VIT®

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF ELECTRICAL ENGINEERING

B.Tech. Electronics and Instrumentation Engineering

(B.Tech. EIE)

ACE Curriculum

(2025-2026 onwards)

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SCHOOL OF ELECTRICAL ENGINEERING

VISION AND MISSION OF THE INSTITUTE AND SCHOOL

Institute:

VISION

Transforming life through excellence in education and research.

MISSION

- **World class Education**: Excellence in education, grounded in ethics and critical thinking, for improvement of life.
- **Cutting edge Research**: An innovation ecosystem to extend knowledge and solve critical problems.
- **Impactful People**: Happy, accountable, caring and effective workforce and students.
- **Rewarding Co-creations**: Active collaboration with national & international industries & universities for productivity and economic development.
- **Service to Society**: Service to the region and world through knowledge and compassion.

School:

VISION

To offer an education in electrical engineering that provides strong fundamental knowledge, skills for employability, cross-disciplinary research and creates leaders who provide technological solutions to societal and industry problems.

MISSION

M1: Provide personalized experiential learning in industry sponsored labs to prepare students in electrical engineering with strong critical thinking and employability skills.

M2: Foster design thinking, creativity and cross-disciplinary research with highly qualified faculty to create innovators and entrepreneurs in the broad area of electrical engineering.

M3: Collaborate with national and international partners to provide innovative solutions to societal and industry challenges.

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PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO-1: Graduates will have successful careers in the electronics, process control and automation industries or pursue higher education, making significant contributions to research and development.

PEO-2: Graduates will provide innovative technological solutions as instrumentation engineering practitioners or entrepreneurs.

PEO-3: Graduates will demonstrate professional and managerial capabilities, uphold ethical conduct and maintain a commitment to continuous learning throughout their professional careers.

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B. Tech Electronics and Instrumentation Engineering

PROGRAMME OUTCOMES (POs)

1) **Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2) **Problem Analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

3) **Design / Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4) **Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions

5) **Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6) **The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7) **Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8) **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9) **Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10) **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11) **Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12) **Life-long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

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SCHOOL OF ELECTRICAL ENGINEERING

B. Tech Electronics and Instrumentation Engineering

PROGRAMME SPECIFIC OUTCOMES (PSOs)

On completion of B. Tech. (Electronics and Instrumentation Engineering) programme, graduates will be able to

- **PSO1:** Design electronics and instrumentation systems to meet industry needs.
- **PSO2:** Develop process control and automation systems considering socio-economic and environmental constraints.
- **PSO3:** Apply modern computational tools to the solution of instrumentation engineering problems.

Bachelor of Technology in Electronics and Instrumentation Engineering

School of Electrical Engineering

Programme Credit Structure	**Credits**
University Core Courses	60
Professional Core Courses	60
Programme Core	40
Concentration	20
Open Elective Courses	40
Total Graded Credit Requirement	160

University Core Courses **60**

		L	T	P	C
BAPHY100	Physics*				4
BACHY100	Chemistry*				4
BAMAT101	Multivariable Calculus and Differential Equations	3	0	2	4
BAMAT200	Mathematics II*				4
BAEEE101	Basic Engineering	3	0	2	4
BACSE101	Problem Solving Using Python	0	0	4	2
BACSE102	Problem Solving Using Java	0	0	4	2
BAENG101	Technical English Communication	3	0	2	4
BASTS101	Qualitative and Quantitative Skills Practice I	3	0	0	1
BASTS102	Qualitative and Quantitative Skills Practice II	3	0	0	1
BAFLC100	Foreign Language	1	0	2	2
BAHSM100	Humanities, Social Science and Management	3	0	0	3
BAHUM101	India Studies	1	0	0	1
BACHY101	Environmental Sciences	2	0	0	2
BAHUM100	Ethics and Values*				2
BAMGT101	Entrepreneurship	3	0	0	3
BAEEE191	Basic Multidisciplinary Project	0	0	4	2
BAEEE291	Innovative Design Project	0	0	4	2
BAEEE391	Research / Design Project	0	0	6	3
BAEEE491	Technical Answers for Real World Problems	1	0	4	3
BAEEE399	Internship I	0	0	2	1
BAEEE499	Internship II / Capstone Project	0	0	12	6
BAENG100	Effective English Communication (NCC)	0	0	4	2
BAEXC100	Extracurricular Activities (NCCM)	0	0	4	2

***-Basket Details**

BAPHY106	Foundations of Quantum Mechanics	3	0	2	4
BACHY106	Chemistry for Electrical and Electronics Engineering	3	0	2	4
BAMAT202	Linear Algebra	3	0	2	4
BAHUM103	Ethics and Values	2	0	0	2

Programme Core Courses **40**

BAEEE102	Circuit Theory	3	0	2	4
BAEEE103	Analog Electronics	3	0	2	4
BAEEE201	Digital Electronics	3	0	2	4
BAEEE202	Control Systems	3	0	2	4
BAEEE203	Microcontroller and its Applications	3	0	2	4
BAEEE208	Probability and Stochastic Processes	3	1	0	4
BAEEE302	Digital Signal Processing	3	0	2	4
BAEIE101	Signals and Systems	3	1	0	4
BAEIE302	Embedded Systems	3	0	2	4
BAEIE303	VLSI Design	3	0	2	4

Concentration

Instrumentation **20**

BAEIE102	Sensors and Signal Conditioning	3	0	2	4
BAEIE201	Electrical and Electronics Measurement	3	0	2	4
BAEIE202	Process Control and Automation	3	0	2	4
BAEIE301	Industrial Instrumentation	3	0	2	4
BAEIE304	Machine Learning	3	0	2	4

Open Elective Courses **40**

Engineering | Sciences | Humanities | Social Sciences | Liberal Arts | Economics | Finance | Management

Ancillary (20 credits) - Students can opt for “Ancillary" in other disciplines by earning 20 credits from the courses listed in the Ancillary options under Open Elective. Ancillary details will be mentioned only on the transcript.

Additional Concentration (20 credits) - Students can opt for “Additional Concentrations" in their own discipline by earning 20 credits from the courses listed in the Concentration options under Open Elective. Concentration details will be mentioned only on the transcript.

Minor (additional 20 credits) - Students can opt for a "Minor Degree" in other disciplines 20 credits in addition to the minimum credit requirement of the Undergraduate Degree from the courses listed in the Minor options

Honours (additional 20 credits) - Students can opt for an “Honours Degree" in the same discipline by earning 20 credits in addition to the minimum credit requirement of the Undergraduate Degree from the courses listed in the Honours options.

Second Major (additional 40 credits) - Students can opt for a “Second Major" in other disciplines by earning 40 credits in addition to the minimum credit requirement of the Undergraduate Degree from the courses listed in the Second Major options.