

**DEPARTMENT OF PRODUCTION ENGINEERING  
NATIONAL INSTITUTE OF TECHNOLOGY TIRUCHIRAPPALLI - 620 015**

<b>COURSE OUTLINE</b>			
Course Title	<b>COMPUTER INTEGRATED MANUFACTURING (THEORY &amp; LAB)</b>		
Course Code	<b>PRPC 23</b>	No. of Credits	<b>03</b>
Department	<b>Production Engg</b>	Faculty	<b>Dr J Jerald</b>
Pre-requisites Courses	---		
Class Committee Chairman	<b>Dr V Senthil Kumar</b>		
Teachers' Contact Email:	jerald@nitt.edu	Telephone No	0431-2503518
Course Type	<input checked="" type="checkbox"/> Core Course		
<b>COURSE OVERVIEW</b>			
<ul style="list-style-type: none"> <li>This course is to teach the concepts of computer integrated manufacturing environment and working of various machines and devices used in CIM environment. The students will get on hand training in CNC machines and programming of CNC machines.</li> </ul>			
<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 systems</li> <li>To impart knowledge in CNC programming for Milling/Turning</li> <li>On hand training in CNC machines through lab practicals</li> </ul>			

**COURSE OUTCOMES (CO)**

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Co1. Describe computer integrated manufacturing concepts and function of various machines and equipments

Co2. CNC code generation for Turning and Milling using Fanuc and Sinumerik controls.

**Aligned Program Outcomes (PO)**

COURSE OUTCOMES	Program Outcomes (PO)										
	1	2	3	4	5	6	7	8	9	10	11
CO1	√	√	√	√	√	√	√	√			
CO2	√	√	√	√	√	√	√	√			

**PROGRAMME OUTCOMES (POs)**

Sl. No	Attributes	Programme Outcomes (POs): On successful completion of the programme the students will be able to
1.	Scholarship Knowledge of	Acquire in depth knowledge in Manufacturing technology with an ability to define, evaluate, analysis and synthesize existing and new knowledge.
2.	Critical Thinking	Analyze problems critically; apply independent judgment for synthesizing information to make intellectual and/or creative advances for conducting research.
3.	Problem Solving	Conceptualize and solve Manufacturing engineering problems and evaluate optimal solutions considering economic and eco-friendly factors
4.	Research Skill	Develop scientific/ technological knowledge in Manufacturing engineering through literature survey and design of experiments.
5.	Usage of modern tools	Apply of IT tools such as CAD/CAE/CAM for modeling and simulation of complex Manufacturing processes.
6.	Collaborative and multi-disciplinary work	Perform collaborate multidisciplinary scientific Manufacturing engineering research through self-management and team work.
7.	Project Management and Finance	Demonstrate knowledge and understanding of Manufacturing engineering and management and apply the same to one's own work, as a member and leader in team, manage projects efficiently in respective disciplines and multidisciplinary environments after consideration of economic and financial factors.
8.	Communication	Communicate with the engineering community, and with society at large, regarding complex engineering activities confidently and effectively, such as, being able to comprehend and write effective reports and design documentation by adhering to appropriate standards, make effective presentations, and give and receive clear instructions.
9.	Life-long Learning	Recognize the need for, and have the preparation and ability to engage in life-long learning independently, with a high level of enthusiasm and commitment to improve knowledge and competence continuously.
10.	Ethical Practices and Social Responsibility	Acquire professional and intellectual integrity, professional code of conduct, ethics of research and scholarship, consideration of the impact of research outcomes on professional practices and an understanding of responsibility to contribute to the community for sustainable development of society.
11.	Independent and Reflective Learning	Observe and examine critically the outcomes of one's actions and make corrective measures subsequently and learn from mistakes without depending on external feedback.

<b>COURSE TEACHING AND LEARNING ACTIVITIES</b>			
<b>S.No</b>	<b>Week</b>	<b>Topics</b>	<b>Mode of Delivery</b>
1.	Week :1 to Week-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.	C&T / PPT /Simulation/ Lab exercises
2.	Week : 6	<b>Assignment -I &amp; Cycle Test-I</b>	
3.	Week : 7 to Week: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 – Work stations – Control systems – Applications and benefits	C&T / PPT
4.	Week :12	<b>Assignment –II &amp; Cycle Test-II</b>	
5.	Week : 13 to Week:15	Materials handling and Storage Systems – type of material handling systems – storage systems – Automated storage and retrieval systems – Robotics technology – control systems – Programming – Applications - Automated inspection and testing – Coordinate measuring machines	C&T / PPT
6.	Week :16	<b>End Semester Examination</b>	
<b>C &amp; T : Chalk and Talk      PPT : Power Point</b>			
<b>TEXT BOOK:</b>			
<ul style="list-style-type: none"> <li>Paul Ranky, “Computer Integrated Manufacturing”, Prentice Hall Publications</li> </ul>			
<b>REFERENCES:</b>			
<ul style="list-style-type: none"> <li>Yoram Koren, “Computer Control of Manufacturing Systems”, McGraw Hill Book Co. New Delhi.</li> <li>Mikell P Groover, “Automation, Production Systems and Computer Integrated Manufacturing”, Prentice Hall Publications</li> </ul>			
<b>EVALUATION PATTERN:</b>			
<b>Theory - 2 Credits:</b>			
<b>Internal: 50 Marks</b>		<b>External: 50 Marks (End Semester Exam)</b>	
Cycle Test I: 20 Marks, Cycle Test II: 20 Marks			
& Assignment: 10 Marks			
<b>Practical - 1 Credit</b>			
<b>Internal: 50 Marks</b>		<b>External: 50 Marks (End Semester Practical)</b>	



### **COURSE EXIT SURVEY**

Mention the ways in which the feedback about the course is assessed and indicate the attainment also:

- Feedback from the students during class committee meetings
- End semester feedback on Course Outcomes

### **CORRESPONDENCE**

- The students may contact the subject teacher at any time during working days with prior intimation.

### **ATTENDANCE**

- 75% attendance is compulsory to attend the End semester examination

### **ACADEMIC HONESTY & PLAGIARISM**

- Copying in any form during assessments is considered as academic dishonesty and will attract suitable penalty.

### **ADDITIONAL COURSE INFORMATION**

- The students will be allowed to practice their lab exercises other than regular lab classes.

### **FOR APPROVAL**

  
Course Faculty

  
CC Chairperson

  
HOD