BITS Pilani
Pilani | Dubai | Goa | Hyderabad | Mumbai

WORK INTEGRATED
LEARNING PROGRAMMES

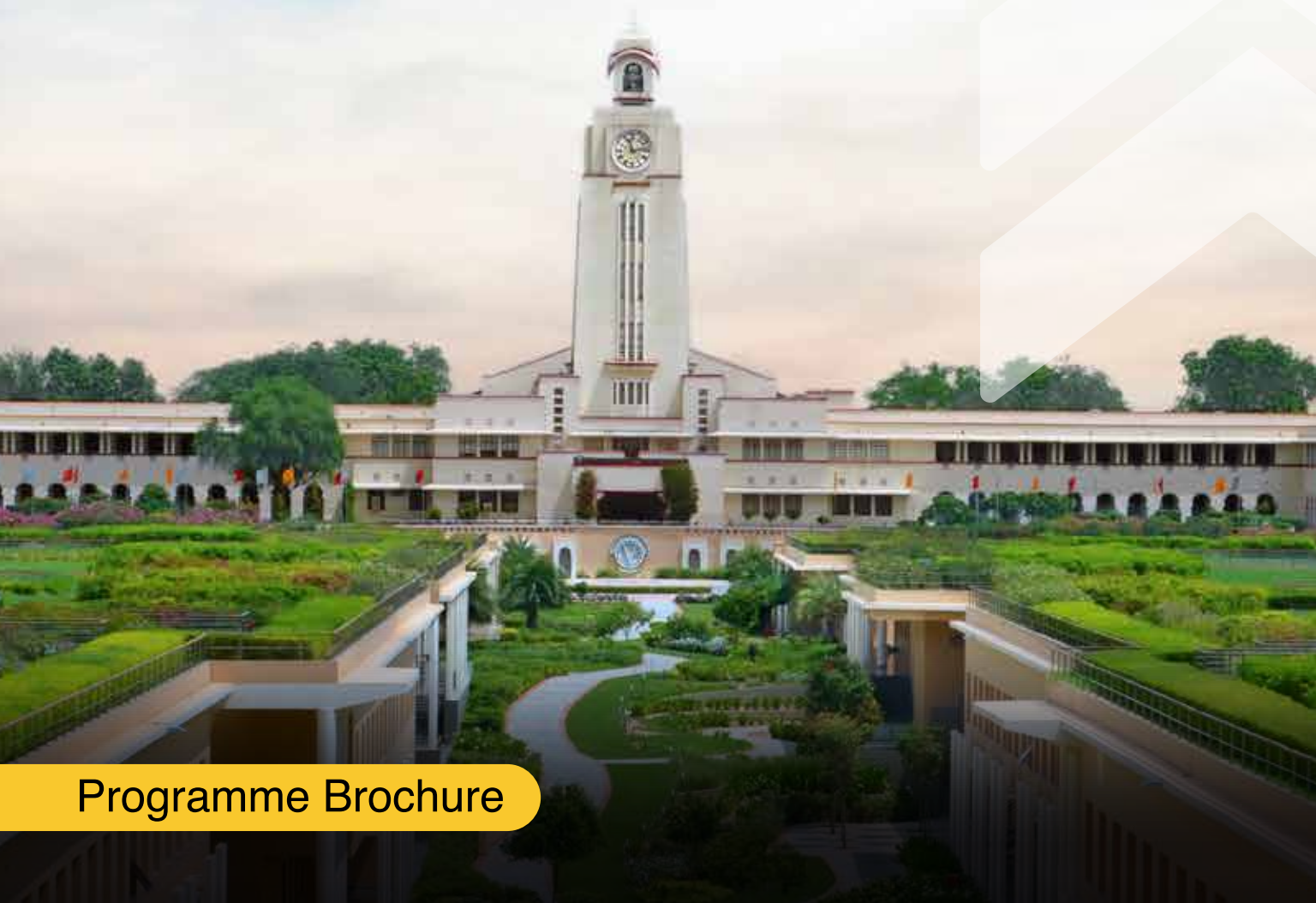
46 Years of Delivering Excellence

M.Tech.

VLSI Design and Microelectronics

for working professionals

Learn. Work. Grow.



Programme Brochure

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BITS Pilani:
An Institute of Eminence

BITS Pilani:

Since 1964, BITS Pilani has been a pioneer in higher education, recognised as an Institute of Eminence by the UGC and Ministry of Education. Known for academic excellence, it has grown into a globally respected institution and was the first Indian university to establish an international campus in Dubai.

Welcome to BITS Pilani's Work Integrated Learning Programmes (WILP)

At BITS Pilani WILP, we blend education with professional growth through tailored programmes aligned with both business and learner goals. Professionals gain new skills, adopt best practices, and make a meaningful impact, while organisations benefit from increased productivity, retention, and a motivated workforce.
Our UGC-approved programmes offer real-world, practical knowledge, ensuring lasting success.

46
Years of legacy

1,36,904
Working Professionals Graduated

353
CEOs and Founders

4,997
Global Heads, Presidents & Directors

367
Organisations Trust Us As Learning Partner

50,117
Working Professionals Currently Enrolled

Programme Introduction

With a comprehensive curriculum, hands-on experiential learning through remote and cloud labs, and flexible education methods, the M.Tech. in VLSI Design and Microelectronics is a four-semester Work Integrated Learning Programme designed for professionals in the semiconductor industry.

This specialised programme focuses on the design, development, and application of integrated circuits and semiconductor devices. Covering key areas such as digital and analogue VLSI design, semiconductor physics, fabrication technologies, and the use of Electronic Design Automation (EDA) tools, it equips learners with both theoretical depth and practical expertise.

Programme Structure

Duration

4 semester programme to be completed in minimum 2 years

Course Structure

12 courses with 4 in each from 1st to 3rd semester

Industry Project

Dissertation or Capstone project in the final / 4th semester

Programme Delivery

Live sessions
Lab exercises
Campus Immersion
Real Life Learning

Eligibility Criteria

- Employed professionals holding Bachelor of Engineering in B.Tech. / EEE / ECE / ENI / Computer Science or equivalent with at least 60% aggregate marks and minimum one year of work experience after the completion of the degree in relevant domains.

Who Should Apply

Ambitious engineers in the Semiconductor industry seeking expertise in System on Chip design, Processor design, IC fabrication, and VLSI CAD. Electronics industry professionals,

Micro-Architects, EDA Tool engineers, and Analog/Digital/Mixed Signal chip designers.

Programme Objectives

The program focuses on essential skills required for lucrative roles in Data Science, Data Engineering, and Advanced Analytics, covering:

To design and analyze analog, digital and RF CMOS integrated circuits fundamentals and new paradigms that practicing engineers need to master as a working professional employed in the VLSI domain.

To develop both a solid foundation and methods of designing, analyzing and optimizing circuits using EDA tools.

To combine theoretical rigor with practical hands-on labs, real-world problem-solving capabilities, lead and innovate in the landscape of semiconductor devices, fabrication technologies, and VLSI design.

To emphasize on the intricacies of smart technologies, high speed and low power design technologies using industry standard EDA tools to master design and analysis of complex integrated circuits.

Equip participants with the knowledge, skills, and aptitude needed for long-term career growth and increased workplace responsibilities.

Career Outcomes

The programme will build you for aspirational career as

- RTL Design Engineer
- Verification Engineer
- Mixed-Signal Design Engineer
- Back-end / Layout Engineer
- SoC / Chip Architect
- EDA Tool Developer
- CAD Engineer
- Failure Analysis Engineer
- IP Integration Engineer

Key Benefits of **BITS Pilani WILP**

Unlock Cutting-Edge Technologies & Industry Practices

Stay ahead of the curve with future-ready tools, methods, and frameworks used by leading professionals worldwide.

Master Hands-On Learning Skills

Apply real world concepts in virtual & remote labs, case studies and simulations that build practical mastery.

Be a Top-Notch Professional in Your Field

Sharpen your expertise, build leadership skills, and accelerate your career growth with industry-relevant learning.

Learn from Best Minds & Industry Experts

Gain insights and mentorship from top faculty and experienced professionals who shape the future of industries.

Grow Without a Career Break

Continue your learning alongside your job, upgrading your skills without taking a career break.

Become Alumni of a Top Institution

Earn credentials from a globally recognised institution and join a powerful, lifelong alumni network

Student **Learning Journey**

Our programmes are designed to help you grow, excel, and advance in your career. By combining industry-relevant skills with academic excellence, we ensure that your learning journey leads to real, measurable progress. Whether you're looking to boost productivity, stay motivated, or take the next step in your professional path, our courses empower you to achieve more. Invest in yourself today and build a future where you're not just keeping up but leading the way.

Programme Orientation

Live Sessions from BITS Experts

Lab Sessions for Practical Learning

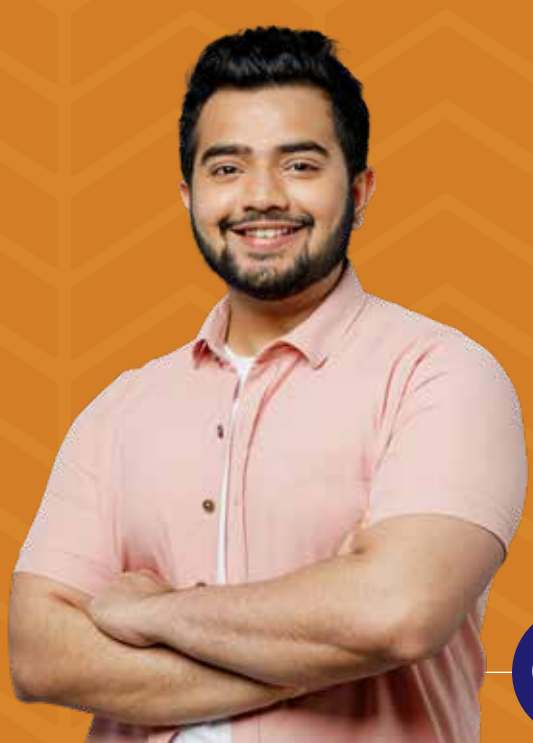
Assessment & Mentoring

Campus Immersion Programme

Workplace Project or Dissertation

Convocation & Degree Award

Become a BITS Alumni



Live Interactive and Engaging Learning Methodology

Live Learning

Live sessions for each course

32 hours of live instruction of each course on weekends in an interactive mode.

Faculty-guided I hands-on learning

Solve real life case studies, assignments & more and receive feedback on the same from the faculty members.

Experiential Learning

Experiential Learning Centres

Learning centres at major cities will go live in 2025 that will have physical labs and faculty members at one place for learners to conduct experiments & practical.

Campus Immersion Programme

Opportunity to visit the BITS campus to learn, experience labs, network with peers and get mentored by BITS leadership.

Project Based Learning

Final Semester Project

Learners pick project from their workplace or industry dissertation to apply their learning and suggest improvements.

Develop Problem Solving Skills

Identify, analyse, and effectively find solutions utilising critical thinking & analytical reasoning.

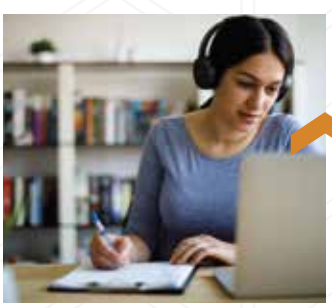
Self-Learning

Flexible learning with access to digital resources

Learners can access e-learning content, recorded sessions, and assignments on our LMS anytime, anywhere.

Library access to books & journals.

Learners get subscription to the world's largest collection of eBooks and other reading resources through OpenAthens.



Flexible Learning

You can take a break to attend personal or professional commitment. Come back & join from where left

(Please take advise from your programme co-ordinator on details).

Labs & Practical Session

Our programmes are designed for real-world impact. With hands-on simulations and remote labs, you don't just learn you apply. Gain practical experience, sharpen problem-solving skills, and master industry-relevant techniques in a dynamic, immersive environment.

Virtual Labs

Software (for design, analysis, modelling, and simulation) hosted on the cloud and accessible online from anywhere.

Remote Labs

Physical lab equipment operated & controlled by students from remote locations.

Simulation, AR / VR & Web Based

Manipulate parameters to understand their impact in a real-world system.

Lab Infrastructure

The VLSI Lab is based on Industry-Standard Cadence® tool with adequate number of licenses installed on a high-end Server that can handle simultaneous logins and utilization by a large number of students. The lab is integral part of several VLSI courses including VLSI Design, Analog IC Design, Advanced VLSI Design, Advanced Analog and Mixed Signal Design, and VLSI Architecture, CAD for VLSI and System-on-chip design.

Hands-on Experience

The VLSI lab enables students to perform controlled experiments from anywhere in the world. The IoT enabled lab equipment's, and the integrated remote access network makes this possible. The lab is open 24x7, 365 days.

Tools & Technologies You Will Learn

python
Java
Flutter
IONIC
GraphQL
Apache Web Server
openstack.
Google Cloud
{ REST }
amazon web services
docker
sonarqube
Gradle
Jenkins
maven
Katalon
APACHE POI
TestLink
Se
StarUML
OPENAPI
ARDUINO
eclipse
SQL
ANACONDA
POSTMAN
PostgreSQL
mongoDB

Campus Immersion Programmes

Learners have the opportunity to visit BITS Pilani campuses for specially curated immersion modules. These sessions offer face-to-face interactions with faculty, hands-on lab experiences, peer networking, and a glimpse into the vibrant campus life.

Earn a Prestigious Degree and Alumni Status of BITS Pilani

Upon successful completion of the programme, learners are awarded a formal degree during the convocation ceremony, just like on-campus students. This degree comes with the prestigious BITS Pilani alumni status, unlocking lifelong recognition and connection to a global network.

About BITS Alumni Association

Graduates can join BITSAA (BITS Alumni Association), a thriving global community of BITSians. Membership offers access to alumni events, mentorship opportunities, and a range of career and networking benefits. The registration process is simple and can be completed online post-graduation.

Programme Curriculum

Participants need to take at least 12 courses towards coursework and complete one Project/ Dissertation. The coursework requirement for the programme would consist of a set of core courses and electives. Core courses are compulsory for all participants, while electives can be chosen based on individual learning preferences.

First Semester - 1st Year

- MOS Devices and Microfabrication Technology
- Analog IC Design
- CAD for VLSI Design Flow
- VLSI Design

Second Semester - 1st Year

- VLSI Architecting, the RTL Way
- Elective - 1
- Elective - 2
- Elective - 3

Third Semester - 2nd Year

- Elective - 4
- Elective - 5
- Elective - 6
- Elective - 7

Fourth Semester - 2nd Year

- Dissertation

Pool of Electives

Basket – 1 Advanced Digital Systems

- Machine Learning for Electronics Engineers
- Hardware Software Formal Verification Techniques
- System on Chip Design
- Testability for VLSI
- Reconfigurable Computing
- Digital Signal Processing
- Advanced Digital Signal Processing
- High Speed SerDes Design
- Advanced VLSI Design
- Advanced VLSI Architectures

Basket – 2 Advanced Analog-Mixed Signal-RF

- RF Microelectronics
- Digitally Assisted Analog Circuits
- Phase and Frequency Synthesis of Analog Circuits
- Advanced Analog and Mixed Signal Design
- Data Converters

Basket – 3 Other Electives

- Introduction to MEMS
- Optoelectronic Devices, Circuit & Systems
- Wireless & Mobile Communication
- Real Time Operating Systems
- Hardware Security
- Embedded System Design
- Novel Memory Concepts and Technology
- Real Time Systems
- In-Memory Computing
- CAD for IC Design
- Hardware Software Co-Design
- Network Embedded Applications

Note:Elective courses have been notionally bucketed. Set of electives will be identified from the pool for a given corporate partner basis of their requirement in consultation. Choice of Electives is made available to enrolled students at the beginning of each semester. A limited selection of Electives will be offered at the discretion of the Institute.

Assessment Methodology

Continuous Assessment

Quizzes, assignments, mid-semester and comprehensive exam

Case studies & Assignments

Real-world cases used as in-class problem-solving exercises

Dissertation/ Project Work

- Apply learnings to a complex, real-world project
- Demonstrate understanding of learnt concepts

Mode of Examination

- Applicable for students admitted from October 2025 batch onward.
- Semesters 1–3 include mid-semester and comprehensive exams for each course.
- In-person exams mostly held on Friday, Saturday or Sunday at designated centers.
- Quizzes/assignments conducted online via Learning Management System (LMS).
- Semester 4 includes Dissertation/Project Work as per guidelines.

Exam Centre for Indian Students

Students can take exams at any of our **36 designated centres**, including:

South Zone
Bangalore, Chennai, Hyderabad, Vijayawada, Visakhapatnam, Kochi, Thiruvananthapuram, Coimbatore, Madurai and Mysore.

North Zone
Delhi NCR - Delhi, Delhi NCR - Faridabad, Delhi NCR - Greater Noida, Delhi NCR - Gurugram, Jaipur, Chandigarh, Lucknow, Pilani and Udaipur.

West Zone
Ahilya Nagar (Ahmednagar), Ahmedabad, Goa, Indore, Bhopal, Mumbai, Mumbai - Navi, Mumbai - Thane, Nagpur, Pune, Raipur, Surat and Vadodara.

East Zone
Kolkata, Guwahati, Bhubaneswar and Jamshedpur.

Exam Centre for International Students

- A designated international exam centre is available in Dubai.
- Students outside India and Dubai can opt for online exams by submitting:
  a) Scanned copy of valid visa for the country in which you are currently residing.
  b) Scanned copy of government-issued ID from the residing country.
  c) HR recommendation or endorsement letter from the employer, stating the location of your work.
- Indian students temporarily based out of India can also avail online exams on request with the above-mentioned documents.

Fee Structure

The following fees schedule is applicable for candidates seeking new admission during the academic year 2025-26.

Application Fees (one time)	Admission Fees (one time)	Semester Fees (per semester)
₹1,500	₹16,500	₹70,100

Easy Monthly Payment Option with 0% Interest and 0 Down Payment

Instant EMI option with 0% interest and 0 Down Payment is now available that allows you to pay programme fee in an easy and convenient way.

- Instant online approval in seconds
- No Credit Cards/ CIBIL score required
- Easy & Secure online process using Aadhaar and PAN number
- Anyone with a Salary Account with Netbanking can apply Option to submit fee using easy - EMI with 0% interest and 0 down payment

Admissions Open for January 2026 Batch

All the above fees are non-refundable.

Important: For every course in the programme, institute will recommend textbooks, students would need to procure these textbooks on their own.

Click here to learn more

How to Apply

Login to our Application Centre to apply for the programme. **Click Here**.

1. **Fill the Application Form**
2. **Review & Pay the Application Fee**
   Verify your details and pay the application fee
3. **Submit Mentor & Employer Info**
4. **Upload relevant documents**
5. **Selection & admission offer**
   Admissions cell will review your application to be offered the admission over email or application portal within 2-3 weeks.

Students Speak

The program significantly boosted my career growth without requiring a career break, and it came from a prestigious institution. If you're seeking quality education and valuable insights, this is the place to be.

Shivendra Kushwaha
Layout Staff Engineer
Participant of M.Tech. Microelectronics

My two-year journey with BITS WILP has been a profound experience of self-discovery. This program rekindled my thirst for learning, and I found the potential within me to keep evolving. I highly recommend it to everyone.

Naganandini Ravichandran
Senior Software Engineer

My journey with WILP has been a revelation. It harnesses cutting-edge learning tools and technology, giving students a competitive edge. Beyond enhancing my career progression, it empowers me to grasp new concepts and apply them in real-world scenarios.

Sanjay Sonar
New Product Manufacturing Engineer

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Workforce Transformation Since 1979

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