

GANPAT UNIVERSITY										
FACULTY OF ENGINEERING & TECHNOLOGY										
Programme		Diploma Engineering				Branch		Mechatronics Engineering		
Semester		VI				Version		1.0.0.0		
Effective from Academic Year			2020-21			Effective for the batch Admitted in			July 2018	
Subject code		1MC2605		Subject Name		Computer Integrated Manufacturing				
Teaching scheme					Examination scheme (Marks)					
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total	
	L	TU	P	TW						
Credit	3		1	0	4	Theory	40	60	100	
Hours	3		2	0	5	Practical	30	20	50	

Pre-requisites:

Course Learning Outcomes:
The course content should be taught and implemented with an aim to develop different skills leading to the achievement of the following competencies and course learning outcomes:
CO 1. Describe scope of C.I.M. in fabrication technology.
CO 2. Describe scope of group technology in fabrication industry.
CO 3. Prepare CAPP (Computer Aided Process Planning) for fabrication process equipment.
CO 4. Describe FMS (Flexible manufacturing System) in welding shop.
CO 5. Describe automated inspection system.

Course Content				
Name of UNIT	Unit Content	Unit Learning Outcomes	Marks	Hrs
<b>UNIT – 1 (Introduction to Computer Integrated Manufacturing )</b>	1.1 Concept of Computer Integrated Manufacturing (CIM) 1.2 Basic components of CIM 1.3 Distributed database system; distributed communication system, 1.4 Computer networks for manufacturing 1.5 Future automated factory 1.6 Social and economic factors	1a. Understand importance and scope of CIM in fabrication / manufacturing industry 1b. Protocol of networking 1c. Scope of CIM	10	07
<b>UNIT – 2 (Role of Computer in CIM)</b>	2.1 Computer Aided Design (CAD): CAD hardware and software 2.2 Product modeling 2.3 Automatic drafting 2.4 Business analysis 2.5 FEM design review and evaluation 2.6 Contact vs. non-contact inspection techniques 2.7 Coordinate measuring machine (CMM) 2.8 Machine vision	2a. Basics of learning CAD 2b. Familiar of product development and testing	10	07

<b>UNIT – 3 (Computer Aided Manufacturing and Process Planning )</b>	3.1 Computer Aided Manufacturing (CAM) 3.2 Computer assisted NC part programming 3.3 Computer assisted robot programming 3.4 Computer aided process planning (CAPP); 3.5 Computer aided material requirements planning (MRP)	3a. Computer use CAPP 3b. Understanding to process planning	10	07
<b>UNIT – 4 (Group Technology &amp; Flexible Manufacturing Systems)</b>	4.1 Part families 4.2 Parts classification and coding 4.3 Production flow analysis 4.4 Cellular manufacturing 4.5 Application of group technology 4.6 Computer aided production scheduling 4.7 Computer aided inspection planning 4.8 Computer aided inventory planning 4.9 Flexible manufacturing system (FMS)	4a. Demonstrate part families 4b. Understanding of flexible manufacturing system	20	17
<b>UNIT – 5 (Material Handling &amp; Identification Technologies)</b>	5.1 Integrating NC machines, robots, AGVs, and other NC equipment; 5.2 Introduction to material handling 5.3 Material transport equipment 5.4 Conventional and automated storage / retrieval system(AS/RS) 5.5 Computer aided quality control 5.6 Business functions, 5.7 Computer aided forecasting; 5.8 Office automation	5a.Demonstrate automated material handling system. 5b. Demonstrate automated storage/retrieval system.	10	07
		Total	60	45

List of Practical		
No.	Unit	Name of Practical
1	I	Demonstrate scope of CIM in fabrication manufacturing industry.
2	I	Demonstrate different CIM hardware and software.
3	II	Demonstrate automated assembly line.
4	III	Performing an activity to define part family of an object and classify with opitz coding system.
5	IV	Demonstrate flexible manufacturing system in fabrication industries.
6	V	Demonstrate automated storage retrieval (AS/RS) system.
7	V	Demonstration of automated guided vehicles and their application in fabrication/manufacturing industries.
8	V	Identification of various types of material handling and transport equipment.
List of Instruments/Equipment/TrainerBoard		
1	Bosch Training centre	
2	CAD laboratory	
3	Robotic Kit	

Link of Text Books			
No	Title of Books	Authors	Publication
1	Automation, Production Systems, and Computer-integrated Manufacturing,	Mikell P. Groover	Prentice Hall
2	CAD/CAM/CIM	P. Radhakrishanan , S. Subramaniyam , V. Raju	New Age Publications
3	Computer Integrated Manufacturing	A. Alavudeen N. Venkateshwaran	PHI Learning Pvt. Ltd.
List of Reference Books			
No	Title of Reference Books	Authors	Publication
1	CAD/CAM Principles and Applications	P. N. Rao	Tata MacGraw hill Education Pvt. Ltd. New Delhi
2	Computer integrated manufacturing	Rohg James A.; Kraebber Henry W.	Pearson Publication New Delhi
3	CAD/CAM/FOF, Vol I,II, and III	Juneja, Pujara and Sagar	TMH Publication New Delhi
Link of Learning Web Resource			
1	<a href="https://www.youtube.com/watch?v=YGtg4OPSFhc">https://www.youtube.com/watch?v=YGtg4OPSFhc</a>		
2	<a href="https://www.youtube.com/watch?v=Ynhp8Wi2qwM">https://www.youtube.com/watch?v=Ynhp8Wi2qwM</a>		
3	<a href="https://www.youtube.com/watch?v=J_8OnDsQVZE">https://www.youtube.com/watch?v=J_8OnDsQVZE</a>		
4	<a href="https://www.youtube.com/watch?v=UF-O48l0vNg">https://www.youtube.com/watch?v=UF-O48l0vNg</a>		
5	<a href="https://www.youtube.com/watch?v=qq6--4jtj7s">https://www.youtube.com/watch?v=qq6--4jtj7s</a>		
6	<a href="https://www.youtube.com/watch?v=U6DWkAOkBP0">https://www.youtube.com/watch?v=U6DWkAOkBP0</a>		