| AE-328: Computer Integrated Manufacturing Systems | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **L** | **T** | **P** | Credit | Area | | **CWS** | **PRS** | **MTE** | **ETE** | **PRE** |
| 3 | 0/1 | 2/0 | 4 | DEC | | 15/25 | 25/- | 20/25 | 40/50 | - |

**Objectives:** To familiarize the students with CIMS, Part Programming, Tooling and Fixture, Work piece Handling etc.

| AE-328: Computer Integrated Manufacturing Systems | | Contact Hours |
|---|---|---|
| **Unit-1** | Introduction: Fundamental Concepts in Manufacturing and Automation- Need for Automation - Automation Strategies Economic Analysis and Production - Fundamental of CIMS | **8** |
| **Unit-2** | Computer Aided Design (CAD) : Elements of CAD System- Graphics Hardware - ALU- CPU - Input/Output Devices -Geometric Modeling - Automated Drafting | **6** |
| **Unit-3** | Manufacturing Systems : Basics of Numerical Control – Types of NC Systems - CNC and DNC Machines - Matching Centre– Tool Magazine - NC Tape Format - Programming – Manual Part Programme - Simple Programmes - Computer Assisted Part Programming - APT Language - Simple Examples | **6** |
| **Unit-4** | Flexible Manufacturing Systems: Group Technology - Part Families - Part Classification and Cooling – Production Flow Analysis - Machine Cell Design - Description of FMS -Equipment, Tooling and Fixture | **8** |
| **Unit-5** | Computer Aided Manufacturing: Computers in Manufacturing- Automated Manufacturing Systems -Workpiece Handling - Types of Transfer - Continuous, Intermittent and Non-Synchronous Walking Beam - | **8** |
| **Unit-6** | Computer Aided Process Planning – Computer Aided Inspection - Computer Aided Quality Control - Basic Model 100 off CIMS- Interfacing Methods of CAD And CAM – Computer Process Monitoring | **6** |
| | **Total** | **42** |



| **Reference Books:** | |
|---|---|
| 1 | Automation, Production Systems, and Computer-Integrated Manufacturing/Mikell P. Groover/Pearson Education, 2015/0133499715, 9780133499711 |
| 2 | CAD/CAM: Computer-Aided Design and Manufacturing/Groover/Pearson Education India, 1984/8177584162, 9788177584165 |
| 3 | Niebel, " Modem Manufacturing Process ", Mcgraw-Hill, 1989 |
| 4 | Numerical Control of Machine Tools/Stanley John Martin/English Universities Press, 1970/0340114576, 9780340114575 |
| 5 | Computer Integrated Manufacturing: From Fundamentals to Implementation/Alan Weatherall/Butterworth-Heinemann, 2013 / 1483163415, 9781483163413 |

**Course Outcomes**

| | |
|---|---|
| CO1 | To study fundamental Concepts in Manufacturing and Automation |
| CO2 | To study Computer Aided Design and its elements. |
| CO3 | To study NC, CNC, DNC. |
| CO4 | To study Flexible Manufacturing Systems |
| CO5 | To study Computer Aided Manufacturing |
| CO6 | To study Computer Aided Process Planning |

**CO-PO/PSOMatrix**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 1 |
| CO2 | 3 | 3 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 |
| CO3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 3 | 2 |
| CO4 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 3 | 2 |
| CO5 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 2 |