

**Foundation Course VLSI Level -2****Course Module**

- Course Name: **Skill Foundation in VLSI Level -2**
- Who Can Join: Pursuing 3<sup>rd</sup> Year B. Tech and M. Tech & M. Sc -1<sup>st</sup> Year
- **The Institute has full right to select the modules as per the requirement of the industry and also depend on the duration of the batch without affecting the course fees.**
- **Certification test is mandatory to attend to award the certificate.**
- **Internship will offer only to the performers or those who completed the industry project.**
- **Fees of each module is**
  - HDL – Verilog @Rs 2950
  - RC & Network @Rs 2950
  - C & C++ Programming @2950
  - HDL VHDL @3540
  - Linux Scripting @ Rs 2950

**Total fees for Level 2 is Rs 15340**

**Important Note: - If a trainee is joining in the 3rd Year, they must first complete Level 1 before progressing to Level 2.**

**1. Module 1- Verilog**

- Methodologies
  - ✓ Behavioral
    - CASE
    - TASK & Function
    - Assign & De-assign, Fork & Join
    - FSM
    - Switch Level Modelling
    - UDP
    - Test Benches
  - ✓ Exposure
    - System Verilog
    - UVM
    - Protocols
- Programming : Implementation of all combination & sequential circuit on FPGA using Verilog Advanced topics.
- Project 1 : Designing of UART using Verilog and Implementation on FPGA's.
- Project2 : Designing of LCD using Verilog and Implementation on FPGA's.
- Project 3 : Designing of VGA using Verilog and Implementation on FPGA's.
- Project 4 : Designing of SPI & I2C using Verilog and Implementation on FPGA's.
- **The Internship Project will be awarded from Aujus Technology, depending on the performance and ability to finish the project in time.**

---

## 2. Module 2 – VHDL

- Introduction of RTL Flow
  - Introduction of VHDL
  - Methodologies
    - ✓ Structural Modeling
    - ✓ Data Flow Modeling
  
    - ✓ Behavioural Modeling
    - ✓ Mixed Modeling
    - ✓ Test bench
  - Programming : Implementation of all combination & sequential circuit on FPGA using VHDL.
  - Project 1 : LED Implementation of 4bit Sign calculator on FPGA using Gate level VHDL.
  - Project2 : SSD Implementation of Traffic Light Controller on FPGA using Behavioral VHDL FSM Modeling
  - Project 3 : SSD Implementation of Digital Clock on FPGA using VHDL.
  - Project 4 : SSD Implementation of Stop watch on FPGA using VHDL
- **The Internship Project will be awarded from Aujus Technology, depending on the performance and ability to finish the project in time.**
- 

## 3. Module 3- Introduction of network elements and its properties.

- Introduction of Electronic Device circuit.
- Semiconductor material and its properties, Basic information of Doping, Diffusion, Conductivity, Mobility of material and more on.
- Working of Diode and its numerical on the basis of application.
- Introduction of Bipolar Junction Transistor and its region of operation in terms of numerical.
- Circuit designing on tools and analysis like DC analysis, Power analysis, Transient analysis, Temperature effect, Corner frequency and more on.
- MOS fabrication steps and difference between MOSFET and BJT.
- MOSFET properties and its numerical.
- Circuit designing on tools and analysis like DC analysis, Power analysis, Transient analysis, Temperature effect, Corner frequency and more on.
- Circuit & Layout Design of Inverter and Digital gates.

## 4. Module 4- UNIX

- Basic of UNIX, how different from Windows.
- Introduction of SHELL.
- File and Directories.
- Home Directories Introduction and .cshrc file formation.
- Basic Commands-cp,mv,rm,touch,which, mkdir,cat
- UNIX sed, cut, awk, grep (regex), TR commands.

## 5. Module 5 – C & C ++ Programming (Implementation of FIFO/QUEUE MEMORY(software) )

### C Programming

- **Introduction -**
    - ✓ “Hello World” Program - Getting Started
-

- ✓ Working with Code Blocks
- ✓ Variables and Arithmetic Expressions
- ✓ Character Input and Output
- ✓ File Copying
- ✓ Examples with Character Counting, Line Counting, Word Counting

**C ++ Programming**

- Introduction to Class-
  - ✓ "Hello World Program"
  - ✓ Types, Variables, and Arithmetic
  - ✓ Constants
  - ✓ Tests and Loops
  - ✓ Pointers, Arrays, and Loops
  - ✓ Public and Private Elements
  - ✓ Structure, Classes
  - ✓ Modularity

-----End of the Doc-----