

VLSI

Curriculum

From semiconductor devices and CMOS logic to ASIC flows, FPGA, physical design, and DFM — a complete industry-aligned VLSI program for chip design careers.



35+

Industry Certifications

13

Modules

11.4k+

Students Trained

WHO WE ARE

Our Mission & Vision

Skillumni is a leading edtech platform focused on transforming careers through high-quality upskilling and training across diverse industries. We connect learners with cutting-edge courses, expert mentors, and practical projects to bridge the gap between education and real-world careers.



Our Vision

To empower every learner through accessible, inclusive, and impactful education — creating equal opportunities for all, regardless of background or geography.



Our Mission

To deliver quality education through career-driven courses that empower success — equipping learners with the skills, tools, and confidence to thrive in today's job market.

WHY CHOOSE US

Why Choose Skillumni for Smarter Learning?

Participate in Skillumni's comprehensive training program designed to elevate your skill set and equip you with practical tools to effectively solve real-world problems.



Industry-Driven Learning Paths

Curriculum built around what employers actually need — not textbooks.



Lifetime LMS Portal Access

Revisit lessons, access new content, and keep growing at your own pace.



Hands-On Domain Based Projects

Build real projects that showcase your skills to future employers.



Earn 2+ Industry Certifications

Globally recognized certificates to validate your expertise.

HOW IT WORKS

Your Learning Journey with Skillumni

1

Enrol

Pick your domain — no prior experience needed.

2

Learn

Access recorded sessions & lifetime LMS portal.

3

Build Projects

Complete 1 minor & 1 major industry project.

4

Get Certified

Earn course & internship completion certificates.

5

Launch Career

Resume help, mock interviews & placement support.

Training Spotlight

- Content developed by experienced industry mentors for real-world application.
- 35+ Hours of Learning, Comprehensive video lessons, exercises, and guided modules.
- Lifetime LMS Access to Revisit all learning materials, updates, and resources—forever.
- Access the program anytime, anywhere through our online platform.
- Build practical skills with real-world project work.
- Certification Showcase your achievement and boost your career profile.
- Regular Assessments to Evaluate your progress and strengthen your understanding.

Curriculum:

Module 1: Intro to VLSI

- Definition & history of VLSI
- Applications across industries
- Advantages of VLSI integration
- VLSI design hierarchy overview

Module 2: Semiconductor Devices

- Intrinsic & extrinsic semiconductors
- PN junctions & diode operation
- MOS capacitors
- MOS transistors (NMOS & PMOS)

Curriculum:

Module 3: Digital Logic Design

- Boolean algebra & minimization
- Logic gates & combinational circuits
- Sequential circuits & state machines
- Flip-flops, latches, counters, registers

Module 4: CMOS Logic Design

- CMOS transistor operation
- CMOS logic gates & circuits
- CMOS timing diagrams
- CMOS design trade-offs

Curriculum:

Module 5: VLSI Design Methodologies

- VLSI design process overview
- Design specifications & requirements
- Conceptual design & RTL coding
- Design synthesis & layout

Module 6: Advanced CMOS & DFT

- Timing issues in digital circuits
- Power consumption in CMOS
- Design for Testability (DFT)
- Low-power design techniques

Curriculum:

Module 7: Physical Design

- Physical design overview
- Floorplanning & placement
- Routing & layout
- Power distribution networks (PDN)

Module 8: ASIC Design Flow

- Intro to ASIC design
- ASIC design flow & methodologies
- Front-end design (RTL, synthesis)
- Back-end design (PnR, STA)

Curriculum:

Module 9: Verification & Testing

- Simulation & emulation
- Formal verification
- Test pattern generation
- Post-silicon validation

Module 10: FPGA Design

- FPGA architecture & configuration
- HDL programming for FPGAs
- Design tools for FPGAs
- FPGA vs ASIC trade-offs

Curriculum:

Module 11: Analog Circuit Design

- Intro to analog circuit design
- Op-amp circuits
- Filters & amplifiers
- Data converter circuits (ADC/DAC)

Module 12: Design for Manufacturability

- DFM overview & importance
- Yield & reliability issues
- Layout optimization for yield
- Fault modeling & analysis

Curriculum:

Module 13: Advanced VLSI Topics

- System-on-Chip (SoC) design
- Intellectual Property (IP) cores
- Nanometer scale CMOS design
- Quantum & neuromorphic computing

Skills You Get:

- Semiconductor Devices & Digital Logic
- CMOS Logic Design
- VLSI Design Methodologies
- Physical Design & ASIC Flow
- Verification, FPGA & Analog
- DFM, SoC & Emerging Technologies

Training Program Outline



Before Training

- No prior experience required
- Beginner friendly — any domain
- Start fresh, choose your specialization



Training

- Recorded sessions + study materials
- Lifetime LMS access
- Flexible, self-paced learning



Industrial Projects

- Complete 1 Minor Project
- Complete 1 Major Project
- Real-world business problems



Certification

- Course Completion Certificate
- Internship Completion Certificate
- Letter of Recommendation (optional)



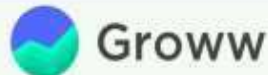
Placement Support

- Resume Building Assistance
- Mock Interview Preparation
- Dedicated Placement Assistance

OUR EXPERTS

Our Mentors Are From:

Learn directly from working professionals at India's top companies — real experience, real insights.



Earn 2+ Industry-Led Certifications

Upon successful completion, receive industry-recognized certificates that validate your skills and boost your career prospects — whether you're aiming for a new job or a promotion.



Course Completion Certificate

Awarded upon finishing all course modules and assessments successfully.



Internship Completion Certificate

Issued after completing both the minor and major industry projects.



Letter of Recommendation

Optional — for outstanding performers, signed by Skillumni co-founder.



Outstanding Performance Certificate

Optional — recognises exceptional dedication and achievement.

Accreditations & Recognitions

Skillumni is proudly recognized under key Government of India initiatives — reflecting our compliance, credibility, and commitment to student success.



Startup India (DPIIT)

Dept. for Promotion of Industry &
Internal Trade, Govt. of India



MSME Certified

Ministry of Micro, Small & Medium
Enterprises, Govt. of India



Ministry of Corporate Affairs

Registered Private Limited Company,
Govt. of India

THANK YOU

We'd love to be part of your learning journey.

Need more insights? Our counsellors are here to guide you through every step.



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