

Faculty of Engineering & Technology

Industrial Automation (CAD/CAM)

Information :

Course Code : MAN 350

Level : Undergraduate

Course Hours : 2.00- Hours

Department : Specialization of Mechatronics Engineering

Area Of Study :

- Explain the basic concepts and engineering fundamentals in mechanical parts process planning
- Prepare student to acquire the essential knowledge and understanding for the common CNC machines programming.
- Develop students knowledge about using CAD/CAM packages: basic of CAD, basic of CAM, G-code programming, and computer assisted part programming.

Description :

Computer assisted manufacturing systems NC, CNC, DNC, robotics, material handling, group technology, flexible manufacturing systems, process planning and control. Scope and utilization of CAM- data bases needed for manufacturing . Languages- for CAM- integration between CAD and CAM- software and applications. How to implement the right industrial robot system for a plant.

Course outcomes :

a. Knowledge and Understanding: :

1 -	Identify the principles of G-Code part programing.
2 -	Explain how CNC machines are working.
3 -	Interpret basic Science and engineering fundamentals in mechanical parts process planning.
4 -	Explain the basic concepts and theories of how CAD works.
5 -	List the different CAD modeling features.

b. Intellectual Skills: :

1 -	Use analytical thought in choosing 3D features to construct CAD model.
2 -	Select suitable parameters for machining operation (Milling and Drilling).
3 -	Select suitable G-code programming parameter to operate CNC machine.
4 -	Solve profiling or slotting problems for any given mechanical part.

c. Professional and Practical Skills: :

1 -	Apply solutions for mathematical transformation in CAD modelling.
2 -	Select the 3D feature to create any mechanical CAD model.
3 -	Create or part programming for mechanical parts.
4 -	Apply analytical methods for milling operations.

d. General and Transferable Skills: :

1 -	Communicate effectively.
-----	--------------------------

2 -	Effectively manage tasks, time, and resources.
3 -	Acquire entrepreneurial skills.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction	3	2	1
Basics of CAD	3	2	1
Main types of CNC machines	3	2	1
G-code programming	3	2	1
G-code programming for milling	6	4	2
G-code programming for drilling	3	2	1
Cycles in G-codes	6	4	2
Computer assisted part programming	6	4	2
CAD transformation	3	2	1
Boundary representation	3	2	1
Constructive solid geometry	3	2	1
Boolean operation with CAD modeling	3	2	1

Teaching And Learning Methodologies :

Interactive Lecturing
Problem solving
Discussuion
Experiential Learning
Project
Research

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignment	5.00		
Final Exam	40.00		
Mid- Exam 1I	15.00		
Mid- Exam I	15.00		
Project	10.00		
Quizzes	10.00		
Research	5.00		

