**Lesson Plan**

**Name of faculty:- Mr. Harish Kumar**

**Discipline:- Mechanical Engineering Semester:- 2nd**

**Subject**:- **Workshop Technology I** **Theory**

**Lesson Plan Duration:- 15 weeks (from 15 February 2024 to 14 June 2024)**

**Work Load:- Lectures-3**

| **WEEK** | **THEORY** | **Sign. & date** |
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| **DAY** | **TOPIC** |  |
| 1st | 1st | Unit -1. Hand Tools Chisels – Types and uses of chisels, wood working chisels, metal working chisels – cold chisel, hard chisel, stone chisel, masonry chisel.  |  |
| 2nd | Hammers – Types, Basic design and variations, Physics of hammering, Hammer as force multiplier, effect of head’s mass, effect of handle.  |  |
| 3rd | Saw – Saw terminology, types of saws, types of saw blades, material used for saw, Hacksaw frame and its types.  |  |
| 2nd  | 1st | Pliers – Function and types. Wrenches/ Spanners – Common General wrenches/spanners, Specialized wrenches/spanners, Surface plate, V block, files, Surface Gauge |  |
| 2nd | 2. Measuring Instruments Calipers – Types – Inside, outside, divider,  |  |
| 3rd | Odd leg caliper. Vernier Caliper- Parts, uses, checking error, least count, working principle.  |  |
| 3rd | 1st | Outside micrometer - Introduction, parts, Principle, Least count, Checking zero error. |  |
| 2nd | Unit II: 3: Cutting Tools and Cutting Materials Cutting Tools - Various types of single point cutting tools and their uses, Single point cutting tool geometry |  |
| 3rd | , tool signature and its effect, Heat produced during cutting and its effect,  |  |
| 4th | 1st | Cutting speed, feed and depth of cut and their effect. Cutting Tool Materials - Properties of cutting tool material,  |  |
| 2nd | Study of various cutting tool materials viz. High-speed steel, tungsten carbide, cobalt steel cemented carbides, stellite, ceramics and diamond. |  |
| 3rd | UNIT III -4. Welding Welding Process - Principle of welding, Classification of welding processes, Advantages and limitations of welding,  |  |
| 5th | 1st | **1st Sessional** |  |
| 2nd |
| 3rd |
| 6th | 1st | Industrial applications of welding, Welding positions and techniques, symbols.  |  |
| 2nd | Safety precautions in welding. Gas Welding - Principle of operation, Types of gas welding flames and their applications,  |  |
| 3rd | Gas welding equipment - Gas welding torch, Oxygen cylinder, acetylene cylinder, cutting torch, Blow pipe, Pressure regulators, Filler rods and fluxes and personal safety equipment for welding.  |  |
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| 7th | 1st | Arc Welding - Principle of operation, Arc welding machines and equipment.  |  |
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| 2nd | A.C. and D.C. arc welding, Effect of polarity, current regulation and voltage regulation,  |  |
| 3rd | Electrodes: Classification, B.I.S. specification and selection, Flux for arc welding. Requirements of pre heating, post heating of electrodes and work piece. Welding defects and their testing methods |  |
| 8th | 1st | UNIT IV : 5. Lathe Principle of turning, Description and function of various parts of a lathe. Classification and specification of various types of lathe, Drives and transmission, Work holding devices. Lathe tools: Parameters/Nomenclature and applications. |  |
| 2nd | Lathe operations - Plain and step turning, facing, parting off, taper turning, eccentric turning, drilling, reaming, boring, threading and knurling, form turning, spinning. |  |
| 3rd | Cutting parameters – Speed, feed and depth of cut for various materials and for various operations, machining time. Speed ratio, preferred numbers of speed selection |  |
| 9th | 1st | . Lathe accessories:- Centers, dogs, different types of chucks, collets, face plate, angle plate, mandrel, steady rest, follower Principle of turning, Description and function of various parts of a lathe. Classification and specification of various types of lathe, Drives and transmission, Work holding devices. Lathe tools: Parameters/Nomenclature and applications. |  |
| 2nd | Lathe operations - Plain and step turning, facing, parting off, taper turning, eccentric turning, drilling, reaming, boring, threading and knurling, form turning, spinning. Cutting parameters – Speed, feed and depth of cut for various materials and for various operations, machining time. |  |
| 3rd | Speed ratio, preferred numbers of speed selection. Lathe accessories:- Centers, dogs, different types of chucks, collets, face plate, angle plate, mandrel, steady rest, follower |  |
| 10th | 1st | **2nd Sessional** |  |
|  | 2nd |
| 3rd |
| 11th | 1st | UNIT V : 6. Drilling Principle of drilling. Classification of drilling machines and their description. Various operation performed on drilling machine – drilling, spot facing, reaming, boring, counter boring, counter sinking, hole milling, tapping.  |  |
| 2nd | Speeds and feeds during drilling, impact of these parameters on drilling, machining time. Types of drills and their features, nomenclature of a drill. Drill holding devices. Types of reamers. |  |
| 3rd | 7. Boring Principle of boring, Classification of boring machines and their brief description.  |  |
| 12th | 1st | Specification of boring machines. Boring tools, boring bars and boring heads. Description ofjig boring machine |  |
| 2nd | 8. Cutting Fluids and Lubricants Function of cutting fluid, Types of cutting fluids, Difference between cutting fluid and lubricant,  |  |
| 3rd | Selection of cutting fluids for different materials and operations, Common methods of lubrication of machine tools, Certifying Organizations (such as SAE, ASTM) forrating standards of lubricants |  |
| 13th | 1st | **3rd Sessional** |  |
| 2nd |
| 3rd |
| 14th | 1st | Revision |  |
| 2nd | Revision |  |
| 3rd | Revision |  |
| 15th | 1st | Revision |  |
| 2nd | Revision |  |
| 3rd | Revision |  |