# "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 | Remarks |
| 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 :- 01/08/2024 | |