6th Semester	RPR5D001	Computer Integrated Manufacturing	L-T-P 3-0-0	3 Credits

MODULE I **(10 HOURS)**

Fundamentals of Manufacturing and Automation: Production systems, automation principles and its strategies; Manufacturing industries; Types of production function in manufacturing; Automation principles and strategies, elements of automated system, automation functions and level of automation; product/production relationship, Production concept and mathematical models for production rate, capacity, utilization and availability; Cost-benefit analysis.

Computer Integrated Manufacturing: Basics of product design, CAD/CAM, Concurrent Engineering, CAPP and CIM.

MODULE II **(12 HOURS)**

Industrial Robotics: Robot anatomy, control systems, end effectors, sensors and actuators; fundamentals of NC technology, CNC, DNC, NC part programming; Robotic programming, Robotic languages, work cell control, Robot cleft design, types of robot application, Processing operations, Programmable Logic controllers: Parts of PLC, Operation and application of PLC, Fundamentals of Net workings; Material Handling and automated storage and retrieval systems, automatic data capture, identification methods, bar code and other technologies.

MODULE III **(08 HOURS)**

Introduction to manufacturing systems: Group Technology and cellular manufacturing, Part families, Part classification and coding, Production flow analysis, Machine cell design, Applications and Benefits of Group Technology.

MODULE IV **(10 HOURS)**

Flexible Manufacturing system: Basics of FMS, components of FMS, FMS planning and implementation, flexibility, quantitative analysis of flexibility, application and benefits of FMS. Computer Aided Quality Control: objectives of CAQC, QC and CIM, CMM and Flexible Inspection systems.

Books:

[1] Automation, Production Systems and Computer Integrated Manufacturing: M.P. Groover, Pearson Publication.
[2] Automation, Production systems & Computer Integrated Manufacturing, M.P Groover, PHI.
[3] CAD/CAM/CIM, P. Radhakrishnan, S. Subramanyam and V.Raju, New Age International
[4] Flexible Manufacturing Systems in Practice, J Talavage and R.G. Hannam, Marcell Decker
[5] CAD/CAM Theory and Practice, Zeid and Subramanian, TMH Publication
[6] CAD/CAM Theory and Concepts, K. Sareen and C. Grewal, S Chand publication
[7] Computer Aided Design and Manufacturing, L. Narayan, M. Rao and S. Sarkar, PHI.
[8] Principles of Computer Integrated Manufacturing, S.K.Vajpayee, PHI
[9] Computer Integrated Manufacturing, J.A.Rehg and H.W.Kraebber, Prentice Hall