Course Type	Course Code	Name of Course	L	T	P	Credit
DE	ECD406	EDA for VLSI Design	3	0	0	9

Course Objective
The objective of the course is to present various aspects of electronic design automation used in VLSI design.
Learning Outcomes
Upon successful completion of this course, students will: • Come to know about various automation tools used in VLSI design. • have an understanding of ASICs , PLDs and FPGAs. • have an understanding of the various steps involved in configuring CPLD/FPGA • have a high-level understanding of simulation, synthesis and physical design.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Introduction to: i) Application specific Integrated circuits (ASICs) & design automation. ii) CMOS Technology and design rules. iii) PLA, PLD and CPLD	7	Familiarization with various devices for VLSI discrete and system design
2	Design flow and overview of Hardware modeling with VHDL	7	To know the various steps used in VLSI EDA tools and to gain an understanding of hardware description language
3	FPGA Concept, architecture and programming	4	To know different types of FPGA and means to configure them
4	Simulation of Digital circuits using CAD tools	6	To have and understanding of various processes used in simulation
5	Y-Chart, Logic and high level Synthesis	7	To know different domains of representing a design and understanding of various processes used in synthesis
6	Physical Design Automation (Placement , Floor Planning ,Routing)	5	Understanding of various processes used in back-end of EDA tools
7	Analog Design automation tools	6	To know the various aspects of analog design automation

Text Books:

1. Wayne Wolf, "FPGA-Based System Design", Pearson Publisher, 2004.
2. S. H. Gerez, “Algorithms for VLSI Design Automation”, John Wiley & Sons Publisher, 2nd Edition, 2008.
3. Z. Navabi, “Digital Design and Implementation with Field Programmable Devices”, Kluwer Academic Publishers, 2005

Reference Books:

1. Giovanni De Micheli, “Synthesis and Optimization of Digital Circuits”, McGraw. Hill Publisher, 1994.
2. Naveed Shervani, “Algorithms for VLSI Physical Design Automation”, Springer International Edition, 3rd Edition, 2005.
3. M.J.S .Smith, - “Application - Specific Integrated Circuits” – Pearson Education.