COURSE CONTENT

COMPUTER AIDED MANUFACTURING LAB

II Semester: M.Tech (CAD/CAM)

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
2424043	Advanced	3	0	0	3	40	60	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 36				Total Classes: 36		

Prerequisites: CAM

Course Overview:

This lab course provides hands-on experience in computer-aided manufacturing, focusing on CNC programming for turning and milling operations. Students perform practical exercises to develop part programs and understand machining processes. The course also introduces robot programming, including lead-through teaching, kinematics, and trajectory planning, enhancing practical skills in modern manufacturing automation.

Course Objectives:

1. To provide practical knowledge of CNC programming for turning and milling operations.
2. To develop skills in creating and executing part programs for machining processes.
3. To introduce concepts of robot programming and automation techniques.
4. To understand kinematics and trajectory planning in robotic systems.
5. To enhance hands-on experience in modern computer-aided manufacturing tools and systems.

Course Outcomes: After Completion of the Course, Students should be able to

1. Ability to develop CNC programs for turning and milling applications.
2. Ability to operate and implement CNC machining processes effectively.
3. Ability to apply robot programming techniques for basic industrial tasks.
4. Understanding of forward and inverse kinematics in robotic systems.
5. Ability to integrate manufacturing and automation concepts in practical scenarios.

List of Excercises

1. CNC programs for turning- 4 exercises
2. CNC programs for milling- 4 exercises
3. Robot programming- Lead through programming using teach product, forward kinematics, inverse kinematics, trajectory planning.

ELECTRONIC RESOURCES:

1. http://vlabs.iitkgp.ac.in/cim/index.html

MATERIALS ONLINE:

1. Course template
2. Definitions and terminology
3. Lecture notes
4. E-Learning Readiness Videos (ELRV)