TECHNICAL SKILL DEVELOPMENT INSTITUTE (t-SDI)

APSSDC SIEMENS: Manufacturing - Computer Numerical Control (CNC) Laboratory

Description

A CNC (Computer Numerical Control) lab is a specialized facility designed for teaching, training, research, and practical application of CNC machining and manufacturing processes. CNC technology is widely used across various industries for precision machining, and a CNC lab is equipped with the necessary tools and equipment to facilitate hands-on learning and skill development in this field. This lab consists of LMW Smarturn Turning Center, LMW JV 55 Vertical Machining Center, and Simulation Controllers for CNC programming.

Objectives of Manufacturing CNC Lab

The objectives of a Manufacturing-CNC (Computer Numerical Control) lab are to provide a structured and practical learning environment that facilitates the development of skills and knowledge related to CNC machining and manufacturing processes. These labs are essential for both educational institutions and industrial settings.

After completing the course, a student will be able to:

➢ Gain hands-on training and practical experience in operating CNC machines and also proficient in setting up workpieces, programming CNC machines, and executing machining operations accurately and efficiently.

➢ Develop abilities to create, edit, and optimize CNC programs using industry-standard programming languages.

➢ Select the appropriate cutting tools, tool holders, and inserts for specific machining tasks. Also, gain knowledge on tool management, including tool changes, maintenance, and tool life monitoring.

➢ Develop the problem-solving and critical thinking skills with machining challenges.

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➢ Inspect and measure machined components to ensure they meet specified tolerances and quality standards.

Key areas covered

➢ Fundamental geometrical principles

➢ Fundamental NC programming principles

➢ Tool change, tool offsets, Spindle motion, and feed control

➢ Creating an NC programming of Turning and Milling

➢ Inspection and testing

➢ Periodical maintenance and safety precautions

➢ POD software for online demonstration of CNC labs through tutorials

Available Software

➢ NX CAM, POD Software

➢ SINUMERIC 840D sl/828D, CNC software version 4.5 SP3 Basic, 4.5ED.2

Equipment Available

➢ LMW Smarturn Turning Center

➢ LMW JV 55 Vertical Machining Center

➢ Milling and Turning training rack of SINUMERIC 840D sl/ 828D

View of Manufacturing CNC Lab