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M.Tech in VLSI Design (Executive)

Artificial Intelligence

Intelligent Systems



Indian Institute of Technology Jammu



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

Semiconductor Industry in India Set for Explosive Growth, VLSI and Intelligent Systems Key Drivers, Expected to Surpass \$300 Billion by 2026.



India Aims to Train Over a Million Semiconductor Professionals by 2026 to Meet Global Tech Demands, Embracing Educational Reforms and International Partnerships.



MeitY gears up to supercharge India's semiconductor ambition with a funding boost for ISM scheme.



PM Modi's game-changing India Semiconductor Mission (ISM) fires up with ₹76,000 crore, paving the path for cutting-edge semiconductor innovation in the country.



Intel's game-changing Gaudi 3 AI chip aims to dethrone Nvidia, partnering with top Indian firms for accelerated AI innovation.





REQUIREMENT OF OVER 100,000 SKILLED VLSI ENGINEERS IN THE NEXT FEW YEARS

Our VLSI Design Program equips you to design powerful chips and integrate cutting-edge technologies like IoT, AI, ML, and 5G





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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.

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.

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.

INTEGRATION OF COMPLEX TECHNOLOGIES

With a focus on integrating semiconductor technology and Al-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





IOT, ML, & 5G EQUIPPED LESSONS

AI-DRIVEN DEFENSE STRATEGY

SURVEILLANCE AI TECHNOLOGIES







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This Program is for you

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.

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.

Educational Qualification: BE/B.Tech/M.Sc. in ECE, EE, ETC, CSE, 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 Highights

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 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

Immersions will happen twice, once each year (5-7 days for each immersion)

INDUSTRY-TETHER WITH FUTURENSE



Fully Sponsored Futurense Bridge Course covering key foundational concepts

Futurense Career Support



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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

(D) MASTER CHIP DESIGN PRINCIPLES AND TOOLS.



() 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







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Student —





(2) - - Appear for Pre-Screening Test



(4) - - Attend the Pre-Screening Interview



Receive your Offer Letter from IIT Jammu and Complete your Full Payment















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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:

0 ASIC Design **VLSI Design Embedded Systems** Developer Engineer Architect



SoC Design Engineer

Semiconductor **Product Manager**









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POTENTIAL RECRUITERS

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







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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 industry experts in semiconductor technology. You'll get interactive sessions and access to 30+ hours of self-paced learning 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

FUNDAMENTAL OF VHDL

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A complimentary refresher on core principles to seamlessly transition you into advanced VLSI Design with AI and Intelligent Systems.

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Curriculum

Subject	Credits	
CMOS Digital Integrated Circuits		
Advanced Digital System Design		
Solid State Devices		
VLSI Technology		otal Credi
Software Tools		

Digital System Design Lab

Microelectronics Simulation Lab

Subject

Analog Integrated Circuit Design

ASIC Design Flow

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Curriculum

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List of — Electives

! Credits

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Low Power Circuits and Systems

Physics of Transistor

Reliability of VLSI Circuits

Test and Verification of SoCs

Embedded System Design

Computer Architecture

Semiconductor Devices for High Frequency

Design for Manufacturability of VLSI Circuits

Cyber Physical Systems

Compact Modeling of Semiconductor Devices

Mixed Signal Circuit Design

Digital VLSI Architecture Design

MOS Device Modeling

Intelligent Systems with VLSI*

Integrated Circuit Design with Networking Protocols* 3

VLSI Design in IoT System Design*

VLSI for Automotive Electronics*

* Approval under process

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Campus Immersion

Campus immersion is a crucial part of the program. You'll need to be at the IIT Jammu campus for 5-7 days each year to earn your certificate. During this time, you'll have live classes with top-notch faculty, plus chances to learn from peers, give presentations, and work on projects in person.

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

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Program – Coordinator

Dr. Kankat Ghosh

Assistant Professor Electrical Engineering Department

Dr. Kankat Ghosh is an Assistant Professor in the Electrical Engineering Department at the Indian Institute of Technology Jammu, India. He completed his Ph.D. in Electrical Engineering from IIT Bombay, and holds an M.Tech. in Radio Physics and Electronics and a <u>B.Sc</u>. (Hons.) in Physics from the University of Calcutta.

His research focuses on III-Nitride based optoelectronic devices, including thin film deposition, nanoelectronics, and semiconductor device modeling. He works extensively on AI(In)GaN/GaN heterostructures for IR and THz applications, with relevance to quantum cascade lasers and photodetectors.

Dr. Ghosh has published over 40 research papers and has received the INSA Visiting Scientist Fellowship for 2024–25. He is actively involved in collaborative academic initiatives and maintains strong engagement in research and development in advanced semiconductor technologies.

Prof. Ambika Prasad Shah

Assistant Professor

Electrical Engineering Department

Prof. Ambika Prasad Shah is currently working as an Assistant Professor, Electrical Engineering Department, at Indian Institute of Technology Jammu, India. He was also the visiting professor at University of Virginia, USA. He received Ph.D. degree from the Electrical Engineering Department, Indian Institute of Technology Indore, India. Before joining IIT Jammu, Dr. Shah worked as a Postdoctoral Fellow at the Institute for Microelectronics, TU Vienna, Austria.

He has authored/co-authored more than 90 research papers in peer reviewed international journals and conferences. He was the Conference Organizing Chair for VDAT-2022 and Fellowship Chair for VLSID-2022, Publicity Chair for iSES 2023, and Fellowship chair for AICAS 2023. He is the guest editor of Springer and Elsevier journals. He is the Fellow of IETE, and senior member of IEEE.

His current research interest includes reliability analysis of digital circuits, Design for reliability, fault tolerant circuits, reliability modelling, low power high performance circuit designs, and Hardware security primitives.

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Futurense Leadership Council

Divesh Singla

Nithya Subramanian

Vice President, Global **Operations and Head, APAC**

Anupam Gupta

VP Enterprise Data and Analytics

UNITEDHEALTH GROUP®

Pankaj Rai **Group Chief Data and Analytics** Officer

Ishu Jain **Head Of Central** Analytics

SWIGGY

Nitin Srivastava

Data & Analytics India Lead

Shrisha Ray

Director of Engineering

THOMSON REUTERS

A V Rahul

Director, Analytics

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Program Details

Program Commencement –

A MONTHS

Program Fee -

One time benefit

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Consolidated Payment - No refunds after standard deadline Registration Fee: ₹10,000** (Included in the overall program fees)

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

Includes a ₹10,000 registration fee

Note:

Additional ₹15,000 for each campus immersion.

Examination fees of ₹500 per credit, amounting to ₹17,500 for 35 credits over the entire duration of the program, will be collected directly by IIT Jammu.

Total Credits -

GO CREDITS

Learning Mode-

LIVE ONLINE CLASS

2 Campus Immersion (5-7 days per year)

Program Schedule-

FRIDAY, SATURDAY, SUNDAY

The class schedule will be determined by IIT Jammu and is scheduled to take place on Fridays (late evenings), 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 – IT Jammu

PG Courses Offered

Computer Science Engineering
Communications and Signal Processing
VLSI Design
Tunnel Engineering
Structural Engineering
Thermal and Energy Systems Engineering

Executive Programs Offered
PGD in Cybersecurity
M.Tech in AI ML

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:

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.

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 IT 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 Al. 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 degreeholders but job-ready professionals.

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\$\lambda + 91 926 675 4756

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