Gautam Buddha University; Greater Noida

School of Engineering (Mechanical Engineering)

Degree	Course Name	Course Code	Marks:100
M. Tech.	Design of Manufacturing Systems	MEM 529	SM+MT+ET 25+25+50
Semester	**Credits**	**L-T-P**	**Exam.**
I	3	3-0-0	3 Hours

Unit - I

Essential of Manufacturing Systems: Basic system concepts; System design; Manufacturing systems; Structural and transformation aspect of manufacturing systems; Integrated manufacturing systems and its frame work. **(06 Hours)**

Unit – II

Process System for Manufacturing: Modes of production-mass production; Multi-product small batch production; Group Technology based production; Cellular and flexible manufacturing systems; Automation systems for manufacturing; CAM/CIM; Economic evaluation of processes **(06 Hours)**

Unit - III

Discrete Part Manufacturing Systems: Different types and management decision system models; Basic approach of modeling; Analytical vs Simulation models; Modelling approach; Long run analysis; Deterministic models; Binomial approximation; Sample path analysis; Markov models; Examples. **(09 Hours)**

Unit - IV

High Volume Production System: Automated flow lines; Method of work part transport; Transfer mechanism; Automation for machining operations; Analysis of automated flow lines; Automated flow lines with/without buffer storage; Computer simulation of automated flow lines; Automated assembly system;

Design for automated assembly; Analysis of multi-station assembly machines; Assembly systems and line balancing. **(08 Hours)**

Unit - V

Manufacturing Process Design: Process planning and design; Process design operation design; Optimum routing analysis; Facility location and layout planning; Single and multiple facility placement problem; Continuous facility location; Computer Aided plant layout; Material handling system design; Storage & warehousing; Automated storage and retrieval systems; Simultaneous development of plant layout and material handling. **(08 Hours)**

Unit - VI

Management and Information systems for Manufacturing: Managerial information flow in manufacturing systems; Decision problem in managerial information; flow; Production planning and scheduling; Production control; Scope and problems; Quality control & function deployment.

Fundamentals of Information technology information systems; Information networking; Computerized manufacturing information systems. **(08 Hours)**

Recommended Books:

1. Manufacturing System Engineering: A Unified Approach to Manufacturing Technology, Production Management and Industrial Economics, Katsundo Hitomi; Taylor and Francis.
2. Manufacturing Facilities: Location, Planning, and Design; Dileep R. Sule; PWS-Kent Pub. Co., 1988
3. Automation; Production Systems & Computer Integrated Manufacturing Mikell P. Groover; PHI Learning Private Ltd., New Delhi.