"PVCNSSK" G.P BILASPUR AT KALOL (H.P)

PLANNED SYLLABUS COVRAGE

Department: Mechanical Engg. Subject – Manufacturing Engineering

Course - Diploma **Duration – 3 Years**

SYLLABUS COVERAGE **Total Periods -56** **Theory –56 hours**

Sr No	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1	1-11	**Cutting Fluids & Lubricants**	Introduction; Types of cutting fluids, Fluids and coolants required in turning, drilling, shaping, sawing & broaching; Selection of cutting fluids, methods of application of cutting fluid; Classification of lubricants(solid, liquid, gaseous), Properties and applications of lubricants. Lathe Operations: Types of lathes – light duty, Medium duty and heavy duty geared lathe, CNC lathe (Concept only); Specifications; Basic parts and their functions; Operations and tools–Turning, parting off, Knurling, facing, Boring, drilling, threading, step turning, taper turning.	Workshop Technology by R.S Khurmi		
2.	12-22	**Broaching Machines**	Introduction to broaching; Types of broaching machines–Horizontal type (Single ram & duplex ram), Vertical type, Pull up, pull down, and push down; Elements of broach tool; Nomenclature; Tool materials for broaching. Drilling: Classification; Basic parts and their functions; Radial drilling machine; Types of operations; Specifications of drilling machine; Types of drills and reamers.	Workshop Technology by OP Khana		
3	23-34	**Welding**	Classification; Gas welding techniques; Types of welding flames; Arc Welding – Principle, Equipment, Applications; Shielded metal arc welding; Submerged arc welding; TIG / MIG welding; Resistance welding - Spot welding, Seam welding, Projection welding; Welding defects; Brazing and soldering. Milling: Introduction; Types of milling machines: plain, Universal, vertical; constructional details specifications; Milling operations: simple, compound and differential indexing (No Numerical); Milling cutters –types; Teeth materials; Tool signature in ASA; Tool & work holding devices.	Welding Technology by OP Khana		

SYLLABUS COVERAGE	Total Periods:56			Theory:56		
Sr No	**Period Nos**	**Topic**	**Details**	**Instruction Reference**	**Additional Study Recommend**	**Remark**
4	35-46	Gear Making	Manufacture of gears–by Casting, Moulding, Stamping, Coining, Extruding, Rolling, Machining; Gear generating methods: Gear Shaping with pinion cutter & rack cutter; Gear hobbing; Description of gear hob; Operation of gear hobbing machine; Gear finishing processes; Gear materials and specification; Heat treatment processes applied to gears. Press working (derivations and problems omitted): Types of presses and Specifications, Press working operations- Cutting, bending, drawing, punching, blanking, notching, lancing; Die set components- punch and die shoe, guide pin, bolster plate, stripper, stock guide, feed stock, pilot; Punch and die clearances for blanking and piercing, effect of clearance.	Workshop Technology by BS Raghuvanshi,		
5	47-56	Grinding and finishing processes:	Principles of metal removal by Grinding; Abrasives –Natural & Artificial; Bonds and binding processes: Vitrified, silicate, shellac, rubber, bakelite; Factors affecting the selection of grind wheels: size and shape of wheel, kind of abrasive, grain size, grade and strength of bond, structure of grain, spacing, kinds of bind material; Grinding machines classification: Cylindrical, Surface, Tool & Cutter grinding machines; Construction details; Principle of centerless grinding; Advantages & limitations of centerless grinding; Finishing by grinding: Honing, Lapping, Super finishing; Electroplating: Basic principles,Plating metals, applications; Hot dipping: Galvanizing, Tin coating, Parkerising, Anodizing; Metal spraying: wire process, powder process and applications; Organic coatings:;Finishing specifications.	Elements of Workshop Technology by SK Chaudhary &Hajra,		

APPROVED	SIGN HOD
DATE :- 01/08/2025	