


Sant Gadge Baba Amravati University
Department of Lifelong Learning & Extension
Short Term Certificate Courses
(3 Month)
Syllabus
For
Certificate Course in CNC Technology

Subject: Lathe Machine Basics

Sr. No	Trade Practical	Trade Theory
1	Importance of trade training, List of tools & Machinery used in the trade. Health & Safety: Introduction to safety equipment's and their uses.	Importance of safety and general precautions observed in the in the industry/shop floor.
2	Measuring instrument Vernier caliper, Micrometar, Bevel protractor	Vernier caliper-its construction, principal graduation and reading, least count etc. Digital Vernier caliper. Outside micrometer-different parts,
3	Introduction of Lathe machine	Types of lathe drivers, merit and demerit. Description in details-head stock cone pulley type- all geared type-construction & function. Tumbler gear set. Reducing speed-necessary & uses. Back Gear Unit - its construction use.
4	Lathe operation Facing, Turning, Drilling, Boring, Knurling, Threading	Lathe cutting tool-different types, shapes and different angles (clearances and rake), specification of lathe tools Drills-different parts, types, size etc., different cutting angles, cutting speed for different material. Boring tool. Lubricant and coolant-types, necessity, system of distribution, selection of coolant for different material: Handling and care. Knurling meaning, necessity, types, grade, cutting speed for knurling. Lathe mandrel different types and their uses
5	Introduction of milling machine	

Subject: Advance CNC technology

1	Introduction and history of CNC	<p>Introduction to CNC technology -CNC machines & controls. History & development of CNC technology. Conventional Vs. non-conventional machine tool.</p> <p>Numerical control on CNC machine tools. CNC Control and types of CNC control. Calculation of technological data for CNC machining. CNC clamping system. Implementation of JH for CNC. Basic health and safety. CNC programming basics. Introduction to manual NC programming. Manual NC programming for lathe & milling machines. Application Numerical Control, Advantages, & Disadvantages, Adoptive Control System. Practical training & workshop for above sub topics on CNC Machine</p>
2	CNC programming	<p>Introduction to CNC programming, Introduction and demonstration of line programs</p> <p>CNC programming for lathe & milling machine using ISO codes into the CNC simulator. NC programming for lathe and milling machines using different machining cycles into the CNC simulator. Procedures Associated with part programming, Cutting process parameter selection, Process planning issues and path planning, G & M Codes, Interpolations, Canned Cycles and Subprograms, Tool compensations. Exposure for programming and simulator of FANUC, HAAS Controls through post processors. Programming exercise. Machining of programmed exercise on CNC lathe & milling machines</p>
3	CNC programming-Lathe	<p>Plan and optimize programs for CNC turning operations. Calculate parameters like speed feed etc. and set references for the various operations. Prepare operation and operation sequence for the lathe operations like turning, grooving etc. Prepare & set CNC lathe operations and test run programmed.</p> <p>Execute program and inspect simple geometrical forms / Standard parts.</p>
4	CNC programming-Milling	<p>Plan and optimize programs for CNC Milling operations. Calculate parameters like speed feed, depth of cut etc. and set a reference for the various operations. Various methods of work process like edgefinding block center etc. Prepare & set CNC Milling operations and test run programmed. Execute program and inspect simple geometrical forms / standard parts.</p>