CAD/CAM Course

Department of Mechanical Engineering
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Course Objectives:

1. Impart knowledge of computer aided design and manufacturing (CAD/CAM) techniques.
2. Develop programming and operating skills for computer numerical control (CNC) machines.
3. Enable students understand various stages of product development and their management.

Course Outcomes:

1. Creation of part drawings and 3D models using CAD techniques.
2. Generation of part programs for industrial components using CAM techniques.
3. Skills to program and operate CNC machines.
4. Ability to develop a product from conceptualization to reality.

Salient Features of the Course:

1. Focus towards practical implementation of classroom teachings.
2. In-house work experience based on industrial CNC machines.
3. Practical training by well-qualified tutors.
4. Individual projects from design to production.

Course Syllabus:

Unit – 1

Computer Aided Design (CAD) :

Overview of 2D drawings, work area customization, constraints and parameters, sketching tools, geometrical modifications, converting 2D drawings to 3D models, modeling features and tools, dimensioning and annotations, materials and appearances, file import/export.

Unit - 2

Computer Aided Manufacturing (CAM) :

Overview of machining processes, work setup, cutting tool selection, calculation of feeds and speeds, CAM cycles, cutting planes selection, toolpath setup, post-processing of G-codes, file import/export.

Unit – 3

Computer Numerical Control (CNC) :

Overview of CNC machines, component identification, safety features and precautions, setting home positions, offsets and work settings, part programming with G-codes, program execution, controlling dimensional accuracy and surface finish.

Unit - 4

Product Development:

Overview of product life cycle, product design, design for manufacture and assembly, material selection and mechanical properties, selection of manufacturing processes, computer integrated manufacturing, quality assurance and management, manufacturing costs, project work.