# ELECTRONIC DESIGN AUTOMATION TOOLS
(ELECTIVE – II)

**Course Code:**15EC2213

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**Pre requisites:** PSPICE, VERILOG, VHDL

**Course Outcomes:** At the end of the course the student will be able to

**CO1:** Illustrate different simulations and delay models which are available for HDL.
**CO2:** Classify the different synthesis using CAD tools.
**CO3:** Design and Analyze Analog and Digital Circuits Using PSPICE model of Transistor.
**CO4:** Describe about Analog, Digital & Mixed Signal Simulators.
**CO5:** Illustrate PCB Design and also describe the tools used for PCB design.

**UNIT I** (10-Lectures)
**SIMULATION USING HDLS:**
Simulation-Types of Simulation, Logic Systems, Working of Logic Simulation, Cell Models, Delay Models State Timing Analysis, Formal Verification, Switch-Level Simulation, Transistor-Level Simulation.

**UNIT II** (10-Lectures)
**SYNTHESIS USING HDLS:**
Verilog and Logic Synthesis, VHDL and Logic Synthesis, Memory Synthesis, FSM Synthesis, Memory Synthesis, Performance-Driven Synthesis.
CAD Tools for Simulation and Synthesis: Modelsim and Leonardo Spectrum

**UNIT III** (10-Lectures)
**CIRCUIT DESIGN AND SIMULATION USING PSPICE:**
Pspice Models For Transistors, A/D & D/A Sample And Hold Circuits etc., And Digital System Building Blocks, Design And Analysis Of Analog And Digital Circuits Using PSPICE.

**UNIT IV** (10-Lectures)

**AN OVERVIEW OF MIXED SIGNAL VLSI DESIGN:**

Fundamentals Of Analog And Digital Simulation, Mixed Signal Simulator Configurations, Understanding Modeling, Integration To CAD Environments.

**UNIT V** (10-Lectures)

**TOOLS FOR PCB DESIGN AND LAYOUT:**

An Overview of High Speed PCB Design, Design Entry, Simulation and Layout Tools for PCB. Introduction to Orcad PCB Design Tools.

**TEXTBOOKS:**

1. J.Bhaskar, "*A Verilog Primer*", BSP, 2003.
2. J.Bhaskar, "*A Verilog HDL Synthesis*", BSP, 2003
3. M.H.RASHID, "*SPICE FOR Circuits and Electronics Using PSPICE*", (2/E) (1992) Prentice Hall.

**REFERENCE BOOKS:**

1. ORCAD: Technical Reference Manual, Orcad, USA.
2. SABER, "*Technical Reference Manual*", Analogy Nic, USA.
3. M.J.S.SMITH, "*Application-Specific Integrated Circuits*", (1997). Addison Wesley
4. J.Bhaskar, "*A VHDL Synthesis Primer*", BSP, 2003.