

ME722PE: AUTOMATION IN MANUFACTURING (PROFESSIONAL ELECTIVE – II)**B.Tech. IV Year, I Sem.**

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Course Objectives:

- To understand types of Automation and production system technologies in modern manufacturing.
- To understand importance of automated flow lines in manufacturing a product.
- To understand the Assembly system and Line Balancing in Manufacturing System.
- To understand Automated Material handling equipments and Automated Storage Systems.
- To understand industrial control and automatic inspection techniques.

Course Outcomes: After the completion of the course, the student will be able to

- Describe the importance of Automation implementation in Manufacturing.
- Analyze the various Automated flow lines.
- Perform Line balancing of assembly system.
- Describe automated Material Handling and automated storage
- Explain Industrial Process controls and automatic inspection.

UNIT – I:

Introduction: Types and strategies of automation, pneumatic and hydraulic components circuits, Automation in machine tools. Mechanical feeding and tool changing and machine tool control transfer the automaton.

UNIT – II:

Automated flow lines: Methods of work part transport transfer Mechanical buffer storage control function, design and fabrication consideration.

Analysis of Automated flow lines: General terminology and analysis of transfer lines without and with buffer storage, partial automation, implementation of automated flow lines.

UNIT – III:

Assembly system and line balancing: Assembly process and systems assembly line, line balancing methods, ways of improving line balance, flexible assembly lines.

UNIT –IV:

Automated material handling: Types of equipment, functions, analysis and design of material handling systems conveyor systems, automated guided vehicle systems.

Automated storage systems, Automated storage and retrieval systems; work in process storage, interfacing handling and storage with manufacturing.

UNIT –V:

Fundamentals of Industrial controls: Review of control theory, logic controls, sensors and actuators, Data communication and LAN in Manufacturing.

Business process Re-engineering: Introduction to BPE logistics, ERP, Software configuration of BPE.

TEXT BOOKS:

1. Automation, Production Systems and Computer Integrated Manufacturing: M.P. Groover. /Pearson Education/4th Edition, 2016.
2. Computer Control of Manufacturing Systems/ Yoram koren/ Mc Graw Hill/ 1st Edition, 1983.

REFERENCE BOOKS:

1. Computer Aided Manufacturing/Tien-Chien Chang, Richard A. Wyskand Hsu-Pin Wang/Pearson/ 3rd Edition, 2005.
2. Automation /W. Buekinsham/PHI Publications/ 1st Edition, 2011.