

## **Online Certificate Course in VLSI Design**

**Course Duration - 28 Hours**

**Total - 2 Hrs. per Day**

**Theory-1Hr. & Lab-1 Hr.**

### **Course Description:**

- **Hardware Modeling Overview.**
- **VHDL & Verilog language concepts.**
- **Test benches Writing.**
- **Coding for Synthesis.**
- **FPGA Architecture - Basic Components of FPGA (LUT, CLB, Switch Matrix, IOB).**
- **FPGA Architecture of different families: Artix-7 FPGA and Basys-3 Board.**
- **FPGA Design Flow - Xilinx Vivado tool, Reading Reports, SSN and Implementing IP cores, soft-core processor IP Design using MicroBlez.**
- **Optimal FPGA Design - HDL Coding Techniques for FPGA, FPGA Design Techniques.**
- **Synthesis Techniques, Implementation Options.**

### **Eligibility:**

- **Diploma/B.Sc./M.Sc./B.Tech./M.Tech. in Electronics/Electrical/Science stream/ Instrumentation (Completed or Pursuing).**

### **Prerequisite:**

- **Basic Knowledge of Analog & Digital circuits.**

### **Fee & Important dates:**

<b>Last Date for Registration &amp; Payment</b>	<b>Expected Date of Course Start</b>	<b>Course Fee</b>
<b>Last Friday of every odd month</b>	<b>First Monday of every even month</b>	<b>Rs. 1,200/- incl. GST &amp; all other charges</b>

## Mode of Course Delivery:

The course would be conducted in virtual classroom environment which will be completely online, Course content includes Online Theory & lab sessions, Live interactive doubt clearance sessions, Course material in text/pdf format, Links to external resources and blogs, Online Forums, Lab Assignments, Tests etc.

## Certificate:

Certificate will be provided to the participants, based on minimum 75% attendance and on performance (minimum 50% marks) in the online test, conducted at the end of the course.

## How to Apply:

- Read the course structure & course requirements carefully.
- Visit the Registration portal and click on apply button.
- Create your login credentials, fill up all the required details, check preview and Submit the application form.
- Login with your credentials to verify the mobile number, email ID and then upload the documents, Lock the profile and Pay the Fees online, using ATM-Debit Card / Credit Card / Internet Banking / UPI etc.

## Contact Person:

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## Course Coordinator:

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## Course Content

<b>Theory Topics</b>	<b>Hours</b>	<b>Practical/Lab Assignments</b>	<b>Hours</b>
➤ <b>Introduction to VHDL</b>	<b>1 Hrs</b>	→ <b>How to download and Install Vivado Software</b> → <b>Install web pack License on Vivado</b>	<b>1 Hrs</b>
➤ <b>Introduction to Verilog</b>	<b>1 Hrs</b>	→ <b>How to create Project in Vivado with example</b>	<b>1 Hrs</b>
➤ <b>Detail modeling's of Verilog</b> 1. Behavioral modeling 2. Data flow modeling 3. Gate level modeling 4. Switch level modeling	<b>4 Hrs</b>	→ <b>How to write Test bench waveform with example</b>	<b>1 Hrs</b>
➤ <b>Introduction to ASIC and FPGA-FPGA design flow</b>	<b>1 Hrs</b>	→ <b>How to write constraint files in Vivado</b>	<b>2 Hrs</b>
➤ <b>Introduction To combinational Circuits and its various examples</b>	<b>1 Hrs</b>	→ <b>Synthesis of combinational logic Examples</b>	<b>2 Hrs</b>
➤ <b>Introduction To Sequential Circuits and its various examples</b>	<b>2 Hrs</b>	→ <b>Synthesis of sequential logic Examples</b>	<b>2 Hrs</b>
➤ <b>Introduction To FSM Circuits and its various examples</b>	<b>1 Hrs</b>	→ <b>Synthesis of FSM Examples</b>	<b>1 Hrs</b>
➤ <b>Introduction To ASM Circuits and its various examples</b>	<b>1 Hrs</b>	→ <b>How to use IP in Vivado</b>	<b>1 Hrs</b>
➤ <b>Verilog Function &amp; Tasks</b>	<b>1 Hrs</b>	→ <b>Practice Examples</b> → <b>Examples Using Basys-3 Board</b>	<b>2 Hrs</b>
➤ <b>Mini Project (Real time project)</b>	<b>1 Hrs</b>	→ <b>Complete Mini Project</b>	<b>1 Hrs</b>