

DIGITAL Electronics

*Innovative Practical
Approach to
LEARN*

Learning Objectives

Digital electronic ICs and FPGAs are the “brains” behind common microcontroller –based systems such as those found in automobiles, personal computers and automated factory control systems

It is important to understand Digital Electronics first before you think of learning HDL Language like VHDL and VERILOG used in VLSI Design – because you need to implement Digital function through VHDL/Verilog.

Learning could be fun if we can skip to read books. This course consists of High Quality Audio-Video lectures on Practical Application of circuit design, operation & troubleshooting followed by National-Instruments MultiSIM EDA Tool to demonstrate the Digital Circuitry.

*What you need to do?
Run the MultiSIM example files and check the results to clear the concepts.*

*What’s more?
Further, now you have the choice to design, simulate and implement your circuits using a programming language called VHDL instead of wiring individual gates and devices to achieve the required function.*

Course Prerequisites:
Basic Electricity Principles

Target Audience:
Engineers, students who want to opt for VHDL/Verilog course and also for those who wants to become Embedded Designer.

Courseware Includes

1. **DVD** - Follow the Audio Video lectures with Multisim demonstration
2. **MultiSIM Files** - Carry out the LAB exercise in Multisim to check the Results all in your PC
3. **MultiSIM Software** - Complete Multisim and LABView software to carry out the simulations.

... All these comes bundled at a small price which will help you to clear many doubts and explore digital electronics as you will require digital electronics in every stage of your design career.

Table of Contents



1. NUMBER SYSTEMS AND CODES
2. DIGITAL ELECTRONIC SIGNALS AND SWITCHES
3. BASIC LOGIC GATES
4. PROGRAMMABLE LOGIC DEVICES: CPLDS AND FPGAS WITH VHDL DESIGN
5. BOOLEAN ALGEBRA AND REDUCTION TECHNIQUES
6. EXCLUSIVE-OR AND EXCLUSIVE-NOR GATES
7. ARITHMETIC OPERATIONS AND CIRCUITS
8. CODE CONVERTERS, MULTIPLEXERS, AND DEMULTIPLEXERS
9. LOGIC FAMILIES AND THEIR CHARACTERISTICS
10. FLIP-FLOPS AND REGISTERS
11. PRACTICAL CONSIDERATIONS FOR DIGITAL DESIGN
12. COUNTER CIRCUITS AND VHDL STATE MACHINES
13. SHIFT REGISTERS
14. MULTIVIBRATORS AND THE 555 TIMER
15. INTERFACING TO THE ANALOG WORLD

Multisim EDA Tool from



Course Part# **PCBkeyDE1513**