

## Advanced FPGA Design (Practical Oriented Workshop)

Course Duration 8-10 weeks (Sundays: 10:00 AM to 1:00 PM)

### Course Content

#### 1) Introduction to FPGA Design and FPGA design Flow

- a. PAL, CPLD and FPGA basics
- b. FPGA Design Flow

#### 2) FPGA Architecture

- a. Internal Architecture of FPGA and CPLD
- b. Logic implementation

#### 3) HDL Basic

- a. Introduction to VHDL/VERILOG
- b. Design methodology using VHDL/VERILOG

#### 4) FPGA Simulation and Synthesis Tool Flow

- a. Modelsim/Aldec simulation
- b. Design Synthesis using Synplify PRO

#### 5) FPGA Implementation Design Flow

- a. Design constraining and pin locking
- b. Static Timing Analysis

#### 6) Timing Simulation and Programming

- a. Timing Simulation using Modelsim/Aldec
- b. Programming using JTAG

#### 7) System Level testing and debugging

- a. Debugging techniques
- b. Identification of the issues/resolving

#### 8) Misc Topics about latest trends of Industry

- a. FPGA Device selection
- b. Other Q&A

#### 9) Hands on Practical Exposure with Altera DE-0 Nano Development Board