GOVERNMENT POLYTECHNIC, NABARANGPUR

DEPARTMENT OF AUTOMOBILE ENGINEERING

Discipline: **AUTOMOBILE ENGG**	Semester: **6TH**	Name of the Teaching Faculty: Er. Kiran Kumar Behera
Subject: CAD/CAM AND AUTOMATION	No. of days/per week class allotted: **04**	Semester From date: 04.02.2025 To Date:17.05.2025 No. of Weeks: **15**
COURSE OUTCOMES	**1.** Understand the fundamentals & use CAD and Conceptualize drafting and modeling in CAD. **2.** Operate CNC machines and Prepare CNC part programming. **3.** Operate industrial robots and Conceptualize automation and FMS	

Week	Class Day	Theory/Practical Topics
1ST	1ST	INTRODUCTION TO CAD /CAM
	2ND	Computers in industrial manufacturing.
	3RD	Product Cycle
	4TH	Contd.
2ND	1ST	CAD /CAM Hardware: Basic structure
	2ND	CPU
	3RD	Memory and I/O devices
	4TH	Storage devices and System configuration.
3RD	1ST	GEOMETRIC MODELLING
	2ND	Contd.
	3RD	Requirement of geometric modeling
	4TH	Types of Geometric models
4TH	1ST	Contd.
	2ND	Geometric construction method-sweep
	3RD	contd
	4TH	Solid modeling – Primitives & Boolean operations
5TH	1ST	Free formed surfaces (Classification of surface only) (No numerical treatment)
	2ND	contd
	3RD	. INTRODUCTION TO COMPUTER NUMERICALCONTROL
	4TH	contd
6TH	1ST	Introduction – NC, CNC, DNC
	2ND	Advantages of CNC
	3RD	The coordinate system in CNC
	4TH	contd
7TH	1ST	contd
	2ND	Motion control system
	3RD	Point to point
	4TH	Straight line
8TH	1ST	Continuous path (Contouring)
	2ND	contd

	3RD	contd
	4TH	Application of CNC.
9TH	1ST	Revision
	2ND	QUIZ
	3RD	PART PROGRAMMING
	4TH	**Fundamentals**
10TH	1ST	Manual part programming
	2ND	contd
	3RD	NC- Words
	4TH	contd
11TH	1ST	Programming format
	2ND	contd
	3RD	Part programming
	4TH	contd
12TH	1ST	Use of subroutines and do loops
	2ND	Computer aided part programming (APT)
	3RD	INDUSTRIAL ROBOTICS Introduction
	4TH	Physical configuration and Basic robot motions
13TH	1ST	Technical features such as Work volume
	2ND	Precision and speed of movement, Weight carrying capacity and Drive system
	3RD	End effectors and Robot sensors.
	4TH	Application such as Material transfer Machine loading Welding, spray coating Processing operation Assembly Inspection
14TH	1ST	contd
	2ND	AUTOMATION Basic elements of automated system
	3RD	Advanced automation functions and Levels of automation
	4TH	Flexible manufacturing:
15TH	1ST	Introduction FMS equipments
	2ND	FMS application and troduction to CIM.
	3RD	Contd.
	4TH	REVISION

LEARNING RESOURCES:

SL. NO.	NAME OF AUTHORS	TITLE OF THE BOOK	NAME OF THE PUBLISHER
1	P.N. RAO	CAD/CAM PRINCIPLES AND APPLICATIONS	TATA MCGRAW-HILL
2	P. & SUBRAMANYAM	CAD/CAM/CIM	WILEY EASTERNLTD
3	B.S. PABLA & M. ADITHAN	CNC/MACHINE	NEW AGEINTERNATIONAL
4	GROOVER M.P. & ZIMMERS JR	COMPUTER AIDED DESIGN AND MANUFACTURING	PRENTICE HALL OF INDIA

Sign. Of Faculty
concerned

Sign. Of HOD I/C

Sign of academic
coordinator

Principal, GP NABARANGPUR .