



**B. P. Poddar Institute of Management & Technology**  
**Department of Electronics & Communication Engineering**  
**Academic Year: 2024-25**



**LESSON PLAN**

**Name of the faculty: Ramesh Kumar**  
**Year: 4<sup>th</sup>**  
**Course Name: VLSI Design Automation**

**Branch & Section: ECE (Sec-A)**  
**Semester: 8<sup>th</sup>**  
**Course Code: PE-EC802C**

<b>Lecture No.</b>	<b>Topics</b>	<b>Book Reference</b>	<b>Teaching Aids</b>	<b>Teaching Methodology</b>
1	Introduction to VLSI Design Methodologies	R1	PPT	lectures, discussions
2	Review of Data Structures & Algorithms for VLSI	R1	Green board, PPT	lectures, discussions
3	Review of VLSI Design Automation Tools	R1	Green board, PPT	lectures, discussions
4	Algorithmic Graph Theory	R1	Green board, PPT	lectures, discussions
5	Computational Complexity – P, NP, NP-complete	R1	Green board, PPT	lectures, discussions
6	Tractable and Intractable Problems	R1	Green board, PPT	lectures, discussions
7	General Purpose Methods for Combinatorial Optimization	R1	PPT	lectures, discussions
8	Design Rules and Layout Compaction – Introduction	R1, R2	Green board, PPT	lectures, discussions
9	Problem Formulation for Layout Compaction	R1, R2	PPT	lectures, discussions
10	Constraint Graph-Based Algorithms for Layout Compaction	R1, R2	PPT	lectures, discussions
11	Circuit Representation for Placement & Partitioning	R1, R2	PPT	lectures, discussions
12	Placement Algorithms – Overview	R1, R2	PPT	lectures, discussions
13	Partitioning Methods and Algorithms	R1, R2	PPT	lectures, discussions
14	Floorplanning Concepts and Terminology	R1, R2	Green board, PPT	lectures, discussions
15	Floorplan Representations	R1, R2	Green board, PPT	lectures, discussions
16	Shape Functions and Floorplan Sizing	R1, R2	Green board, PPT	lectures, discussions
17	Routing Problems in VLSI – Types and Overview	R1, R2	Green board, PPT	lectures, discussions
18	Local Routing and Area Routing	R1, R2	Green	lectures,

	Concepts		board, PPT	discussions
19	Channel Routing Techniques	R1, R2	PPT	lectures, discussions
20	Global Routing – Introduction & Algorithms	R1, R2	Green board, PPT	lectures, discussions
21	Gate-Level Modeling and Simulation	R1, R2	Green board, PPT	lectures, discussions
22	Switch-Level Modeling and Simulation	R1, R2	Green board, PPT	lectures, discussions
23	Combinational Logic Synthesis Techniques	R1, R2	Green board, PPT	lectures, discussions
24	Binary Decision Diagrams (BDD)	R1, R2	Green board, PPT	lectures, discussions
25	Two-Level Logic Synthesis	R1, R2	PPT	lectures, discussions
26	Introduction to High-Level Synthesis (HLS)	R1, R2	Green board, PPT	lectures, discussions
27	Hardware Models and Internal Representations	R1, R2	PPT	lectures, discussions
28	Allocation and Assignment	R1, R2	PPT	lectures, discussions
29	Scheduling and Simple Scheduling Algorithms	R1, R2	PPT	lectures, discussions
30	Assignment Problems and High-Level Transformations	R1, R2	Green board, PPT	lectures, discussions

### REFERENCE BOOKS

**R1.** S.H. Gerez, "Algorithms for VLSI Design Automation", John Wiley & Sons, 2002.

**R2.** N.A. Sherwani, "Algorithms for VLSI Physical Design Automation", Kluwer Academic Publishers, 2002

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Course Faculty