for different materials and operations,		
	2nd	Common methods of lubrication of machine tools,		
	3rd	Certifying Organizations (such as SAE, ASTM) forrating standards of lubricants.		
14th	1st	Welding Process - Principle of welding, Classification of welding processes, Advantages and limitations of welding,		
	2nd	Gas Welding - Principle of operation, Types of gas welding flames and their applications, Gas welding equipment - Gas welding torch,		
	3rd	Pressure regulators, Filler rods and fluxes and personal safety equipment for welding.		
15th	1st	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,		
	2nd	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.		
	3rd	Gas Welding - Principle of operation, Types of gas welding flames and their applications, Gas welding equipment - Gas welding torch, Oxygen cylinder, acetylene cylinder, cutting torch, Blow pipe,		