PVP 19

PLANT LAYOUT AND FACILITIES PLANNING

Course Code	19ME4602D	Year	III	Semester	II
Course Category	Program Elective-III	Branch	ME	Course Type	Theory
Credits	3	L – T – P	3 – 0 – 0	Prerequisites	Nil
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

Course Outcomes		Levels
Upon successful completion of the course, the student will be able to		
CO1	Explain the concept of plant location selection and Layout planning.	L2
CO2	Apply numerical methods and optimize layout planning.	L3
CO3	Illustrate material handling systems in manufacturing firms.	L2
CO4	Estimate number of stations, production rate and cycle time for a given assembly line.	L2
CO5	Develop a best layout using line balancing algorithms.	L3

	Contribution of Course Outcomes towards achievement of Program Outcomes Strength of correlations (3: High, 2: Moderate, 1: Low)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	1					1	1			3	3
CO2	3	3	3	1					1	1			3	3
CO3	3												3	1
CO4	3	3	3	1					1	1			3	3
CO5	3	3	3	1					1	1			3	3

Syllabus		
Unit No.	Contents	Mapped CO s
I	**PLANT ENGINEERING:** Plant Layout, Introduction, Types of Plant Layout, Phases of Layout Planning, Plant Location, Urban v/s Rural Location, Single facility location problems, Multifacility location Problems.	CO1
11	**SYSTEMATIC LAYOUT PLANNING:** P-Q Analysis, Flow of Materials Analysis, Activity Relationship Analysis, Space Requirements & Availability, Modifying Considerations, Practical Limitations, Selection of Layout, Installation of Layout, CORELAP, CRAFT, ALDEP Algorithms Procedure and application, Problems.	CO 2
III	**MATERIAL HANDLING:** Functions, Principles of Material Handling, MH Equipment-Conveyors, MH Equipment-Cranes, MH Equipment-Trucks, Systematic Handling Analysis, Classification of Materials.	CO3
IV	**MASS PRODUCTION MANAGEMENT (LINE BALANCING):** Basic idea of assembly line balancing, Optimization of number of stations with given production rate, Minimization of cycle time with fixed number of stations.	CO4
V	**LINE BALANCING ALGORITHMS**: Kilbridge and Wester, Rank Positional Weight method, COMSOAL, Moodie and Young method.	CO5

Learning Recourse(s)

Text Book(s)

1. J.M. Apple, Plant Layout and Material Handling, McGraw Hill, 1972.
2. R. Panneerselvam, Production and operations management,3rd Edition, Prentice Hall Inc, 2012.

Reference Book(s)

1. R.L Francis and J.A White, Facilities layout and location: An analytical approach, Prentice Hall, 1992.
2. P. Rama Murthy, Production and operations management, 2nd Edition, New Age International, 2006.

e-Resources & other digital material

1. https://alison.com/course/fundamentals-of-plant-layout-in-industrial-engineering
2. https://www.youtube.com/watch?v=-aGk5-yx340
3. https://www.youtube.com/watch?v=swk6Fo-BoSA