FACULTY OF ENGINEERING & TECHNOLOGY

First Year Master of Engineering

Semester II

Course Code: 102320205

Course Title: Computer Aided Production Management

Type of Course: Program Elective III

Course Objectives: This course aims to provide an overview of production management through Computer Aids, Focusing on the computer aided tools applicable in managing automated production, Material Resource Planning & Enterprise Resource Planning. Holistic approach to improve and increase the value of Computer Aided tools in Production Management.

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Internal		External		Total
Lecture	Tutorial	Practical		Theory	J/V/P*	Theory	J/V/P*	
3	0	2	4	30 / 15	20 / 10	70 / 35	30 / 15	150 / 75

* **J**: Jury; **V**: Viva; **P**: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	Concept of Computer Aided Production Management (CAPM): Introduction of Production Management,Computer Aided System concept, Hierarchical structure, System design, Decision making procedure, Manufacturing Systems, Factors affecting selection of Manufacturing Process, Modes of Production.	3
2	Structuring & Planning of Product/Process:Types of Layout, Location and layout of various Facilities, Plant location Factors, Study of rural and urban sites, Methods to selecting plant layout,Computerized Layout Techniques: Computerized Relative Allocation of Facilities Technique (CRAFT), Automated Layout Design Program(ALDEP).	9
3	Concept of Material Requirement Planning (MRP): Material Requirements, Types of Demands, Inputs to MRP,Techniques of MRP, Lot sizing methods, Advantages and disadvantages of MRP, Manufacturing Resources Planning (MRP –II).	4
4	Introduction to Enterprise Resource Planning: Introduction, Main features, Generic model of ERP system, Selection of ERP, Proof of concept approach, Analytic hierarchy approach, ERPimplementation.	4
5	Scheduling of Job: Sequencing, Scheduling, Shop Floor Control, Data Collection, Computer Generated Time Standards.	4
6	Computer Aided Process Planning: Operation Management, Computer Aided Inspection, Computer Aided Testing.	5

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7	Group Technology: Introduction, Objectives part families, Algorithms and models, Rank order clustering, Bond energy, Mathematical model for machine, Component cell formation, Design and manufacturing attributes, Parts classification and coding, Concept of composite job machine group, Cell group tooling, Design rationalization, CAD/CAM and GT benefits.	**6**
8	Simulation of Manufacturing Processes: Major activities, Purpose, Simulation process, Types,Methodology, Various simulation packages, Process quality simulator, Applications.	**4**

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks						**R**: Remembering; **U**: Understanding; **A**: Application, **N**: Analyze; **E**: Evaluate; **C**: Create
R	**U**	**A**	**N**	**E**	**C**	
20	10	30	20	10	10	

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1	An Introduction to Computer Aided Production Management, Childe, S., Springer
2	Computer Aided Production Management, Mahapatra P B, PHI
3	Production & operations management: Concepts, Models and Behaviour, Adam E. (Jr.), Ebert R J., PHI
4	Manufacturing Processes, Kalpakjian, Pearson.
5	Facility Layout & location – An analytical approach – Richard L. Francis, John A. white.
6	Production & operations management, Nair G N, McGraw-Hill.
7	Simulation modeling and analysis, Averill M Law & David Kelton, Tata McGraw Hill.
8	Production & operations management, Chary S N, McGraw-Hill

Course Outcomes (CO):

Sr.	**Course Outcome Statements**	**%weightage**
CO-1	Understand relevance and importance of the Different Production and operations management techniques and their applications.	**30**
CO-2	Capable to design, analyse and assess production planning and control systems, including those operating within distributed manufacturing environment.	**30**
CO-3	Be able to develop simulation of machine shop.	**25**
CO-4	Gain an overall understanding of computer aided production management.	**15**

List of Practicals / Tutorials:

Computer Aided Production Management

1	Tools and Techniques of Production Management
2	Development of Algorithm and Program for Sequencing & Scheduling.
3	Programs on Forecasting Methods
4	Exercise on Group Technology

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5	Computerized Plant Layout Design
6	Exercise on Computer Aided Process Planning
7	Exercise on Material Requirement Planning
8	Examples on Shop Floor Control

Supplementary learning Material:	
1	https://www.digimat.in/nptel/courses/video/112102106/L19.html
2	https://nptel.ac.in/courses/112/104/112104188/

Curriculum Revision:	
Version:	**1**
Drafted on (Month-Year):	Apr-20
Last Reviewed on (Month-Year):	Jul-20
Next Review on (Month-Year):	Apr-22

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