

## CURRICULUM: CAD/CAM TECHNOLOGY

**Brief Description:** Uses the CAD/CAM system to recreate the design techniques by transferring ideas to the computer, digitizing and modifying patterns, and using CAM to get the cut out in the actual sizes.

**Minimum Educational Qualifications** : Graduate, preferably

**Maximum Educational Qualifications** : Certification course in CAD/CAM/Computer

**Experience** : 1-2 years of experience/internship, preferably

**Personal Attributes:** Needs to have the knowledge to interpret instructions, specs or sample designs and working of the particular software/system to produce a pattern. A learner should also have basic mathematical skills, particularly calculations and measuring. Good written and oral communication skills.

**Task:** This unit/task covers the following: (i) identifying the process, (ii) preparing the prerequisites for CAD/CAM operation, and (iii) operating the CAD/CAM.

**Description:** This unit is about how the CAD/CAM Operator manages to develop patterns using CAD/CAM software.

### A) TECHNICAL KNOWLEDGE

#### Prepare the prerequisites for CAD/CAM operation

To be competent, you must be able to:

- Downloading and organizing information related to the job
- Analyzing specific information and translating according to the procedure
- Coordinate with designer to ensure clarity of communication and resolve any possible misinterpretations

#### Operate the CAD/CAM

- Understand CAD/CAM Operating system.
- Principles of the CAD/CAM systems
- Draft the pattern on the CAD software as per the specification given
- Digitize the manual pattern on CAD software, if applicable, as per the specification given
- Adjust the specifications as per the standard and allowances required
- Set Parameters on CAM as per the required output
- Ensure the design output is cut and continued for the next activity
- Ensure the work is saved as a backup before shutting down the CAD machine
- Take a printout for reference
- Shut down the CAD/CAM system after use carefully following instructions.

#### For Textiles/Apparel/Home Furnishing

You need to know and understand the following:

- Garment construction techniques and processes.
- Perform size-wise grading of patterns
- Incorporate shrinkage in pattern grading
- Determine the cut ratio plan
- Perform the most efficient marker (lay planning) according to the configuration intended

- Process of modelling and testing using CAD
- Grading using CAD
- Lay planning with accuracy

#### **For Wood and the substitute material**

- Execute CNC Router interface/control program screen.
- Plan and prepare a 2D program with various tool keys, vector keys, etc. and Execute to load a program from computer to CNC machine.
- Prepare tool path in 2D and make a program with throughout cut.
- Execute saving of tool path & program file to the machine.
- Plan and prepare program with multiple tools used in ATC (Alternative Tool Changing), device installation and job mounting with zero offsets.
- Prepare job operating CNC router machine and inspect job accuracy.
- Check drawing and execute the operation with various relief functions.
- Prepare a 3D object with the CAD, set the machine and do the job.
- Describe complex job designing on CAD, editing program and inspection process of a job.
- Execute application-oriented small projects.

#### **B) KNOWLEDGE AND UNDERSTANDING (Organizational Context)**

The individual on the job needs to know and understand the following:

- Guidelines and standards for quality
- Safe working practices and procedures
- Job role and responsibilities
- Documenting procedure in case of faults in processes
- Guidelines for storage of materials
- Minimize wastage
- Potential hazards associated with machines and safety precautions that must be taken
- Documentation formats

#### **C) Soft Skills**

- Verbal/ Non-verbal communication
- Interview skills
- Professional/social etiquettes
- Professional correspondence/ English