

# Empower Excel Elevate

**10 Weeks** Program in  
**VLSI**  
Integrated with **Top experts from MNCs**



## ABOUT COMPANY

An Idea of learning and upskilling every single day for the hope of a better tomorrow.

LearnFlu is nothing but an Idea. An Idea of learning and upskilling every single day for the hope of a better tomorrow. LearnFlu is also a disease, which every being alive wishes to have. A disease of learning something new and interesting for the growth they desire



## WE OFFER



## PROGRAM HIGHLIGHTS

### WHY THIS PROGRAM IS YOUR BEST CHOICE

- 01 LIVE INTERACTIVE SESSIONS WITH INDUSTRY EXPERTS
- 02 MENTOR-DRIVEN SPRINT-BASED REAL-WORLD TEAM PROJECTS
- 03 LIVE MENTORSHIP
- 04 PERSONALISED MENTORSHIP AND CAREER GUIDANCE
- 05 CAREER ASSISTANCE
- 06 DOUBLE CERTIFICATION & CREDIT REPORT
- 07 PLACEMENT ASSISTANCE

## COURSE CURRICULUM



### Module 1: Introduction to VLSI and Digital Design Concepts

- Chapter 1: Introduction to VLSI**
  - Basics of VLSI (Very Large Scale Integration)
  - VLSI design flow: front-end and back-end design
  - Key trends and challenges in VLSI technology
- Chapter 2: Basics of Digital Design**
  - Introduction to combinational and sequential logic circuits
  - Logic gates, multiplexers, encoders, decoders, and flip-flops
  - Designing basic digital circuits using truth tables and Boolean algebra
- Chapter 3: Synchronous and Asynchronous Circuits**
  - Designing synchronous vs asynchronous circuits
  - Timing diagrams and clocking in digital circuits
  - Design considerations for clock distribution and clock domains

### Module 3: Verilog HDL for Digital Design

- Chapter 1: Introduction to Verilog HDL**
  - What is Verilog? Basic syntax and structure
  - Modules, ports, and hierarchical design
  - Designing simple combinational and sequential circuits in Verilog
- Chapter 2: Dataflow, Behavioral, and Structural Modeling**
  - Different modeling techniques in Verilog (dataflow, behavioural, structural)
  - Writing Verilog code using these modelling techniques
  - Testbenches and simulation
- Chapter 3: Verilog for Sequential Logic and FSMs**
  - Designing counters and shift registers in Verilog
  - Timing analysis in Verilog simulations

### Module 2: Advanced Digital Design

- Chapter 1: Design of FSM (Finite State Machines)**
  - Introduction to FSMs: Moore and Mealy machines
  - FSM design techniques and state diagrams
  - Applications of FSM in digital circuits
- Chapter 2: Sequential Circuit Design**
  - Design of counters, registers, and shift registers
  - Setup time, hold time, and timing constraints in sequential circuits
  - Power optimization techniques for sequential circuits
- Chapter 3: Designing Arithmetic Circuits**
  - Design of adders (Ripple-carry, Carry-lookahead, Carry-save)
  - Multiplexers: array and Wallace-tree multipliers
  - Pipelining and parallelism in digital circuit design

### Module 4: SystemVerilog HVL (Hardware Verification Language)

- Chapter 1: Introduction to SystemVerilog**
  - What is SystemVerilog?
  - Differences between Verilog and SystemVerilog
  - Basic syntax and enhancements for design and verification
- Chapter 2: Verification Constructs in SystemVerilog**
  - Data types, procedural blocks, and operators in SystemVerilog
  - Clocking blocks and interfaces in SystemVerilog
  - Randomization and constraints
- Chapter 3: Functional Coverage and Assertions**
  - Functional coverage: goals and techniques
  - Writing assertions in SystemVerilog
  - SystemVerilog UVM (Universal Verification Methodology) basics

### Module 5: Verification Methodologies

- Chapter 1: Basics of Verification Methodology**
  - Importance of verification in VLSI
  - Verification plans and strategies
  - Overview of testbenches, stimulus generation, and result checking
- Chapter 2: UVM (Universal Verification Methodology)**
  - Introduction to UVM
  - UVM components: environment, test, driver, monitor, and scoreboard
  - Designing a testbench using UVM
- Chapter 3: Testbenches and Verification Environments**
  - Designing a testbench in Verilog/SystemVerilog
  - Testbench components: stimulus, DUT (Device Under Test), and checker
  - Coverage-driven verification

### Module 7: RTL (Register Transfer Level) Design

- Chapter 1: Basics of RTL Design**
  - What is RTL?
  - Understanding the RTL abstraction level
  - Writing synthesizable RTL code
- Chapter 2: Synthesizable Constructs in Verilog and SystemVerilog**
  - Designing synthesizable blocks
  - Synthesizing combinational and sequential logic
  - Tools for RTL synthesis and verification
- Chapter 3: Timing Analysis and RTL Optimization**
  - Introduction to static timing analysis
  - Timing closure and optimization techniques
  - Power and area optimization in RTL design

### Module 6: Object-Oriented Programming Concepts (OOPs) in SystemVerilog

- Chapter 1: Introduction to OOPs: Concepts**
  - Basics of object-oriented programming
  - Classes, objects, inheritance, polymorphism, and encapsulation
  - Applying OOPs principles in SystemVerilog for verification
- Chapter 2: Creating Classes and Objects in SystemVerilog**
  - Creating classes, methods, and constructors
  - Inheritance and method overriding
  - Using OOPs for testbench reusability and scalability
- Chapter 3: Transaction-Level Modeling (TLM)**
  - Introduction to TLM and its importance in verification
  - Modeling and simulating transactions
  - TLM components in UVM for efficient verification

### Module 8: Modelling Methods and Practical Design

- Chapter 1: Modelling Methods in Verilog/SystemVerilog**
  - RTL, behavioural, and gate-level modelling
  - Differences between Verilog and SystemVerilog
  - Simulation of models and comparison between different modelling methods
- Chapter 2: Writing Testbenches for Verification**
  - Writing functional and timing verification testbenches
  - Stimulus generation and response analysis
  - Automating testbenches with SystemVerilog
- Chapter 3: Capstone Project: End-to-End VLSI Design and Verification**
  - Building an end-to-end RTL design
  - Verifying the design using SystemVerilog and UVM
  - Presenting the project: design, simulation, and verification results

2 Weeks Major Projects

## Jobs You Can Apply

- ◆ Physical Design Engineer, ₹6-15 LPA
- ◆ RTL Design Engineer (Logic Design), ₹7-18 LPA
- ◆ Verification Engineer, ₹6-16 LPA
- ◆ DFT (Design for Test) Engineer, ₹6-14 LPA
- ◆ Analog/Mixed-Signal Design Engineer, ₹8-18 LPA
- ◆ Layout Design Engineer, ₹5-12 LPA.

## Projects

- ◆ Adaptive Edge-Enhanced Color Interpolation Processor for Real-Time Video Applications
- ◆ High-Performance H.264/AVC Intra-Prediction Architecture for Ultra HD Video
- ◆ Low-Power Digital Signal Processor Architecture for Wireless Sensor Nodes.

## TOOL BOX



## MEET YOUR MENTOR



**Niharika**  
Company : M-Tech  
Experience : 2+ years

Niharika is a dynamic mentor with over 2 years of expertise in VLSI, cultivated through her tenure in more than 2 multinational corporations. Armed with an M.Tech in VLSI, she brings a comprehensive understanding of the field to her mentorship. Niharika's impact extends beyond her academic achievements; she has successfully mentored over 20 B-Tech students, guiding them towards their professional aspirations. Her commitment to fostering talent and sharing her wealth of experience makes her an invaluable mentor, ensuring that her mentees not only achieve their goals but also flourish in the intricate realm of VLSI technology.

## PLACEMENT SERVICES

- REACH YOUR DREAM JOB :**  
AT LEARNFLU, WE ARE DEEPLY COMMITTED TO YOUR LEARNING JOURNEY AND DEDICATED TO YOUR CAREER SUCCESS. OUR COMPREHENSIVE PLACEMENT SERVICES ARE TAILORED TO EQUIP YOU WITH THE SKILLS, CONFIDENCE, AND CONNECTIONS NECESSARY TO SECURE YOUR DREAM TECH JOB
- RESUME PREPARATION :**  
CRAFT A STANDOUT RESUME WITH EXPERT GUIDANCE TO EFFECTIVELY HIGHLIGHT YOUR SKILLS AND EXPERIENCE, ENSURING YOU CATCH THE ATTENTION OF RECRUITERS.
- SOFT SKILL PREPARATION :**  
ELEVATE YOUR COMMUNICATION, TEAMWORK, AND LEADERSHIP ABILITIES WITH ENGAGING LIVE SESSIONS AND CUSTOMIZED FEEDBACK, DESIGNED TO HELP YOU EXCEL IN ANY PROFESSIONAL SETTING.
- HIRING PARTNERS & CAREER PORTAL :**  
GAIN ACCESS TO LEADING TECH COMPANIES THROUGH OUR EXTENSIVE NETWORK OF HIRING PARTNERS AND OUR EXCLUSIVE CAREER PORTAL, DESIGNED TO CONNECT YOU WITH YOUR IDEAL JOB OPPORTUNITIES.
- MENTORSHIP**  
GAIN HANDS-ON EXPERIENCE THROUGH INTERNSHIPS AND MENTORED PROJECTS, EARNING AN INDUSTRY CERTIFICATE

## ADDITIONAL SERVICES

- Linkedin optimization**  
Optimizing your LinkedIn profile can greatly enhance your professional online presence and increase your
- Career Guidance**  
Career guidance plays a vital role in helping individuals navigate the complex and often challenging world of work.
- Career Opportunities**  
Career opportunities are essential as they provide pathways for personal and professional growth, financial stability, and the fulfillment of individual potential and aspirations.
- Hands-on experience**  
The importance of hands-on experience, education, and is very substantial to land your first job.
- Personality Development**  
Personality development is crucial as it enhances overall personal growth, fosters confidence, and improves interpersonal skills, leading to success in both personal and professional life.



## CREDIT VALIDATION REPORT

## COURSE COMPLETION CERTIFICATE



## INTERNSHIP COMPLETION CERTIFICATE



## STUDENTS REVIEWS

- Sravan** ★★★★★  
Very good internship program. My mentors are teaching me more technical stuff. I also recommend my friends to do this internship.
- Vasavi** ★★★★★  
This is the best internship provider with major projects with best experienced mentors.
- Sarvani** ★★★★★  
This is the best internship and training provider company with 100% job assistance
- Raghu Roy** ★★★★★  
This is the best internship provider with major projects with best experienced mentors.
- Aradhana** ★★★★★  
Learnflu seamlessly merges education and technology, offering a dynamic platform for immersive learning experiences. With innovative tools and engaging content, Learnflu elevates the educational landscape.

- Kashish Yadav** ★★★★★  
Very good internship program. My mentors are teaching me more technical stuff. I also recommend my friends to do this internship.
- Dinakaran** ★★★★★  
Thank you so much Learnflu for giving this wonderful opportunity and developed my knowledge.
- Aju Koshan** ★★★★★  
I enrolled for web Data Analysis program for April batch and yesterday was my induction session and session was so good and the mentor Syed Ateem have given very insightful information about this internship and Training Programme and I am very much excited regarding the program
- Priya** ★★★★★  
This is a very good learning platform which offers students training and internship program

## OUR ALUMNI WORKS AT



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