DEPARTMENT OF PRODUCTION ENGINEERING

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Name of the programme and specialization	B.Tech-Production Engg.		
Course Title	Computer Integrated Manufacturing		
Course Code	PRPC23	No. of Credits	03
Course Code of Pre-requisite subject(s)	---		
Session	July 2019	Section	A
Name of Faculty	Dr J Jerald	Department	Production Engg
Email	jerald@nitt.edu	Telephone No.	0431-2503518
Name of Course Coordinator	Dr. C. Sathiya Narayan		
E-mail	csathiya@nitt.edu	Telephone No.	0431-2503511
Course Type	☑ Core course	☐ Elective course	

Syllabus (approved in BoS)

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. 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 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.

TEXT BOOK:

- Paul Ranky, "Computer Integrated Manufacturing", Prentice Hall Publications

REFERENCES:

- Yoram Koren, "Computer Control of Manufacturing Systems", McGraw Hill Book Co. New Delhi.
- Mikell P Groover, "Automation, Production Systems and Computer Integrated Manufacturing", Prentice Hall Publications
- P.Radha Krishnan, "Computer Numerical Control Machines", New Central Book Agency(P) Ltd., India

COURSE OBJECTIVES

- To gain knowledge in Engineering product specification and CAD/CAM Integration
- To know the concepts and working of various components in CIM systems
- To impart knowledge in CNC programming for Milling/Turning
- On hand training in CNC machines through lab practicals

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
• Describe computer integrated manufacturing concepts and function of various machines and equipments	
• CNC code generation for Turning and Milling using Fanuc and Sinumerik controls.	

COURSE PLAN – PART II

COURSE OVERVIEW

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.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/Contact Hours	Topic	Mode of Delivery
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 practicals
2	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
3	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

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle Test-1	Week 6	I Hour	15%

2	Cycle Test-2	Week 12	I Hour	15%
CPA	Compensation Assessment - Retest	Week 14	1 Hour	15%
3	End Semester Examination	Week 16	3 Hours	40%
4	Lab Practicals	---	---	30%

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

Feedback from the students in classes during the semester
End semester feedback on Course Outcomes

COURSE POLICY

MODE OF CORRESPONDENCE (email/ phone etc)
The students may contact the subject teacher at any time during working days. Also, the correspondence through mail (jerald@nitt.edu)

COMPENSATION ASSESSMENT POLICY
The syllabus for the retest include CT 1 & CT 2 portions

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

- **At least 75% attendance in each course is mandatory.**
- **A maximum of 10% shall be allowed under On Duty (OD) category.**
- Students with **less than 65% of attendance** shall be prevented from writing the final assessment and **shall be awarded 'V' grade.**

ACADEMIC DISHONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- 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.

  The above policy against academic dishonesty shall be applicable for all the programmes.

ADDITIONAL INFORMATION:

EVALUATION PATTERN:

Theory – 70 Marks (Internal: 30% End Semester Exam: 40%)

(Internal : Cycle Test-1, Cycle Test - 2)

Lab Practicals – 30 Marks
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.