GUJARAT TECHNOLOGICAL UNIVERSITY
M.E.in VLSI System Design
Semester: I

Subject Name: **Applied Algorithm for VLSI CAD**
Subject Code: **714202**

Sr. No	Course content	Total Hrs.
1.	**Introduction:** VLSI Design, The VLSI Design Process, Layout Styles, Difficulties in Physical Design, Definitions and Notation	5
2.	**Graphs:** Review of Graph and, Dependency/ Constraint graphs; Steiner Tree, Cliques, Clustering and Spanning Tree Algorithms	10
3.	**Network Flow Algorithms**	5
4.	**Circuit Partitioning:** Review of Greedy, Heuristic, Constructive and Iterative Algorithms, Integer Programming algorithms	7
5.	**Floor planning:** Introduction, Problem Definition, Approaches to Floor planning, Other Approaches	8
6.	**Placement:** Introduction, Problem Definition, Cost Functions and Constraints, Approaches to Placement, Other Approaches	5
7.	**Grid Routing:** Introduction, Problem Definition, Cost Functions and Constraints, Maze Routing Algorithms, Line Search Algorithms, Other Issues, Other Approaches	9
8	**Global Routing:** Introduction, Cost Functions and Constraints, Routing Regions, Sequential Global Routing, Integer Programming, Global Routing by Simulated Annealing, Hierarchical Global Routing, Other Approaches	5
9	**Channel Routing:** Introduction, Problem Definition, Cost Functions and Constraints, Approaches *to* Channel Routing, Other Approaches and Recent Work.	5
10	**Genetic algorithms**	5

Reference Books:

1. S. H. Gerez, Algorithmes for VLSI Design Automation, Wiley,1998
2. N. Sherwani, Algorithms for VLSI Physical Automation, Third Edition, Kluwer,1998.
3. A. Micozo, Digital Logic Testing and Simulation, Second edition, Wiley,2003.
4. S. M. Sait and H..Yousuf, Iterative Computer Alogorithm with Applications in Engineering, Wiley/IEEE,2002.
5. C. Visweswariah and S. Duvall, Computer Aided Optimization of Digital Integrated Circuits,Wiley,2002.
6. G. De Micheli, Synthesis and Optimization Of Digital Circuits, Mcgraw-Hill International , 1994.