

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme		Master of Technology			Branch/Spec.		Mechanical Engineering-CAD/CAM/ Mechanical Engineering -AMS		
Semester		I			Version		1.0.0.0		
Effective from Academic Year			2021-22		Effective for the batch Admitted in			July 2021	
Subject code		3ME1106		Subject Name		Computer Aided Process Planning			
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	1	0	4	Theory	40	60	100
Hours	3	0	2	0	5	Practical	30	20	50
Pre-requisites:									
A student has to understand following subjects before learning these subjects:									
<ul style="list-style-type: none"> • Metrology and Measurements • Any one of the programming language. • Should acquire knowledge of computer 									
Course Objective:									
<ul style="list-style-type: none"> • Understand basics of computer aided forecasting, concurrent engineering • Learn the basics of group technology and how to implement group technology in shop floor. • Understand the various modern concepts of CAPP, MRP, ERP, JIT etc. • Learn the basics of computer aided testing and inspection of various manufacturing processes. 									
Theory syllabus:									
Unit	Content								Hrs
1	INTRODUCTION: Introduction to process planning in manufacturing, Computer aided production management and computer aided production planning, Process planning and production planning, Process planning and Concurrent engineering, Information requirement for process planning system, Role of process planning, Advantages of conventional process planning over CAPP.								6
2	COMPUTER AIDED FORECASTING: Computer Aided Forecasting : Nature and use of forecast, sources of data, demand patterns, forecasting methods – Delphi's method, Time series method, Exponential smoothing, Linear regression, Selection of forecasting technique, Measurement of forecast accuracy-MAD, Adoptive methods.								8
3	GROUP TECHNOLOGY: Introduction, Significance, Structure, Relative advantages, Implementation and applications, Algorithms and models for G.T , Rank order clustering, Bond energy, Mathematical model for machine, Component cell formation, Design and manufacturing attributes, Parts classification and coding, Concept of composite job machine group, Cell group tooling, Design rationalization, CAD/CAM and GT benefits.								8
4	USE OF MODERN CONCEPT IN COMPUTER AIDED PROCESS PLANNING: MRP: Introduction, Objective, Input, Computational procedure, Information provided by the system. Detailed capacity planning, Manufacturing resources planning. ERP: Introduction, Main features, Generic model of ERP system, Selection of ERP, Proof of concept approach, Analytic hierarchy approach, ERP implementation. JUST IN TIME MANAGEMENT (JIT) Introduction, Philosophy of JIT, Just in time procurement, Just in time shop floor corner, Arguments against JIT								12

5	<p>COMPUTER AIDED MEASUREMENT AND INSPECTION:</p> <p>Computer Aided Inspection: Computer Aided Testing, Contact type, non-contact type.</p> <p>Computer Aided Testing: Major activities, Purpose, Simulation process, Types methodology, Simulation packages, Process quality simulator, Computer requirements trends and applications simulation of machine shop. Co-ordinate measuring machines, Universal measuring machine, Laser viewers for production profile checks,</p>	8
Practical content:		
The term work shall be based on experimental and analytical work on the topics mentioned above and will be defended by the candidates.		
Text Books		
1	Gideon Halevi and Roland D. Weill, 'Principles of Process Planning', A logical approach, Chapman & Hall,1995.	
2	Tien – Chien Chang and Richard A wysk, 'An introduction to Automated Process Planning', Prentice Hall,1985.	
Reference Books		
1	P.N.Rao, N.K.Tewari, T.K. Kundra, 'Computer Aided Manufacturing' Tata Mcgraw Hill Delhi, 1993	
2	M.P. Groover, 'Automation Production Systems and Computer Aided Manufacturing' Third Edition,Prentice Hall.	
3	Buffa & Sarin, 'Modern Production Management' Student Edition, Wiley, 2007.	
4	P.B.Mahapatra, 'Computer Aided Production Management' Prentice-Hall of India Pvt.Ltd, 2004.	
5	Averill M Law & David Kelton, 'Simulation Modeling and Analysis', Fourth Edition, Tata Mcgraw Hill,2007.	
Mooc Links:		
https://nptel.ac.in/courses/112/104/112104250/		
https://nptel.ac.in/courses/112/104/112104188/		
https://nptel.ac.in/courses/112/104/112104289/		
Course Outcomes:		
<ol style="list-style-type: none"> 1. Generate the structure of automated process planning system and uses the principle of generative and retrieval CAPP systems for automation 2. Select the manufacturing sequence and explains the reduction of total set up cost for a particular sequence 3. Predict the effect of machining parameters on production rate, cost and surface quality and determines the manufacturing tolerances 4. Create awareness about the implementation techniques for CAPP. 		