GUJARAT TECHNOLOGICAL UNIVERSITY

Signal Processing and VLSI Technology (EC)

M.E. Semester: II

Subject Name: **Algorithms for VLSI Physical Design Automation (Major Elective III)**

Sr. No.	Course Content
1.	**Introduction:** VLSI Design, The VLSI Design Process, Layout Styles, Difficulties in Physical Design, Definitions and Notation
2.	**Circuit Partitioning:** Introduction, Problem Definition, Cost Function and Constraints, Approaches to Partitioning Problem, Other Approaches and Recent Work.
3.	**Floor planning:** Introduction, Problem Definition, Approaches to Floor planning, Other Approaches and Recent Work.
4.	**Placement:** Introduction, Problem Definition, Cost Functions and Constraints, Approaches to Placement, Other Approaches and Recent Work.
5.	**Grid Routing:** Introduction, Problem Definition, Cost Functions and Constraints, Maze Routing Algorithms, Line Search Algorithms, Other Issues, Other Approaches and Recent Work.
6.	**Global Routing:** Introduction, Cost Functions and Constraints, Routing Regions, Sequential Global Routing, Integer Programming, Global Routing **by** Simulated Annealing, Hierarchical Global Routing, Other Approaches and Recent Work.
7.	**Channel Routing:** Introduction, Problem Definition, Cost Functions and Constraints, Approaches *to* Channel Routing, Other Approaches and Recent Work.
8.	**Layout Generation:** Introduction, Layout Generation, Standard-cell Generation, Optimization of Gate-matrix Layout, Programmable Logic Arrays, Other Approaches and Recent Work.

Reference Books:

1. VLSI Physical Design Automation, Theory and Practice, Sadiq M. Sait and Habib Youssef. By world scientific press.
2. Algorithm for VLSI physical design automation by Sherwani and navneed- by Springer /B S Publication (2008)