

VLSI Course Content

Overview: VLSI is the technology used in the fabrication of IC (integrated circuits)

Day 1

Session 1:

- Introduction - 7-Series Architecture
- Overview and Vivado Design Flow
- Creating an HDL Design
- Use Vivado IDE to create a simple HDL design.
- Simulate the design using the XSIM HDL simulator available in Vivado design suite.

Session 2:

- Generate the bit stream and verify in hardware.
- Xilinx Design Constraints

Session3:

- Xilinx Design Constraints
- Create a project with I/O Planning type, enter pin locations, and export it to the rtl.
- Create the timing constraints and perform the timing analysis.
- IP Integrator and Embedded System Design Flow

Session 4:

- Create a Processor System using IP Integrator
- Create a simple ARM Cortex-A9 based processor
- Design targeting the Zed Board using IP Integrator.

Day 2

Session 1:

- Introduction to High-Level Synthesis with Vivado HLS
- Improving Performance and Resource Utilization
- Creating an Accelerator

Session 2:

- Creating a Processor System using Accelerator
- Profile an application performing a function both in software and hardware.
- Create an accelerator in Vivado HLS.
- Use the generated accelerator to build a complete system.
- Introduction to Partial Reconfiguration (PR)
- Introduction to Vivado for PR Designs

Section 3:

- Introduction to Partial Reconfiguration Design Flow
- Use Vivado with Partial Reconfiguration (PR) capability enabled to synthesize HDL models and implement the design.

Session 4:

- competition
- Certificate Distribution