

PLANT LAYOUT AND FACILITIES PLANNING

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

Course Outcomes

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

Course Articulation Matrix:

	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

Course Content		Map ped CO s
UNIT-1	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
UNIT-2	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
UNIT-3	Material Handling: Functions, Principles of Material Handling, MH Equipment-Conveyors, MH Equipment-Cranes, MH Equipment-Trucks, Systematic Handling Analysis, Classification of Materials.	CO3
UNIT-4	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

UNIT-5	Line Balancing Algorithms: Kilbridge and Wester, Rank Positional Weight method, COMSOAL, Moodie and Young method.	CO5
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Learning Resources	
Text Books:	<ol style="list-style-type: none"> 1. 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 Books:	<ol style="list-style-type: none"> 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:	<ol style="list-style-type: none"> 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