

## Lesson Plan

Name of the Faculty : Amit Phogat  
 Discipline : Mech. Engg.  
 Semester : 2nd  
 Subject : WT-1  
 Lesson plan duration : 06 March 2023 to 23 June 2023

Week	Theory	
	Lecture Day	Topic (including assignments /tests)
Week-1	1 <sup>st</sup>	<b>Hand Tools Chisels – Types and uses of chisels, wood working chisels, metal working chisels – cold chisel, hard chisel, stone chisel, masonry chisel. Hammers,</b>
	2 <sup>nd</sup>	Types, Basic design and variations, Physics of hammering, Hammer as force multiplier, effect of head's mass, effect of handle.
	3 <sup>rd</sup>	<b>Saw – Saw terminology, types of saws, types of saw blades, material used for saw,</b>
Week 2	1 <sup>st</sup>	Hacksaw frame and its types. Pliers – Function and types. Wrenches/ Spanners – Common General wrenches.
	2 <sup>nd</sup>	Measuring Instruments Calipers – Types – Inside, outside, divider, Odd leg caliper. Vernier Caliper- Parts
	3 <sup>rd</sup>	checking error, least count, working principle. Outside micrometer - Introduction, parts, Principle
Week 3	1 <sup>st</sup>	Checking zero error
	2 <sup>nd</sup>	Cutting Tools and Cutting Materials Cutting Tools - Various types of single point cutting tools and their uses
	3 <sup>rd</sup>	Single point cutting tool geometry, tool signature and its effect, Heat produced during cutting and its effect
Week4	1 <sup>st</sup>	Cutting speed, feed and depth of cut and their effect.
	2 <sup>nd</sup>	<b>Cutting Tool Materials - Properties of cutting tool material, Study of various cutting tool materials</b>
	3 <sup>rd</sup>	High-speed steel, tungsten carbide, cobalt steel cemented carbides,

		stellite, ceramics and diamond.
Week 5	1 <sup>st</sup>	Welding Process - Principle of welding, Classification of welding processes, Advantages
	2 <sup>nd</sup>	limitations of welding, Industrial applications of welding
	3 <sup>rd</sup>	Welding positions and techniques, symbols. Safety precautions in welding.
Week 6	1 <sup>st</sup>	Gas Welding - Principle of operation, Types of gas welding flames and their applications, Gas welding equipment
	2 <sup>nd</sup>	Filler rods and fluxes and personal safety equipment for welding
	3 <sup>rd</sup>	Arc Welding - Principle of operation, Arc welding machines and equipment.
Week 7	1 <sup>st</sup>	Effect of polarity, current regulation and voltage regulation
	2 <sup>nd</sup>	Electrodes: Classification
	3 <sup>rd</sup>	Flux for arc welding. Requirements of pre heating
Week 8	1 <sup>st</sup>	Welding defects and their testing methods
	2 <sup>nd</sup>	Lathe Principle of turning, Description and function of various parts of a lathe
	3 <sup>rd</sup>	Lathe Principle of turning, Description and function of various parts of a lathe
Week 9	1 <sup>st</sup>	Drives and transmission, Work holding devices
	2 <sup>nd</sup>	Parameters/Nomenclature and applications. Lathe operations - Plain and step turning, facing, parting off, taper turning, eccentric turning, drilling, reaming, boring, threading and knurling,
	3 <sup>rd</sup>	form turning, spinning. Cutting parameters – Speed, feed and depth of cut for various materials
Week 10	1 <sup>st</sup>	Lathe accessories:- Centers, dogs, different types of chucks, collets, face plate, angle plate, mandrel, steady

	2 <sup>nd</sup>	<b>Brief description of capstan and turret lathe, comparison of capstan/turret lathe, work holding and tool guiding devices in capstan and turret lathe.</b>
	3 <sup>rd</sup>	Drilling Principle of drilling. Classification of drilling machines and their description
Week 11	1 <sup>st</sup>	Various operation performed on drilling machine – drilling, spot facing, reaming, boring, counter boring, counter sinking
	2 <sup>nd</sup>	Speeds and feeds during drilling, impact of these parameters on drilling, machining time
	3 <sup>rd</sup>	Types of drills and their features, nomenclature of a drill. Drill holding devices. Types of reamers.
Week 12	1 <sup>st</sup>	<b>Boring Principle of boring, Classification of boring machines</b>
	2 <sup>nd</sup>	their brief description. Specification of boring machines. Boring tools, boring bars and boring heads
	3 <sup>rd</sup>	Description of jig boring machine
Week 13	1 <sup>st</sup>	Cutting Fluids and Lubricants Function of cutting fluid,
	2 <sup>nd</sup>	<b>Types of cutting fluids, Difference between cutting fluid and lubricant</b>
	3 <sup>rd</sup>	Selection of cutting fluids for different materials and operations
Week 14	1 <sup>st</sup>	Common methods of lubrication of machine tools
	2 <sup>nd</sup>	Certifying Organizations (such as SAE, ASTM) for rating standards of lubricants
	3 <sup>rd</sup>	Description of jig boring machine
	1 <sup>st</sup>	Types of cutting fluids, Difference between cutting
	2 <sup>nd</sup>	cutting fluids for different materials

Week 15		and operations
	3 <sup>rd</sup>	SAE, ASTM
Week 16	1 <sup>st</sup>	for rating standards of lubricants
	2 <sup>nd</sup>	machines and their brief description
	3 <sup>rd</sup>	Revision of above syllabus