

**DEPARTMENT OF PRODUCTION ENGINEERING**  
**NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI**

COURSE PLAN – PART I			
Name of the programme and specialization	B.Tech- PRODUCTION ENGINEERING		
Course Title	COMPUTER INTEGRATED MANUFACTURING		
Course Code	PRPC23	No. of Credits	03
Course Code of Pre-requisite subject(s)	-----		
Session	July 2018	Section (if, applicable)	B
Name of Faculty	SIMSON D	Department	PRODUCTION ENGG
Email	simson@nift.edu	Telephone No.	+91-9080972352
Name of Course Coordinator(s) (if, applicable)			
E-mail		Telephone No.	
Course Type	<input checked="" type="checkbox"/> Core course <input type="checkbox"/> Elective course		
<b>Syllabus (approved in BoS)</b>			
1. CIM - evaluation, hardware and software of CIM - concurrent engineering – advance modelling techniques. 2. Numerical Control - Concepts and features– Classification – Input media – Design considerations–Functions of MCU - CNC concepts - Point-to-point and Contouring systems - Interpolators –Feedback devices – DNC - Adaptive Control – ACO and ACC systems. 3. Part programming - manual part programming – preparatory, miscellaneous functions – computed aided part programming - post processors - APT programming. 4. Cellular manufacturing - Group Technology – Flexible Manufacturing Systems- Configurations- Workstations - Control systems - Applications and benefits 5. Materials handling and Storage Systems - types of material handling systems – storage systems- –Automated storage and retrieval systems – Robotics technology - control systems – Programming - Applications– Automated inspection and testing – Coordinate measuring machines.			
<b>TEXT BOOK:</b>			
1. Paul Ranky, "Computer Integrated Manufacturing", Prentice Hall, 2005.			
<b>REFERENCES:</b>			
1.YoramKoren, "Computer Control of Manufacturing Systems", McGraw Hill Book co. New Delhi, 1986.			
2.Mikell P Groover,, "Automation, Production Systems and Computer Integrated Manufacturing", Prentice Hall, 2007.			
3.Donatas T I junclis, Keith E Mekie, "Manufacturing High Technology Hand Book", Marcel Decker.			
<b>COURSE OBJECTIVES</b>			
<ul style="list-style-type: none"> <li>• To gain knowledge in Engineering product specification and CAD/CAM integration.</li> <li>• To know the concepts and working of various components in CIM system</li> </ul>			

<ul style="list-style-type: none"> <li>To impart knowledge in CNC programming for Milling/Turning.</li> <li>Hands on training in cnc machines through lab practical.</li> </ul>						
<b>COURSE OUTCOMES (CO)</b>						
<table border="1"> <thead> <tr> <th>Course Outcomes</th> <th>Aligned Programme Outcomes (PO)</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> <li>Describe computer integrated manufacturing concept and functions of various machines and equipment</li> </ul> </td> <td></td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>CNC code generation for turning and milling using Fanuc and Sinumerik controls.</li> </ul> </td> <td></td> </tr> </tbody> </table>	Course Outcomes	Aligned Programme Outcomes (PO)	<ul style="list-style-type: none"> <li>Describe computer integrated manufacturing concept and functions of various machines and equipment</li> </ul>		<ul style="list-style-type: none"> <li>CNC code generation for turning and milling using Fanuc and Sinumerik controls.</li> </ul>	
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COURSE PLAN – PART II				
COURSE OVERVIEW				
<p>➤ This course is to teach the overview of computer integrated manufacturing environment and working of various machine and devices used in CIM environment. The students will get on hand training in CNC machines and programming of CNC machines.</p>				
COURSE TEACHING AND LEARNING ACTIVITIES				
S.No	Week	Topic	Mode of Delivery	
MECHANICS OF SOLIDS				
1	1 to 5	CIM - evaluation, hardware and software of CIM - concurrent engineering – advance modelling techniques. Part programming - manual part programming – preparatory, miscellaneous functions – computed aided part programming - post processors - APT programming.	PPT, C&T VIDEO	
2	7 to 11	Numerical Control - Concepts and features– Classification – Input media – Design considerations– Functions of MCU - CNC concepts - Point-to-point and Contouring systems - Interpolators –Feedback devices – DNC - Adaptive Control – ACO and ACC systems. Cellular manufacturing - Group Technology – Flexible Manufacturing Systems- Configurations- Workstations - Control systems - Applications and benefits.	PPT, C&T VIDEO	
3	13 to 15	Materials handling and Storage Systems - types of material handling systems – storage systems- – Automated storage and retrieval systems – Robotics technology - control systems – Programming - Applications– Automated inspection and testing – Coordinate measuring machines.	PPT, C&T VIDEO	
COURSE ASSESSMENT METHODS (shall range from 4 to 6)				
S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle test -1	Week 6	60 Minutes	20
2	Cycle test -2	Week 12	60 Minutes	20
3	Assignment	Once in three weeks	-----	10

CPA	Compensation Assessment*	Week 14	60 Minutes	20
4	Final Assessment *	Week 16	180 Minutes	50
<b>*mandatory; refer to guidelines on page 4</b>				
<b>COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)</b>				
<ol style="list-style-type: none"> <li>1. Feedback from the students during class committee meeting.</li> <li>2. End semester feedback on course outcomes</li> </ol>				
<b>COURSE POLICY (preferred mode of correspondence with students, compensation assessment policy to be specified)</b>				
<b><u>MODE OF CORRESPONDENCE (email/ phone etc)</u></b>				
Phone and E-mail				
<b><u>COMPENSATION ASSESSMENT POLICY</u></b>				
60 minutes examination including all syllabus.				
<b><u>ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)</u></b>				
<ul style="list-style-type: none"> <li>➤ <b>At least 75% attendance in each course is mandatory.</b></li> <li>➤ <b>A maximum of 10% shall be allowed under On Duty (OD) category.</b></li> <li>➤ <b>Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.</b></li> </ul>				
<b><u>ACADEMIC DISHONESTY &amp; PLAGIARISM</u></b>				
<ul style="list-style-type: none"> <li>➤ Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.</li> <li>➤ Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.</li> <li>➤ The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.</li> </ul> <p>The above policy against academic dishonesty shall be applicable for all the programmes.</p>				
<b><u>ADDITIONAL INFORMATION</u></b>				
<b>Evaluation pattern</b>				
Theory - 70marks (* Internal 50% - end				



Semester exam 50%  
(\*internal cycle test-1, cycle test-2 & assignment)  
Lab – 30marks (Internal : 50% End Semester Practical: 50%)

FOR APPROVAL

Course Faculty 

CC-Chairperson 

HOD 

**Guidelines:**

- a) The number of assessments for a course shall range from 4 to 6.
- b) Every course shall have a final assessment on the entire syllabus with at least 30% weightage.
- c) One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered. Details of compensation assessment to be specified by faculty.
- d) The passing minimum shall be as per the regulations.
- e) Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.
- f) Absolute grading policy shall be incorporated if the number of students per course is less than 10.
- g) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.