MF5102 COMPUTER INTEGRATED MANUFACTURING SYSTEMS

DETAILED SYLLABUS

UNIT I COMPUTER AIDED DESIGN

Concept of CAD as drafting and designing facility, desirable features of CAD package, drawing features in CAD – Scaling, rotation, translation, editing, dimensioning, labeling, Zoom, pan, redraw and regenerate, typical CAD command structure, wire frame modeling, surface modeling and solid modeling (concepts only) in relation to popular CAD packages.

UNIT II COMPONENTS OF CIM

CIM as a concept and a technology, CASA/Sme model of CIM, CIM II, benefits of CIM, communication matrix in CIM, fundamentals of computer communication in CIM – CIM data transmission methods – seriel, parallel, asynchronous, synchronous, modulation, demodulation, simplex and duplex. Types of communication in CIM – point to point (PTP), star and multiplexing. Computer networking in CIM – the seven layer OSI model, LAN model, MAP model, network topologies – star, ring and bus, advantages of networks in CIM.

UNIT III GROUP TECHNOLOGY AND COMPUTER AIDED PROCESS PLANNING

History Of Group Technology – role of G.T in CAD/CAM Integration – part families- classification and coding – DCLASS and MCLASS and OPTIZ coding systems – facility design using G.T – benefits of G.T – cellular manufacturing. Process planning - role of process planning in CAD/CAM Integration – approaches to computer aided process planning – variant approach and generative approaches – CAPP and CMPP systems.

UNIT IV SHOP FLOOR CONTROL AND INTRODUCTION TO FMS 9

Shop floor control – phases – factory data collection system – automatic identification methods – Bar code technology – automated data collection system.

FMS – components of FMS – types – FMS workstation – material handling and storage system – FMS layout- computer control systems – applications and benefits.

UNIT V COMPUTER AIDED PLANNING AND CONTROLAND COMPUTER MONITORING

Production planning and control – cost planning and control – inventory management – material requirements planning (MRP) – shop floor control. Lean and Agile Manufacturing. Types of production monitoring systems – structure model of manufacturing – process control and strategies – direct digital control.

REFERENCES

1. Chris McMahon and Jimmie Browne, "CAD CAM Principles, Practice and Manufacturing Management", Pearson Education second edition, 2005.Ranky, PaulG.,"Computer Integrated Manufacturing", Prentice hall of India Pvt. Ltd.,2005.
2. James A. Regh and Henry W. Kreabber, "Computer Integrated Manufacturing", Pearson Education second edition, 2005.
3. Mikell. P. Groover "Automation, Production Systems and Computer Integrated Manufacturing", Pearson Education 2001.
4. Mikell. P. Groover and Emory Zimmers Jr.,"CAD/CAM", Prentice hall of India Pvt.Ltd., 1998.
5. P N Rao, " CAD/CAM Principles and Applications", TMH Publications, 2007.
6. Yorem Koren, "Computer Integrated Manufacturing", McGraw Hill, 2005.

OBJECTIVES

- This course will enable the Student
- To gain knowledge about the basic fundamental of CAD.
- To gain knowledge on how computers are integrated at various levels of planning and manufacturing understand computer aided planning and control and computer monitoring.