

COURSE CONTENT

Week	Practical	Theory
1	Manufacturing process and their importance in Industries. Safety precautions followed on shop floor Vernier caliper and micro-meter, construction, parts, principles, application making the jobs. Different types cutting tools, grinding practice on pedestal machine.	Outline of various subjects to be covered disciplinary rules of the Institute training and other facilities available. Importance of measurement. Types of precision measuring tools, Micro-meter and Vernier caliper, Principle, Construction of various parts, reading of micrometer and Vernier caliper both English and Metric system.
2	Introduction of shaping, planning and slotting-construction, types, parts, function and used, shaping rectangular block as per sketch.	Shaper, Planer and Slotting machine, construction types used of parts, General principle of power transmission. Various cutting tools and their angles and importance of angle.
3	Introduction to milling machine demonstration on working principle, setting of jobs, setting of cutter in arbor setting of vice on table. Step milling using side and face cutter checking with micro-meter. Slot Mill using slot milling cutter. Face mill using face milling cutter.	Milling machine – Introduction, construction, type's specification and application. Work holding devices and cutter holding devices. Process of milling Machine-up & down milling. Milling operation-plain milling. Stop milling. Face milling. Slot milling, angular and end milling etc. Classification of different type milling cutter and their used. Selection of cutting speed, feed and depth of cut for different milling operation.
4	Setting of indexing head on milling, table and mill a hexagon on a round bar using direct indexing method. Spur gear cutting on horizontal milling machine using simple indexing methods. Checking with gear tooth Vernier calipers. Milling a rack by linear indexing method.	Introduction of indexing head types, parts, function and used. Indexing- types of indexing as direct, simple, differential, compound, angular and linear indexing and their calculation. Introduction of gear, types and their used. Spur gear elements and calculation.
5	Introduction of engine lathe and parts, holding the job in three & four jaw chuck. Facing and plain turning operations use of measuring tools required for turning.	Manufacturing process in brief outline of various subjects to be covered. Disciplinary rules of the Institute. Training and other facilities available. Introduction to lathe description. Lathe-types of lathe machine, parts of centre lathe and function, lathe operation. Size and specification of a centre lathe. Lathe cutting tools- Types & tools, angle.
6	Facing, Plain and Turning. Taper Turning by compound rest slide methods. Setting threading tool and cutting the external "V" threads.	Work and tools, holding devices of lathe machine. Methods of mounting and dismounting chucks. Taper- types of Taper and their used. Taper turning methods and their calculation.
7	Perform centre drilling, boring, parting off, Knurling, grooving, chamfering operations.	Cutting speed, feed and depth of cut for different lathe operations, threads, types of thread and used. Cutting tool materials & types of coolants.

8	Balancing and truing of grinding wheel. Mounting and dressing of grinding wheel. Re sharpen of plain turning tool on Pedestal grinder to an accuracy of one degree; check the tool angle using bevel protector.	Grinding machine- Introduction. Types specification and used. Grinding wheel, types and construction and mounting of wheel, wheel balancing & wheel turning. Metallurgy- types of metals, properties of metals, classification of steel, alloy steels and effect of alloying elements.
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