

ME 10 32D AUTOMATION IN MANUFACTURING

(with effect from the academic year 2011-2012)

Lectures/week: 4 Hrs.

Credits: 4

Sessional Marks: 20+20

End Examination Marks: 60

UNIT-I:

Introduction, Mechanization, Principles of Automation, Types of Automation, Production Concepts. Automation Strategies, Merits and Demerits of Automation.

UNIT-II:

Automated Flow Lines – Methods of Work part Transport, Transfer Mechanism Buffer Storage, Automation for Machining Operations, Design and Fabrication Considerations.

Analysis of Automated Flow Lines – General terminology and Analysis of Transfer lines without and with buffer storage, Partial Automation, Computer Simulation of Automated Flow lines.

UNIT-III:

Assembly Systems and Line Balancing – Assembly Process Systems, Assembly lines, Line balancing methods, Computerized line balancing methods, Ways of improving line balance, flexible assembly lines. Types of Automated Assembly Systems, Parts Feeding Devices.

UNIT-IV:

Automated Materials Handling and Storage Systems – The Material Handling Function, Types of Material Handling Equipment, Analysis and Design of Material Handling Systems, Conveyor Systems and Automated Guided Vehicle Systems, Automated Storage/Retrieval Systems, Work-in-process Storage, Interfacing Handling and Storage with Manufacturing.

UNIT-V:

Adaptive Control Systems – Introduction, Adaptive Control with Optimization, Adaptive Control with Constraints, Application of Adaptive Control in Machining Operations – Use of Various parameters such as cutting forces, temperatures, vibrations and acoustic emissions. Cost Analysis in Machining.

TEXT BOOKS:

1. Automation, Production Systems & Computer Aided Manufacturing : Groover M.P.
2. Computer Control of Manufacturing Systems : Yoram Koren

REFERENCES:

- 1) CAD/CAM/CIM : RadhaKrishnan.
- 2) Automation : Buekinsham W.