

Gautam Buddha University, Greater Noida

School of Engineering (Mechanical Engineering)

Degree	Course Name	Course Code	Marks:100
M. Tech.	Flexible & Computer Integ. Manufacturing	MEM 512	SM+MT+ET 25+25+50
Semester	Credits	L-T-P	Exam.
II	3	3-0-0	3 Hours

Unit - I

Introduction: Introduction to manufacturing systems; Different types of manufacturing systems; Volume-variety relationships for understanding manufacturing systems; FMS and FMS types. **(06 Hours)**

Unit - II

Flexibility and Automation: Different types of flexibility in manufacturing; Flexibility tests; Different types of FMS building blocks; Work station; Storage retrieved system; Material handling systems; Computer control system; FMS layouts. **(07 Hours)**

Unit - III

Machining System of FMS: Horizontal machining Centers; Vertical machining Centers; Integrated material handling; Automated guided vehicles; Automatic storage and retrieved system; Components of AS/RS systems; Analysis of AS/RS systems; FMS designing and planning problems; FMS advantages and disadvantages. **(08 Hours)**

Unit - IV

Computer Integrated Manufacturing: The meaning and origin of CIM; The changing manufacturing and management scene; External communication; Islands of automation and software-dedicated and open systems; Manufacturing automation protocol; Product related activities of a company- marketing engineering - production planning - plant operations - physical distribution- business and financial management. **(08 Hours)**

Unit - V

Group Technology: History of group technology- role of G.T. in CAD/CAM integration; Part families; Classification and coding - DCLASS and MICLASS and OPITZ coding systems; Facility design using G.T.; Benefits of G.T.; Cellular manufacturing. **(08 Hours)**

Unit - VI

Process Planning: Process planning; Role of process planning in CAD/CAM integration; Approaches to computer aided process planning - variant approach and generative approaches; CAPP and CMPP process planning systems; Layout consideration for flexible manufacturing; Scheduling of flexible manufacturing system; FMS simulation. **(08 Hours)**

Recommended Books:

1. Automation; Production Systems and Computer Integrated Manufacturing; M. P. Groover; PHI Learning Private Ltd.; New Delhi.
2. Systems Approach to Computer Integrated Design and Manufacturing; Nanua Singh; John Wiley & Sons; Inc
3. Flexible Manufacturing Systems in Practice: Design: Analysis and Simulation; Talavage & Hunnam; CRC Press.
4. Hand-book of Flexible Manufacturing Systems; Nand K. Jha; Academic Press; 1991.
5. FMS Components Manufacturers Catalogues.