भारतीय प्रौद्योगिकी संस्थान जम्मू
INDIAN INSTITUTE OF TECHNOLOGY JAMMU
विद्याधनं सर्वधन प्रधानम्

Powered by Futurense.uni

M.Tech in VLSI Design (Executive)

Artificial Intelligence | Intelligent Systems | Sensors

Indian Institute of Technology Jammu

24 MONTHS * PROGRAM | **IIT ALUMNI STATUS** | **LIVE ONLINE CLASSES** by IIT Jammu faculty and Top Industry Leaders with Campus immersion

Build the Brains of Tomorrow's Tech, Byte by Byte

Apply Now

*After 1 Year of completion of course, candidate will be eligible for PG Diploma in VLSI Design.

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Context of the Program

FROM SMARTPHONES TO SELF-DRIVING CARS, THE DEMAND FOR MICROELECTRONICS IS ON A ALL-TIME-HIGH

Market Size: *The Indian semiconductor industry is on a path of significant growth, with verifiable forecasts projecting the market to reach approximately* ***$63 billion by 2026*** *and further expanding to an estimated range of* ***$100 to $110 billion by 2030.***

Job Demand: *While the ambitious long-term goal is to train over a million semiconductor professionals, a more immediate and pressing challenge is the projected demand for* ***250,000 to 300,000 skilled professionals by 2027,*** *highlighting a potential talent shortfall that requires urgent attention.*

Government Support: *The India Semiconductor Mission (ISM) is a game-changing demonstration of government commitment, starting with an initial financial outlay of* ***₹76,000 crore*** *(approximately $10 billion), and now signaling a strong, sustained push with a proposed follow-on funding phase of up to* ***$20 billion*** *(or approximately* ***₹1.67 lakh crore****).*

Industry Presence: *The bedrock of this ecosystem is the strategic presence of global leaders like* ***NVIDIA, Intel, and AMD,*** *who are significantly investing in India's semiconductor landscape, particularly in areas like* ***AI, data centers, and advanced computing,*** *positioning the country as a major R&D and design hub.*

AMD *Inaugurated its largest global design center, the Technostar research and development campus, with a $400 million investment over five years in Bengaluru. The facility aims to house 3,000 engineers and focus on CPU, GPU, adaptive SoCs, and FPGA development.*

TIME TO SPECIALIZE IN VLSI FOR 2027:

Required Qualification (Entry Barrier): *Secure an M.Tech in* ***VLSI/Electronics to meet the basic eligibility*** *for core product company roles, which is expected to become the industry standard by* ***2027.***

Tool Proficiency (Practical Mandate): *Demonstrate hands-on expertise with full-cycle flows using industry-standard* ***EDA tools*** *(Cadence/Synopsys/Mentor Graphics) to secure a position in the* ***2027*** *hiring cycle.*

Qualcomm Inc: *Planning to outsource semiconductor chip manufacture to India once the country establishes its* ***own fab plants and OSAT facilities****. Eyeing growth opportunities in* ***5G phones, automotive software for EVs, WiFi technologies, and wireless fixed broadband solutions.***

Resources: Counterpoint Technology Market Research, India Electronics & Semiconductor Association (IESA), Deloitte, The Economic Times, Government of India (MeitY), Outlook Business, TeamLease Degree Apprenticeship, ETAuto, and Tech in Asia.

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About the Program

This two-year comprehensive program at IIT Jammu is intricately structured to address the rapid advancements in VLSI Design and Intelligent Systems, considering the integration of complex semiconductor technology with AI-driven innovation.

INDUSTRY-FOCUSED CURRICULUM

Designed by esteemed faculty with input from global VLSI Design experts and industry leaders, focusing on nurturing future leaders.

ADAPTATION TO TECHNOLOGICAL ADVANCEMENTS

Tailored to keep pace with rapid advancements in VLSI Design and Intelligent Systems, the program ensures students are equipped with the latest skills demanded by the industry.

ACADEMIC EXCELLENCE

Leveraging IIT Jammu's renowned academic and research excellence, the program offers a solid foundation in VLSI Design, addressing industry needs through multidisciplinary education.

INTEGRATION OF COMPLEX TECHNOLOGIES

With a focus on integrating semiconductor technology and AI-driven innovation, students are prepared to navigate the complexities of modern VLSI systems effectively.

PRACTICAL ENGAGEMENT

Through hands-on projects and collaboration with industry experts, the program emphasises practical learning, bridging the gap between theory and application.

IMMERSIVE EDUCATIONAL EXPERIENCE

Immersive educational experience, giving students access to the latest technological tools and preparing them for impactful roles in data-centric technological domains.

AI INTEGRATED CURRICULUM

HANDS-ON LABS WITH CADENCE SYNOPSYS TOOLS

IOT, ML, & 5G EQUIPPED LESSONS

SURVEILLANCE AI TECHNOLOGIES

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This Program is for you

IF

- You have a passion for VLSI Design with Intelligent Systems, seeking to become a frontrunner in cutting-edge technology.
- Exploring the integration of AI and IoT in enhancing fab lab efficiency and innovation in semiconductor manufacturing processes.
- You aspire to specialise in high-demand fields, aiming to carve out a distinguished niche in the industry.
- You're determined to master not only VLSI design but also IoT, Edge Computing, AI, ML, and Intelligent Systems related concepts.
- You're driven to upskill and climb the ladder of success.
- You aspire to build a robust career in the ever-evolving field of VLSI Design.
- Semiconductor VLSI is evolving through its synergy with mechanical and chemical engineering, leading to innovations in thermal management, material science, and fabrication techniques.

The forward-thinking curriculum at IIT Jammu is carefully designed by industry experts and top Academic Professionals. Updated to reflect the latest trends following the emergence of Intelligent System integrations, the program offers a practical educational experience enriched with hands-on projects.

ELIGIBILITY

- Educational Qualification: BE/B.Tech/M.Sc. in ECE, EE, ETC, CSE, ME, Physics, or a related field.
- Academic Requirement: Minimum 60% or 6 CGPA in Under-Graduation or Post-Graduation (55% or 5.5 for candidates with over 10 years of work experience).
- Work Experience: Minimum 2 years of full-time work experience is compulsory.

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Program Highlights

NEXT - GEN CURRICULUM FOR A FUTURE-PROOF CAREER

- Cutting-edge curriculum built by industry experts and IIT-Jammu Faculty based on extensive studies on the needs of the industry
- Application-oriented approach along with case studies and project work

THE IIT DREAM

- Attain an M.Tech (Executive) Degree from IIT Jammu
- Achieve IIT Jammu Alumni Status
- Become a part of IIT Jammu Alumni network
- Network with wide-ranging experts from tech industry

HYBRID AND HIGHLY EXPERIENTIAL LEARNING

- Live sessions every week
- Masterclasses by top industry experts bringing in use cases, applications, challenges and projects

CAMPUS IMMERSION

- The first year of campus immersion is mandatory, while the second-year campus immersion is optional.

INDUSTRY-TETHER WITH FUTURENSE

- Fully Sponsored Futurense Bridge Course covering key foundational concepts
- Futurense Career Support

Program Outcome

Acquire Foundational and Advanced VLSI Design Skills

Gain comprehensive knowledge in VLSI design principles and methodologies using tools like Synopsys, ready to tackle complex integrated circuit designs.

Develop Intelligent System Integration Expertise

Learn to embed intelligence into VLSI systems, incorporating aspects of AI and IoT for creating sophisticated, smart electronic solutions.

Hands-on Proficiency with Industry Software

Attain practical skills in industry-standard software for simulation and analysis, essential for VLSI design and intelligent system development.

Master Advanced Digital System Design

Delve deep into Advanced Digital Systems, preparing to innovate in Semiconductor Technology and Intelligent Electronics.

Engage in Cross-Disciplinary Practical Applications

Apply theoretical knowledge in real-world settings, particularly in laboratories focusing on Digital System Design and Microelectronics simulation.

Execute a Capstone Dissertation

Demonstrate expertise through a significant, original research project that synthesises learning and contributes to the field.

Specialise with a Wide Array of Electives

Tailor your expertise with electives in areas like Embedded System Design, Semiconductor Devices, and Cyber-Physical Systems, among others.

Become a Leader in Next-Gen Technology

Be at the forefront of technological advancements by contributing to the development of intelligent and innovative chip solutions

Enhance Communication Skills

Develop the ability to articulate complex VLSI and Intelligent System concepts clearly and effectively to various audiences.

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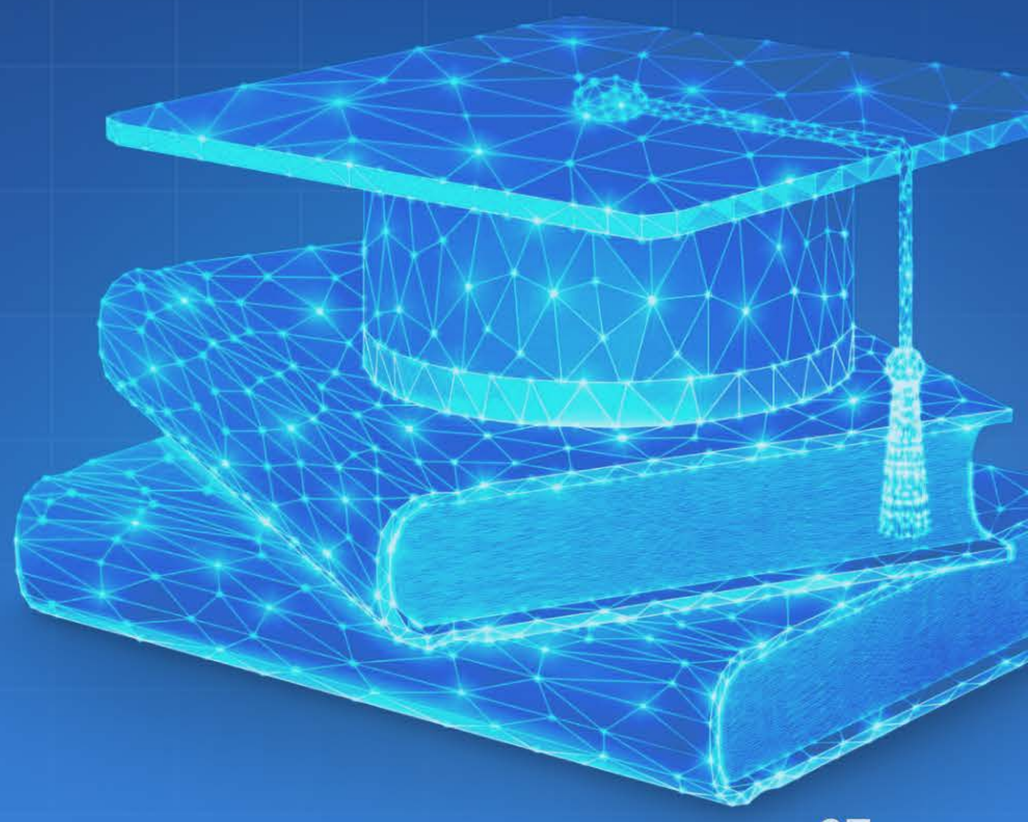
Expected —
Graduate Attributes

- MASTER CHIP DESIGN PRINCIPLES AND TOOLS.
- SEAMLESSLY COMBINE AI WITH CHIP DESIGN.
- TACKLE COMPLEX CHALLENGES IN NEXT-GEN TECH.
- BECOME A TECH COMMUNICATOR, EXPLAINING COMPLEX CONCEPTS WITH CLARITY.
- COLLABORATE EFFECTIVELY WITH THE TEAM FOR PROJECT SUCCESS.

TOOLS COVERED

- cadence® — For VLSI Design and Verification (Digital & Analog Design)
- Mentor Graphics® — For Electronic Design Automation Workflows
- XILINX® — For FPGA Design (Front End Design)
- VIVADO™ — For FPGA Design (Front End Design)
- SYNOPSYS® — For Chip Design and Verification (Device Stimulations)



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Student — Journey

1. Submit your application
2. Appear for Pre-Screening Test
3. Pay the Application Processing Fee
4. Attend the Pre-Screening Interview
5. Receive your Offer Letter from IIT Jammu and Complete your Full Payment
6. Strengthen your foundations with Futurense Bridge Course
7. Begin your M.Tech at IIT Jammu
8. Graduate as an IIT Jammu Alumni

Career —

Opportunities

With VLSI technology becoming increasingly vital across industries like consumer electronics, automotive, and telecommunications, job opportunities are abundant. Graduates holding an M.Tech in VLSI can expect rewarding careers with competitive salaries and ample room for growth.

After graduating from the M.Tech Program in VLSI Design, you can anticipate a salary that typically ranges from 10 LPA to 40 LPA.

POTENTIAL JOB ROLES

Career Opportunities in VLSI Design and Intelligent Systems:

- VLSI Design Engineer
- ASIC Design Architect
- Embedded Systems Developer
- Hardware Verification Engineer
- Signal Processing Engineer
- SoC Design Engineer
- FPGA Developer
- AI Hardware Specialist
- Semiconductor Product Manager

POTENTIAL RECRUITERS

World's leading companies are hiring for the most in-demand data job roles!

Qualcomm
intel
NVIDIA
Texas Instruments
BROADCOM
Micron
AMD
SAMSUNG ELECTRONICS
tsmc
arm
SYNOPSYS
cadence
XILINX
IBM
SONY
Infineon technologies
life.augmented
NXP
BOSCH

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Futurense

Bridge Course

Prepare for your IIT Jammu M.Tech in VLSI Design with the Futurense Bridge Course.

This free program offers live online training with experts in semiconductor technology. You'll get interactive sessions and access to 30+ hours of self-paced learning material covering core VLSI design concepts. The course ends with an assessment to ensure you're ready to excel. Get ready to thrive in your academic and professional journey with the Futurense Bridge Course.

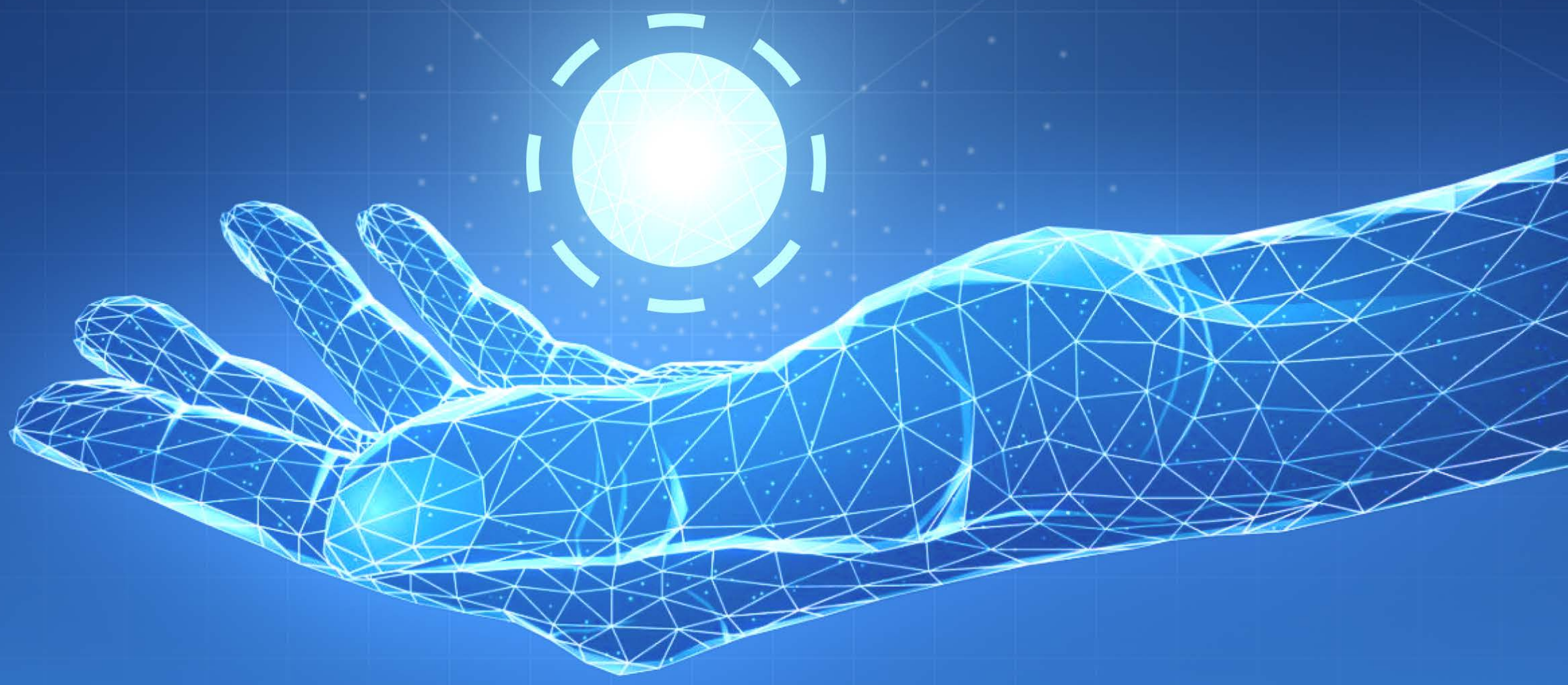
Weekly 4 hours of live online training and 30+ hours of self-guided learning in:

SEMICONDUCTOR FUNDAMENTALS

DIGITAL ELECTRONICS

ANALOG ELECTRONICS

FUNDAMENTALS OF HDL



A complimentary refresher on core principles to seamlessly transition you into advanced VLSI Design concepts.

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Curriculum

SEMESTER 1

Subject	Credits
CMOS Digital Integrated Circuits	3
Advanced Digital System Design	3
Solid State Devices	3
VLSI Technology	3
Software Tools	1
Digital System Design Lab	1
Microelectronics Simulation Lab	1

15
Total Credits

SEMESTER 2

Subject	Credits
Analog Integrated Circuit Design	3
ASIC Design Flow	3
Minor Project	3
Elective-I	3
VLSI Circuit Design Lab	1
Technical Writing and Communication Skills	2

15
Total Credits

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Curriculum

SEMESTER 3

Subject	Credits
Elective II	3
Elective III	3
Dissertation-I	7

13
Total Credits

SEMESTER 4

Subject	Credits
Elective IV	3
Dissertation-II	14

17
Total Credits

List of Electives

Course	Credits
Low Power Circuits and Systems	3
Physics of Transistor	3
Reliability of VLSI Circuits	3
Test and Verification of SoCs	3
Embedded System Design	3
Computer Architecture	3
Semiconductor Devices for High Frequency	3
Design for Manufacturability of VLSI Circuits	3
Cyber Physical Systems	3
Compact Modeling of Semiconductor Devices	3
Mixed Signal Circuit Design	3
Digital VLSI Architecture Design	3
MOS Device Modeling	3
Intelligent Systems with VLSI*	3
Integrated Circuit Design with Networking Protocols*	3
VLSI Design in IoT System Design*	3
VLSI for Automotive Electronics*	3

* Approval under process

Campus —

Immersion

The campus immersion phase is a pivotal part of the program, offering students the chance to engage in on-campus activities and sessions during the designated immersion period. The first year of campus immersion is mandatory, while the second-year campus immersion is optional.

Note: Students will bear their own travel expenses for the campus visit. Each campus immersion cost is approximately ₹5,000, to be paid directly to IIT Jammu or the hostel authorities during the immersion period.

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Program
Coordinator

Dr. Satyadev Ahlawat

Assistant Professor

Electrical Engineering Department

Dr. Satyadev Ahlawat is currently serving as an Assistant Professor in the Department of Electrical Engineering at the Indian Institute of Technology Jammu, India. He received his Ph.D. in Electrical Engineering from the Indian Institute of Technology Bombay. Prior to joining IIT Jammu, he worked as a Research Scientist in the CADS Laboratory at IIT Bombay and has held positions as a Teaching Assistant at IIT Bombay and Lecturer at Kurukshetra University. Dr. Ahlawat also gained valuable research experience as a Research Associate at IIT Bombay and as a Research Assistant at the Indian Institute of Science, Bangalore.

His primary research interests include VLSI testing and design-for-test (DfT) architectures, trusted system design, hardware security, and high-performance processor design. Dr. Ahlawat has taught courses in VLSI design and test, cryptography and hardware security, semiconductor device physics and technology, and computer architecture. He has contributed to several collaborative research projects and served as reviewer for reputed international journals and conferences. Dr. Ahlawat's academic background also includes a Master of Technology in Microelectronics from Panjab University and a Master of Science in Electronics from Kurukshetra University.

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Futurense

Leadership Council

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Vice President, Global Operations and Head, APAC
SIGNANT HEALTH

Kaushik Das
Transformation | Strategy | Operations | Analytics
giant eagle

Nithya Subramanian
Head of Data & Analytics - AMEA
Kellanova

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VP Enterprise Data and Analytics
UNITEDHEALTH GROUP

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SWIGGY

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Walmart

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Director - BI & Analytics
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Schneider Electric

Anand Das
Chief Digital & AI Officer
TVS

Ashish Dabas
Vice President
Capital One

Bhargab Dutta
Chief Digital Officer
CENTURYPLY

Alok Tiwari
Director of Analytics
OLA ELECTRIC

Muthumari S
Global Head of Data & AI Studio
brillio

Aditya Khandekar
President
Corridor Platforms

and many more

Program Details

Duration

24 MONTHS*

Program Commencement

31 JANUARY 2026

Program Fee

₹4.49 LACS

One time benefit

Consolidated Payment - No refunds after standard deadline

Registration Fee: ₹10,000** (Included in the overall program fees)

OR

Provision will also be available on request for payment is 2 parts:

Year 1	₹3,37,000 Includes at 10,000 Registration fee	Year 2	₹1,81,000

Note:

- Each campus immersion cost is approximately ₹5,000, payable directly to IIT Jammu or the hostel authorities at the time of immersion.
- Examination fees of ₹500 per credit, amounting to ₹17,500 for 35 credits over the entire program duration, will be collected directly by IIT Jammu.

Both these costs are not included in the overall program fees and must be paid separately.

Total Credits

60 CREDITS

Learning Mode

LIVE ONLINE CLASS

2 Campus Immersion per Year

Program Schedule

FRIDAY, SATURDAY, SUNDAY

The class schedule will be determined by IIT Jammu and is scheduled to take place on Fridays (if required, at late evening hours), Saturdays, and Sundays, subject to the availability of the faculty.

*After 1 year of program completion, candidates will be eligible for PG Diploma in VLSI Design subject to program director approval.

**Non Refundable. If the Application is not accepted by IIT Jammu or by Futurense, this amount will be refunded in full. However, if after acceptance of the Application, the student withdraws or drops out, for any reason whatsoever, this amount is strictly non-refundable.

If requested for withdrawal:

- If a student submits a withdrawal or refund request within 30 days of the batch start date, an amount of ₹1,68,500 (equivalent to the first semester fee) will be deducted, regardless of whether the student has paid the full program fee of ₹4,49,000 or the first installment of ₹3,37,000. The remaining balance will be refunded.
- If a student has paid the full program fee of ₹4,49,000 and submits a withdrawal request after 30 days from the batch start date, an amount of ₹3,37,000 (equivalent to the first-year fee) will be deducted. The remaining amount will be refunded.
- If a student has paid only the first installment of ₹3,37,000 and requests a refund after 30 days from the batch start date, no refund will be issued, and the entire amount will be forfeited.

Note: GST (18%) is non-refundable.

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About IIT Jammu

In 2018, IIT Jammu relocated its primary operations to a sprawling 400-acre expanse in Jagti village, just beyond Jammu city, allocated by the Government of Jammu and Kashmir for its main campus. Presently, Phase 1A of the main campus, covering 25 acres, is operational, while Phase 1B and 1C are undergoing rapid construction. Situated along National Highway–44, the Institute's main campus lies 17 km from Jammu Airport and 19 km from Jammu Tawi Railway Station.

The Paloura campus now serves as accommodations for PhD scholars and hosts the Central Instrumentation Facility (CIF or SAPTARSHI Labs), a cutting-edge research facility furnished with advanced instruments supporting researchers in both basic sciences and engineering.

IIT Jammu's VLSI Design program is a quintessence of its vision to create humanistic technology that's driven by design and innovation. The program, offered by this esteemed institute, is meticulously integrated with AI and intelligent systems, mirroring the institution's motto: "Learn, Engage, Invent, Create Impact." It's tailored for those who aspire to shape the future of technology, blending rigorous academics with practical, hands-on experience in state-of-the-art facilities.

The institute's ethos is characterised by a culture of mutual respect, a melting pot of creativity and collaboration, and a passionate pursuit of innovative problem-solving. The educational systems at IIT Jammu are not just about learning but are a comprehensive experience, enriched through research that culminates in practicum, reflecting the institute's dedication to developing transformational leaders.

With infrastructure designed to sustain cutting-edge research in thematic areas and a goal to impact at regional, national, and global levels, IIT Jammu is not only an institution but a legacy in the making. It is poised to mentor, support, and innovate for educational institutions, industries, and traditional sectors alike, leveraging its outreach and connectivity with communities and esteemed institutions worldwide.

Embarking on an educational journey with IIT Jammu's VLSI Design program means stepping into a world where every action aligns with the esteemed brand of IIT Jammu. It is an invitation to connect, innovate, and contribute to solutions that resonate with regional relevance and global significance, where AI and VLSI design converge to create a transformative impact.

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About

Futurense Technologies

At Futurense, we recognized the potential challenges engineers could face amid the rapid growth of AI and its widespread adoption. Our focus has been on identifying specific problems confronted by Indian engineers and developing solutions to prepare them for the Global Job Market through upskilling.

We are currently addressing four key issues:

ZERO COST UPSKILLING

Many deserving individuals lack resources for upskilling without sacrificing their salaries. We've pioneered an industry-defining model that offers free upskilling while providing salaries. This model is financially structured through partnerships with Fortune 500 companies, where we act as their talent partner in specialised areas.

ACCESS TO US MASTER'S

The US Job Market has abundant vacancies, but obtaining a Master's degree from top US universities, the only viable way to enter this market, is often financially challenging. We established India's first pathway program between top US universities and IITs/IIMs, reducing the total cost by over 50% and enabling degree completion in just 12 months.

SECOND CHANCE AT IIT DREAM

With an incredibly low selection rate of 0.6% and high placement and compensation rates, the IIT brand holds a special place in the hearts of tech enthusiasts. To provide individuals with a second chance at their IIT Dream, we have collaborated with multiple IITs to launch their first academic degree programs focused on AI. These programs are facilitated by MAANG experts.

JOB-FOCUSED BTECH DEGREES

We believe that traditional BTech education needs reshaping for meaningful change at scale. Partnering with specific universities, we've taken control of their entire BTech education through meticulously designed four-year programs that go beyond textbooks. Our focus is on practical, industry-driven skills, ensuring graduates are not just degree-holders but job-ready professionals.

iitjm.vlsi@futurense.com

+91-80504 14219