

# COMPUTER INTEGRATED MANUFACTURING

Written by Administrator  
Wednesday, 04 November 2009 07:13 -

---

**Subject Code**

:

**06ME72**

**IA Marks**

:

25

**No. of Lecture Hrs./ Week**

:

04

**Exam Hours**

# COMPUTER INTEGRATED MANUFACTURING

Written by Administrator  
Wednesday, 04 November 2009 07:13 -

---

:

03

Total No. of Lecture Hrs.

:

52

Exam Marks

:

100

**PART - A**

## Unit - 1

**Computer Integrated Manufacturing Systems:** Introduction, Automation definition, Types of automation, CIM, processing in manufacturing, Production concepts, Mathematical Models-Manufacturing lead time, production rate, components of operation time, capacity, Utilization and availability, Work-in-process, WIP ratio, TIP ratio, Problems using mathematical model equations.

**8 Hours**

## Unit - 2

**High Volume Production System:** Introduction Automated flow line-symbols, objectives, Work part transport-continuous, Intermittent, synchronous, Pallet fixtures, Transfer Mechanism-Linear-Walking beam, roller chain drive, Rotary-rack and pinion, Ratchet & Pawl, Geneva wheel, Buffer storage, control functions-sequence, safety, Quality, Automation for machining operation.

**6 Hours**

## Unit - 3

**Analysis of Automated Flow line & Line Balancing:** General terminology and analysis, Analysis of Transfer Line without storage-upper bound approach, lower bound approach and problems, Analysis of Transfer lines with storage buffer, Effect of storage, buffer capacity with simple problem, Partial automation-with numerical problems, flow lines with more than two stages, Manual Assembly lines, line balancing problem.

**6 Hours**

## Unit - 4

**Minimum rational work element:** Work station process time, Cycle time, precedence constraints. Precedence diagram, Balance delay methods of line balancing-largest Candidate rule, Kilbridge and Westers method, Ranked positional weight method, Numerical problems covering above methods and computerized line balancing.

**6 Hours**

## PART - B

## Unit - 5

**Automated Assembly Systems:** Design for automated assembly systems, types of automated assembly system, Parts feeding devices-elements of parts delivery system-hopper, part feeder, Selectors, feed back, escapement and placement analysis of Multistation Assembly Machine analysis of single station assembly.

**Automated Guided Vehicle System:** Introduction, Vehicle guidance and routing, System management, Quantitative analysis of AGV's with numerical problems and application.

**8 Hours**

## Unit - 6

**Computerized Manufacturing Planning system:** Introduction, Computer Aided Process Planning, Retrieval types of process planning, Generative type of process planning, Material requirement planning, Fundamental concepts of MRP inputs to MRP, Capacity planning.

**6 Hours**

## Unit - 7

# COMPUTER INTEGRATED MANUFACTURING

Written by Administrator

Wednesday, 04 November 2009 07:13 -

---

**CNC Machining Centers:** Introduction to CNC, elements of CNC, CNC machining centers, part programming, fundamental steps involved in development of part programming for milling and turning.

**6 Hours**

## Unit - 8

**Robotics:** Introduction to Robot configuration, Robot motion, programming of Robots end effectors, Robot sensors and Robot applications.

[This is required for CIM automation lab 06MEL77]

**6 Hours**

## Text Books:

1. **Automation, Production system & Computer Integrated manufacturing**, M. P. Groover" Person India, 2007 2<sup>nd</sup> edition.

2. **Principles of Computer Integrated Manufacturing**, S. Kant Vajpayee, Prentice Hall India.

## Reference Books:

1. **Computer Integrated Manufacturing**, J. A. Rehg & Henry. W. Kraebber.
2. **CAD/CAM by Zeid**, Tata McGraw Hill.