



# ELITE

ELECTRIFYING THE FUTURE

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# **SRI VASAVI INSTITUTE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)**



*... Empowering Minds*

## **Chief Editor:**

**Dr. A. Chandra Suresh**

## **Editors:**

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## **Faculty Coordinators:**

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**2. Mr. D. Sridhar**

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**DEPARTMENT VISION**

To become centre of excellence in Electronics and Communication Engineering to meet the challenges of industry and the society

**DEPARTMENT MISSION**

**DM1:** Impart high quality education to enable students to face challenges Of Electronics and Communication Engineering.

**DM2:** Provide all possible support to promote activities in the related areas of VLSI, Communications, Signal Processing, and Micro Processors & Micro Controllers.

**DM3:** Inculcate ethical, professional values and life-long learning skills to address the societal needs.

**PROGRAM EDUCATIONAL OBJECTIVES**

**PEO1:** Graduates shall accomplish Excellence in professional career and pursue higher studies with innovation.

**PEO2:** Graduates shall be competent professionals by inculcating values with profound knowledge in Electronics and Communication Engineering.

**PEO3:** Graduates shall have an attitude to apply technical knowledge to solve real time industrial problems and develop lifelong learning attitude.

**PEO4:** Graduates shall aware of multi disciplinary knowledge in the context of teamwork.

## DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

The goal is to impart value-based technical education and train students to become well-rounded engineers in the field of Electronics and Communication Engineering, equipping them for successful careers in industry, research, or higher education. The program commenced in the academic year 2008–09 with an initial intake of 60 students. Currently, the intake for the ECE Department is 120 students. The department has a faculty strength of 23 well-qualified, experienced, and dedicated postgraduate members, including five Ph.D. holders, with several others pursuing their doctorates in various specializations. Additionally, the department is supported by five technical staff members.

The department actively encourages students to pursue postgraduate studies and prepares them for leadership roles in research and development. In addition to the undergraduate program, the department has been offering an M.Tech course in VLSI System Design since the academic year 2012–13, with an intake of 18 students.

The ECE department boasts well-established infrastructure, including five specialized laboratories: Microwave Engineering Lab, Microprocessor & Microcontroller/Simulation Lab, Communications Lab, Electronic Devices and Circuits (EDC) Lab, and a dedicated Research & Development (R&D) Lab.

The department has an E-Yantra Laboratory, established in 2019 and sponsored by the Ministry of Human Resource Development (MHRD). This lab serves as a collaborative platform between IIT Bombay and SVIET, Nandamuru. All laboratories in the department are fully equipped to support advanced technologies and modern engineering practices.

The ECE department also extends its support to the Atal Tinkering Lab at Z.P.H. School, Guduru. It hosts professional chapters such as the IETE Student Forum. All departmental activities are conducted under the IETE banner. In addition, the student association *Versatile Electronic Designers' Association* (VEDA) organizes various technical events such as seminars, quizzes, poster presentations, paper presentations, and project expos.

Each semester, the department arranges a minimum of two guest lectures and one workshop to further enrich the academic experience. Students are actively encouraged to participate in international, national and state-level technical contests.

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- ❖ Mr. A. Chandra Suresh was awarded the **Doctor of Philosophy (Ph.D.)** on **October 16, 2024**, by **Sri Venkateswara University, Tirupati**, for his research titled *“Performance Evaluation of UWB MIMO Antennas Using Characteristic Mode Analysis.”*

## PUBLICATIONS



S. No	Author Name	Title of the Paper	Journal Name & Publisher Name	Vol. No., Issue No., Page No. & Date	ISBN/ISSN No (On Line & Print)
1.	Dr. Shaik Khader Zelani	Energy efficient ant routing algorithm for optimized path selection network longevity in wireless sensor network.	Telecommunication and Radio Engineering	1943-6009, November 2024	SCOPUS

## RESEARCHSCHOLARS



Mr. D. Sridhar, Associate Professor, has enrolled in a Ph.D. research program Under **Jawaharlal Nehru Technological University, Kakinada**



**Mr. N. Nagaraju**, Assistant Professor, has enrolled in a Ph.D. research program Under **Jawaharlal Nehru Technological University, Kakinada**



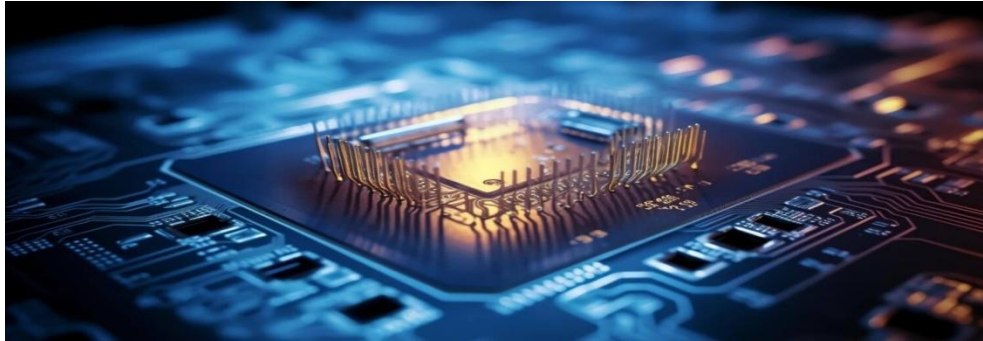
**Mr. J. Jyothi Swaroop**, Assistant Professor, has enrolled in a Ph.D. research program Under **Jawaharlal Nehru Technological University, Kakinada**



Mr.K.G.VNageswaraRao,Assistant Professor, has enrolled in a Ph.D. research program Under **Jawaharlal Nehru Technological University, Kakinada**

## ALUMNI ARTICLE

# Emerging Trends in VLSI Technology



VLSI technology is rapidly evolving in 2024, driven by advancements that focus on making microchips faster, more efficient, and smaller. Key trends include the rise of 2nm and 3nm chip technology, enhancing chip density and reducing power consumption for high-performance devices. AI and machine learning integration into VLSI design is improving automated testing and optimization processes. 3D integrated circuits are becoming more prominent, allowing for better chip stacking and reduced latency. Additionally, RISC-V architecture is gaining traction, offering an open-source alternative for chip designers. These innovations are propelling VLSI to meet the growing demands of modern technologies like IoT, AI, and 5G.

As demand for smaller, faster, and more efficient devices continues to grow, gaining expertise in VLSI has become crucial. A VLSI course provides a comprehensive understanding of designing, fabricating, and testing integrated circuits. It covers essential topics such as digital design, circuit analysis, and semiconductor technology, equipping learners with practical skills needed for the semiconductor industry. Pursuing a VLSI course is a great way to build a strong foundation and keep up with emerging trends in the VLSI field, leading to numerous career opportunities.

### Key elements of VLSI

#### 1. Transistor Integration

VLSI involves integrating millions of transistors into a single microchip, enabling complex functionalities in smaller packages.

#### 2. Logic Design

The design of logical circuits like AND, OR, and XOR gates forms the foundation of creating sophisticated circuits that perform specific functions.

#### 3. Semiconductor Materials

The use of semiconductors, such as silicon, is essential for the fabrication of transistors and other components on integrated circuits.

#### 4. Chip Fabrication

**Fabrication** is the process of physically creating the integrated circuit through photolithography, etching, and deposition techniques.

#### 5. Design Automation (EDA Tools)

VLSI heavily relies on Electronic Design Automation (EDA) tools to design and verify integrated circuits, making the design process faster and more efficient.

#### 6. Testing and Verification

Once designed, ICs go through testing and verification to ensure they meet performance specifications and are free from defects.

#### 7. Power Management



Efficient power consumption is a key factor that makes VLSI technology vital for portable and battery-powered devices. These fundamental principles serve as the building blocks of VLSI, enabling the creation of powerful, efficient, and compact integrated circuits used in a wide range of applications.

**Emerging trends in VLSI technology for 2024****1. 2nm and 3nm Chip Technology**

The drive for smaller and faster chips continues, with leading manufacturers such as TSMC and Intel advancing 2nm and 3nm chip fabrication processes. These smaller technology nodes enable the production of more compact and power-efficient devices, which are crucial for cutting-edge applications like artificial intelligence, mobile computing, and the Internet of Things (IoT).

**2. 3D Integrated Circuits (3D ICs)**

3D IC technology enables the stacking of multiple layers of silicon wafers, significantly reducing physical space requirements while enhancing performance. For instance, AMD employs 3D stacking in its latest processors to improve data transfer rates and reduce latency.

**3. 3RISC-V Architecture**

The RISC-V open-source architecture is gaining momentum as a cost-effective and flexible alternative for chip designers, fostering innovation. Companies such as NVIDIA and Western Digital are actively exploring RISC-V to develop more customizable solutions.

**4. AI Integration in VLSI Design**

AI is revolutionizing the VLSI design process by automating layout generation, verification, and testing. Machine learning models help predict potential errors, minimizing manual intervention and accelerating chip design cycles.

**5. System-on-Chip (SoC)**

SoC (System on Chip) technology integrates multiple functions—such as CPU, GPU, memory, and connectivity—onto a single chip, enhancing the efficiency of devices like smartphones. Companies like Qualcomm and Apple are pioneers in SoC development.

**5. Low Power Design Techniques**

With the growing demand for portable devices, low-power design techniques have become essential. Advanced VLSI methods help minimize power leakage and optimize energy consumption, thereby enhancing battery efficiency.

**Future of vlsi**

The future of VLSI (Very Large Scale Integration) technology is promising, marked by continuous advancements toward smaller, faster, and more power-efficient chips. Emerging trends such as 2nm and 3nm process nodes, 3D IC technology, and AI-driven design workflows are reshaping VLSI's role in cutting-edge applications—from artificial intelligence and the Internet of Things (IoT) to autonomous vehicles. This rapid evolution opens up vast opportunities for aspiring VLSI engineers.

**Building a Career in VLSI**

A career in VLSI can be highly rewarding due to the increasing demand for skilled professionals across semiconductor manufacturing, consumer electronics, and automotive industries. Mastering VLSI technology lays a strong foundation for roles such as chip design engineer, verification engineer, and circuit analyst.

Enrolling in a VLSI certification course helps develop in-depth knowledge of digital and analog circuit design, fabrication processes, and Electronic Design Automation (EDA) tools. Through hands-on projects and simulations, learners acquire practical experience, making them job-ready and helping them stand out in the competitive tech industry. The expertise gained through such courses opens doors to a successful career in the rapidly growing semiconductor sector.

**V.S L S R D LAKSHMI****Year of Passed out: 2024**

## FACULTY ARTICLE

### A Comprehensive Guide to Balanced Living

Navigating academic responsibilities, personal growth, and societal expectations can be particularly challenging for girl students. Developing effective strategies to manage these aspects is crucial for success and well-being. This offers practical guidance to help you thrive in all areas of life.

#### 1. Mastering Time Management

Effective time management is foundational for balancing various commitments. Consider these approaches:

- **Prioritize Tasks:** Identify urgent and important tasks to focus your energy where it's most needed.
- **Use Planning Tools:** Utilize planners or digital calendars to schedule study sessions, extracurricular activities, and personal time.
- **Set Realistic Goals:** Break larger objectives into manageable steps to avoid feeling overwhelmed.
- **Avoid Multitasking:** Concentrate on one task at a time to enhance productivity and reduce errors.

#### 2. Prioritizing Mental and Physical Health

Maintaining your health is essential for academic and personal success:

- **Regular Exercise:** Engage in physical activities like walking, yoga, or sports to boost mood and energy levels.
- **Balanced Nutrition:** Consume a diet rich in nutrients to support cognitive function and overall health.
- **Adequate Sleep:** Aim for 7-8 hours of sleep per night to enhance concentration and memory.
- **Mindfulness Practices:** Incorporate meditation or deep-breathing exercises to manage stress and anxiety.

#### 3. Building a Supportive Network

Cultivating relationships with peers, mentors, and family members can provide emotional support and guidance:

- **Seek Mentorship:** Connect with faculty members or professionals who can offer advice and encouragement.
- **Join Study Groups:** Collaborate with classmates to enhance learning and share diverse perspectives.
- **Communicate Openly:** Discuss challenges with trusted individuals to gain insights and solutions.

#### 4. Embracing Self-Care and Personal Growth

Investing time in self-care fosters resilience and personal development:

- **Pursue Hobbies:** Engage in activities that bring joy and relaxation.
- **Set Personal Boundaries:** Learn to say no to commitments that may overextend you.
- **Reflect Regularly:** Take time to assess your goals, values, and progress.

**5. Navigating Academic and Social Pressures**

Balancing academic demands with social life requires intentional effort:

- **Plan Social Activities:** Schedule time with friends to unwind and build connections.
- **Stay Organized:** Keep track of assignments and deadlines to reduce last-minute stress.
- **Seek Help When Needed:** Utilize campus resources like counseling centers or academic advisors for support.

**Conclusion**

Managing life as a girl student involves a multifaceted approach that includes effective time management, prioritizing health, building supportive relationships, embracing self-care, and balancing academic and social pressures. By implementing these strategies, you can create a fulfilling and balanced student experience.

**Mrs.PJyothi**  
**Assistant Professor**

