

## DETAILED TEACHING PLAN (NOV-DEC-2024)

Lecture No	Unit no	Topic to be covered	Planned Date	Execution Date	Remarks
	Unit 1.0 Metal cutting	1.1 Cutting Tools – types, requirements, specification & application of different cutting tools, cutting tool materials – high carbon steels, high speed steels, non-ferrous cast alloys, cemented carbides, ceramics, diamond, Cubic Boron Nitride, properties and applications	28/08/24 to 30/08/24	28/08/2024 to 30/08/2024	
		1.2 Geometry of Single Point Cutting Tool - Tool angle, Tool geometry and influence of tool angles, tool signature, Tool angle specification system, ASA, ORS and inter-relationship.	31/08/2024 03/09/2024 04/09/2024	31/08/24 03/09/24 04/09/24	
		1.3 Mechanics of Metal Cutting - Theories of metal cutting, Chip formation, types of chips, BUE formation condition and its effect upon surface finish, chip breakers, Orthogonal and Oblique cutting, stress and strain in the chip, velocity relations, power and energy requirement in metal cutting.	09/09/2024 10/09/2024 11/09/2024	09/09/2024 10/09/2024 11/09/2024	
	Unit 2.0 Mechanics of machining	2.1 Cutting forces and tool life - Forces acting on the cutting tool and their measurement, Merchant's circle diagram, dynamometer, force and velocity relationship, Tool wear, Factors causing wear, tool life, tool life equation, variables affecting tool life, Cutting parameters - speed, feed, depth of cut and machining time, economical cutting speed.	12/09/2024 13/09/2024 17/09/2024	12/09/2024 13/09/2024 17/09/2024	
		2.2 Machinability - Concept and evaluation of Machinability, Mechanism of Tool failure, Machinability index, factors affecting machinability.	18/09/2024 19/09/2024 20/09/2024	18/09/2024 19/09/2024 20/09/2024	
		2.3 Thermal Aspects in Machining- Sources of heat generation in machining and its effects, Temperature Measurement techniques in machining, types of cutting fluids, Functions of cutting fluid, Characteristics of cutting fluid, Application of cutting fluids.	21/09/2024 23/09/2024 24/09/2024	21/09/2024 23/09/2024 24/09/2024	
		3.1 Shaper: Principle of operation, classification, specification, Basic parts and their functions and Applications, safety precautions.	25/09/2024 27/09/2024 28/09/2024	25/09/2024 27/09/2024 28/09/2024	
		3.2 Slotter: Principle of working, classification, specification. Basic parts of Slotting machine and their functions and Applications, safety precautions.	03/10/24 04/10/24 07/10/24	03/10/24 04/10/24 07/10/24	

Unit 3.0 Shaper, Planner and Drilling machine	3.3 Planer: Principle of operation, Classification, Basic parts and their functions, Specifications and Applications, safety precautions.	08/10/24 14/10/24 15/10/24	08/10/24 14/10/24 15/10/24
	3.4 Drilling, Reaming & Boring: Drilling: Principle of operation, Classification, Basic parts and functions, drill nomenclature, other operations like counter boring, counter sinking, spot facing etc. Reaming: Principle of operation, description of reamers, and types of reaming operations, safety precautions, Boring: Principle of operation, Classification of boring machines, Basic parts and functions, boring operations, boring tools and applications, safety precautions.	16/10/24 19/10/24 21/10/24 23/10/24 24/10/24	16/10/24 19/10/24 21/10/24 23/10/24 24/10/24
Unit 4.0 Milling and Broaching operations	4.1 Milling: Principle of operation, Classification of milling machines, Basic parts and their functions, Specifications	25/10/24 05/11/24	25/10/24 05/10/24
	4.2 Milling cutters – Different types of cutters used in milling, face milling cutter, end milling cutter, Staggered tooth milling cutter, side and face milling cutter, form milling cutters, metal slitting saw etc.	08/11/24 16/11/24	08/11/24 16/11/24
	4.3 Milling operations – Plain milling, face milling, side milling, end milling, straddle milling, gang milling, slotting, slitting, Up milling and down milling, safety precautions.	18/11/24 19/11/24	18/11/24 19/11/24
	4.4 Dividing head – types, function of dividing head, method of indexing, index plates.	20/11/24 21/11/24	20/11/24 20/11/24
	4.5 Broaching: Principle of operation, types of broaches- horizontal, vertical, pull, surface-internal and external broaching machines, Basic	22/11/24 25/11/24	22/11/24 25/11/24
Unit 5.0 Grinding and Finishing Processes	5.1 Grinder and types of grinding wheel, Types of abrasive materials and their properties, Bonding materials, Grinding wheel classification, condition for selection of grinding wheels, balancing of grinding wheels, glazing, loading dressing and Truing. Designation of grinding wheel	28/11/24 30/11/24	28/11/24 30/11/24
	5.2 Principles of working of grinding machines and functions of main parts, types of grinding processes, function of tool and work holding devices, Table drive in surface and cylindrical grinders, Types of lubricants and coolants	01/12/24 03/12/24 04/12/24	01/12/24 03/12/24 04/12/24
Unit 6- Installation and Testing of Machine Tools	6.1 Foundations, leveling and alignment, Factors affecting the working accuracy of machine tools, Acceptance tests for lathe, Test Charts.	05/12/24 06/12/24 09/12/24 10/12/24	05/12/24 06/12/24 09/12/24 10/12/24

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