FLEXIBLE MANUFACTURING SYSTEM

Subject Code: 13ME2116 **L P C**
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Course Outcomes :

At the end of the course, the student will be able to

CO1: Apply the concepts of PPC and GT to the development of FMS

CO2: Discuss the planning and scheduling methods used in manufacturing systems

CO3: Identify various workstations, system support equipments and hardware components of FMS

CO4: Select suitable database and software required for FMS

CO5: Summarize the concepts of modern manufacturing such as JIT, supply chain management and lean manufacturing etc.

UNIT-I

Types of production, production planning and control, manufacturing in a competitive environment, concept, automation of manufacturing process , numerical control, adaptive control, material handling and movement, industrial robots, flexible fixturing, design for assembly, disassembly and service. types of FMS, types of FMS layouts, advantages and disadvantages of FMS

Group technology – composite part families - classification and coding - production flow analysis,

UNIT-II

Planning issues: components of FMS, types of flexibility, tradeoffs, computer control and functions, planning, scheduling and control of FMS, scheduling and knowledge-based scheduling.

Hierarchy of computer control, supervisory computer, introduction to turning center, machining center, cleaning and deburring equipment, coordinate measuring machines: types, working and capabilities.

UNIT-III

System support equipment, types, working capability, automated material movement and automated storage and retrieval systems, scheduling of AGVs, cutting tools and tool management, work holding considerations

FMS computer hardware and software, general structure and requirements, PLCs, FMS installation and implementation, acceptance testing

UNIT-IV

Computer software, simulation and database of FMS: System issues, types of software, specification and selection, trends, application of simulation, software, manufacturing data systems, data flow, CAD/CAM considerations, planning FMS database

UNIT-V

Characteristics of JIT pull method, small lot sizes, work station loads, flexible work force, line flow strategy. supply chain management
Preventive maintenance - Kanban system, value engineering, MRD JIT, lean manufacture, quality concepts and management

TEXT BOOK:

1. Shivanand H.K., Benal MM, Koti V, "*Flexible Manufacturing System*", New age international (P) Limited, New Delhi, 2006

REFERENCES:

1. Mikell P. Groover "*Automation, Production Systems and Computer Integrated Manufacturing*", PHI, 2008.

2. Kalpakjin, "*Manufacturing Engineering and Technology* ", Addison-Wesley Publishing Co., 1995.