



## LESSON PLAN

**DISCIPLINE: MECHANICAL ENGINEERING SEMESTER: V**

**SUBJECT: WORKSHOP TECHNOLOGY - III**

**LESSON PLAN DURATION: 15 WEEKS**

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

WEEK	THEORY	
	LECTURE NOS	TOPIC
1 <sup>st</sup>	1	<b>Unit-1-</b> Milling, Specification and working principle of milling machine Classification, brief description and applications of milling machine
	2	Main parts of column and knee type milling machine, Milling machine accessories and attachment – Arbors, adaptors, collets, vices, circular table, indexing head and tail stock,
	3	vertical milling attachment, Milling methods - up milling and down milling, Identification of different milling cutters and work mandrels
2 <sup>nd</sup>	4	Work holding devices, Milling operations – face milling, angular milling, form milling,
	5	straddle milling and gang milling, Cutting parameters
	6	Indexing on dividing heads, plain and universal dividing heads.
3 <sup>rd</sup>	7	Indexing methods: direct, Plain or simple, compound
	8	differential and angular indexing, numerical problems on indexing
	9	<b>Unit-2-</b> Grinding, Purpose of grinding
4 <sup>th</sup>	10	Various elements of grinding wheel – Abrasive, Grade, structure, Bond
	11	Common wheel shapes and types of wheel – built up wheels, mounted wheels and Diamond wheels.
	12	Specification of grinding wheels as per BIS
5 <sup>th</sup>	13	<b>SESSIONAL TEST –I</b>
	14	<b>Unit-2-</b> Truing, dressing, balancing and mounting of wheel.
	15	2.5 Grinding methods – Surface grinding, cylindrical grinding and centreless grinding.
6 <sup>th</sup>	16	2.6 Grinding machine – Cylindrical grinder, surface grinder, internal grinder, Centreless grinder, tool and cutter grinder.
	17	2.7 Selection of grinding wheel
	18	<b>Unit-3-</b> Gear Manufacturing and Finishing Processes

		3.1 Gear hobbing 3.2 Gear shaping
7 <sup>th</sup>	19	<b>Unit-4-Modern Machining Processes-</b> Mechanical Process - Ultrasonic machining (USM): Introduction, principle, process,
	20	advantages and limitations, applications(USM) Electro Chemical Processes - Electro chemical machining (ECM) – Fundamental principle, process, applications
	21	Electro chemical Grinding (ECG) – Fundamental principle, process, application, Electrical Discharge Machining (EDM) - Introduction, basic EDM circuit, Principle,
8 <sup>th</sup>	22	metal removing rate, dielectric fluid, applications
	23	Laser beam machining (LBM) – Introduction, machining process and applications
	24	Electro beam machining (EBM)- Introduction, principle, process and applications
9 <sup>th</sup>	25	<b>SESSIONAL TEST -II</b>
	26	<b>Unit-5- Metallic Coating Processes-Metal spraying – Wire process</b>
	27	powder process, applications , Powder coating
10 <sup>th</sup>	28	<b>Unit-6-Metal Finishing Processes, Purpose of finishing surfaces</b>
	29	Surface roughness-Definition and units, Honing Process, its applications
	30	Description of hones, Brief idea of honing machines.
11 <sup>th</sup>	31	Lapping process, its applications.
	32	Description of lapping compounds and tools
	33	Brief idea of lapping machines
12 <sup>th</sup>	34	Super finishing process, its applications
	35	Polishing
	36	Buffing
13 <sup>th</sup>	37	<b>SESSIONAL TEST -III</b>
	38	<b>Revised Sessional Test -1</b>
	39	<b>Revised Sessional Test -2</b>
14 <sup>th</sup>	40	<b>Revised Sessional Test -3</b>
	41	Seminar
	42	Seminar
15 <sup>th</sup>	43	Any Other Query