

Year & Sem:	Course Code: EC5201	Course Name: VLSI Design Verification and Test	No. of Credits: 4	L 2	T&PS 2	P 0
Unit-I: Introduction , Overview of VLSI Design Flow,High Level Synthesis (HLS) Overview ,Scheduling in High Level Synthesis (HLS),Resource Sharing and Binding in HLS Unit-II: Logic Synthesis, Physical Design, Intoduction to formal methods for design verification, Temporal Logic: Introduction and Basic Operations on Temporal Logic Unit-III: Syntax and Semantics of CTL, Equivalences between CTL Formulas, Introduction to Model Checking, Model Checking Algorithms, Model Checking with Fairness Unit-IV: Binary Decision Diagram: Introduction and Construction, Ordered Binary Decision Diagram (OBDD), Operation on OBDD, OBDD for state Transition systems Unit-V: Symbolic model checking, Introduction to Digital VLSI Testing, Functional and Structural Testing, Fault Equivalence, Fault Simulation Unit-VI: Testability Measures (SCOAP) , Introduction to Automatic Test Pattern generation(ATPG) and ATPG Algebras, D-Algorithm, ATPG for synchronous sequential circuits, Scan Chain based Sequential circuit testing, Built in Self Test (BIST) Textbooks: 1. Miron Abramovici, Melvin A. Breuer and Arthur D. Friedman, “Digital Systems Testing and Testable Design,” Revised, IEEE Press (1990) 2. Samiha Mourad and Yervant Zorian, “Principles of Testing Electronic Systems”, Wiley (2000) 3. Michael L. Bushnell and Vishwani D. Agrawal, “Essentials of Electronic Testing, for Digital, Memory and Mixed-Signal VLSI Circuits”, Kluwer Academic Publishers (2000) Videos : VLSI Design Verification and Test by Prof Arnab Sarkar , IIT Guwahati References/Text Books: 1. Miron Abramovici, Melvin A. Breuer and Arthur D. Friedman, “Digital Systems Testing and Testable Design,” Revised, IEEE Press (1990) 2. Samiha Mourad and Yervant Zorian, “Principles of Testing Electronic Systems”, Wiley (2000) 3. Michael L. Bushnell and Vishwani D. Agrawal, “Essentials of Electronic Testing, for Digital, Memory and Mixed-Signal VLSI Circuits”, Kluwer Academic Publishers Lecture Plan: Unit-I & -II syllabus for MID-I, Unit-III & -IV syllabus for MID-II and Unit-V & -VI syllabus for MID-III examinations. Video Lectures (Web Links): 1. 2.						