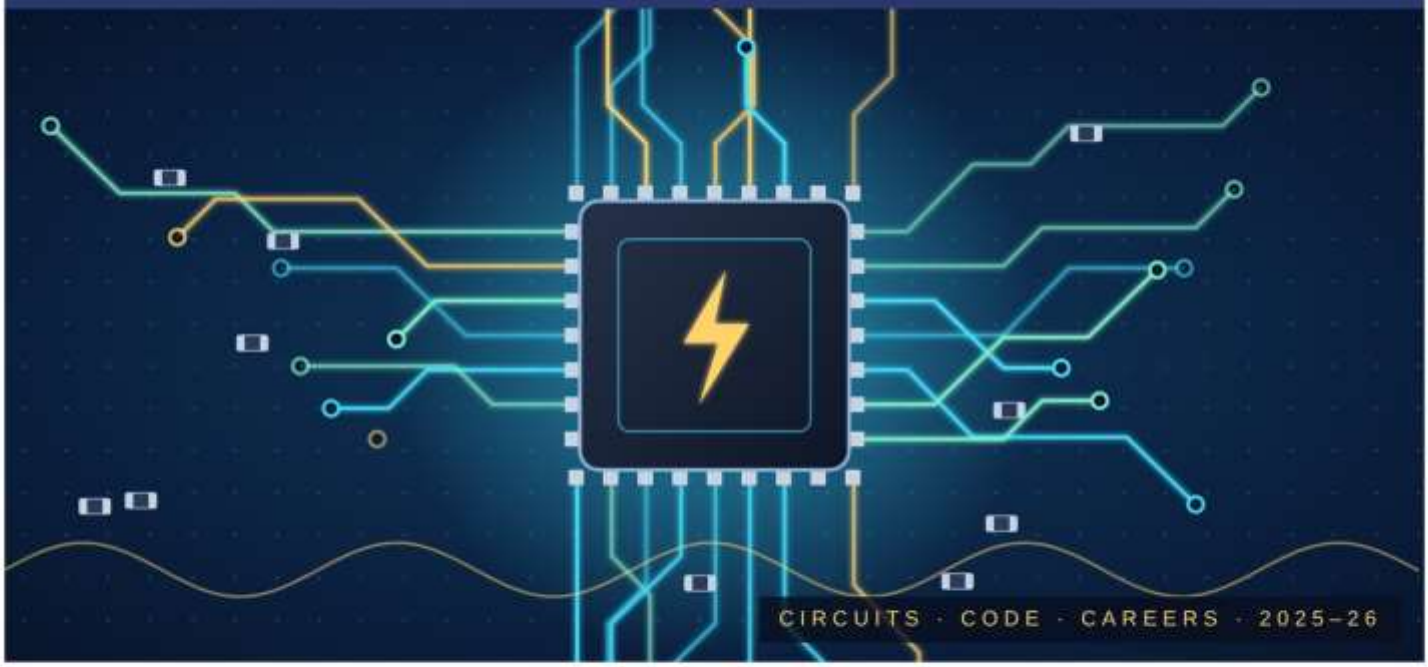
AY-2025-2026

NEXT GEN CIRCUITS

Newsletter from

DEPARTMENT OF

ELECTRICAL & ELECTRONICS ENGINEERING



GATES

INSTITUTE OF TECHNOLOGY

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NEWSLETTER · AY 2025–26

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MESSAGE

From the HoD's Desk

Dear Students, Faculty Members and Well-wishers,

I am happy to present this edition of Next Gen Circuits, the newsletter of the Department of Electrical & Electronics Engineering, for the Academic Year 2025–26.

During the year the department organised fifteen programmes: certification programmes on MATLAB/Simulink, Electric Vehicles and Battery Management Systems, and PSPICE/Multisim; five guest lectures by experts from leading institutions; a six-day Faculty Development Programme on smart-grid technologies; an industrial visit to the Power Grid substation, Gooty; and seminars and workshops on interaction skills, research methods, project management, patents and NPTEL certification.

Our students made us proud with symposium prizes, NSS recognition and a place in the final round of a national innovation challenge. I congratulate them and thank our management, Principal, faculty coordinators and resource persons for their support. Let us keep learning, building and innovating — the next generation of circuits, and of engineers, starts here.

With best wishes,

Dr. G. Madhu Mohan

Professor & Head, Department of EEE · GATES Institute of Technology, Gooty





2025–26 AT A GLANCE

The Year in Numbers

15	5	3	1
PROGRAMMES	GUEST LECTURES	CERTIFICATIONS	INDUSTRIAL VISIT

SUMMARY OF ACTIVITIES

No.	Date	Programme	Type
1	03 Sep 2025	**Seminar on Interaction Skills**	Seminar
2	19 Sep 2025	**Workshop on Engineering Research Methods and Data Analysis**	Workshop
3	22 – 27 Sep 2025	**Six-Day Certification Program on MATLAB/Simulink for Electrical Engineers**	Certification Program
4	05 Oct 2025	**Certification Course on Electric Vehicle & BMS**	Certification Course
5	01 Dec 2025	**Certificate Program on PSPICE/Multisim**	Certificate Program
6	05 Jan 2026	**Awareness Session on NPTEL Certification**	Awareness Session
7	12 Jan 2026	**Guest Lecture on Smart Grid & Electric Mobility**	Guest Lecture
8	19 – 24 Jan 2026	**Six-Day FDP on Smart Grid Technologies and Future Power Systems**	Faculty Development Programme
9	27 Jan 2026	**Guest Lecture on Power System Protection**	Guest Lecture
10	08 Feb 2026	**Seminar on Engineering Project Management & Cost Analysis**	Seminar
11	16 Feb 2026	**Guest Lecture on Control Systems in Modern Power Networks**	Guest Lecture
12	19 Feb 2026	**Industrial Visit – Power Grid, Gooty**	Industrial Visit
13	28 Feb 2026	**Seminar on Traditional Knowledge & Patent Issues**	Seminar
14	11 Mar 2026	**Guest Lecture on Sustainable Engineering & Future Trends**	Guest Lecture
15	24 Mar 2026	**Guest Lecture on Advancements in Electrical Machines**	Guest Lecture

HIGHLIGHT OF THE YEAR

Six-Day Certification Program on MATLAB/Simulink

From 22 to 27 September 2025 students trained hands-on in MATLAB programming and Simulink modelling of circuits, machines, converters and control systems, with sessions by an APTRANSCO engineer on power-system studies — and earned certificates on completion.

DEPARTMENT ACTIVITIES · SEPTEMBER 2025

What Happened This Year

01 Seminar on Interaction Skills

03 Sep 2025 • Seminar

The academic year opened with a seminar on the interaction skills that every engineer needs in the classroom, in project teams and at the workplace. The resource person explained how to listen actively, ask good questions, speak with clarity and confidence, and respond politely in discussions and interviews. Students took part in short pair activities and impromptu speaking rounds, and received practical tips on body language, tone and professional etiquette when talking to faculty, recruiters and colleagues.

02 Workshop on Engineering Research Methods and Data Analysis

19 Sep 2025 • Workshop

This workshop introduced students to the methods engineers use to plan and carry out research. Topics included choosing a research problem, carrying out a literature survey, designing experiments and simulations, and collecting reliable data. The second session focused on data analysis — basic statistics, graphs, curve fitting and drawing sound conclusions from results — along with the use of spreadsheet and MATLAB tools and good practice in writing technical reports and papers.

03 Six-Day Certification Program on MATLAB/Simulink for Electrical Engineers

22 – 27 Sep 2025 • Certification Program

The first flagship programme of the year gave students six days of hands-on training in MATLAB and Simulink — the most widely used simulation platform in electrical engineering. Beginning with MATLAB programming, matrices and plotting, participants moved on to Simulink modelling of electrical circuits, DC and AC machines, power electronic converters and control systems. Sessions by an APTRANSCO engineer connected simulation with real power-system practice, including load-flow and fault studies. Each day ended with a lab exercise, and participants completed an assessment to earn their certificate.

DEPARTMENT ACTIVITIES · SEPTEMBER – DECEMBER 2025

04 Certification Course on Electric Vehicle & BMS

05 Oct 2025 • Certification Course

This certification course focused on the electric vehicle and its most critical subsystem — the battery management system (BMS). Students studied EV architecture, lithium-ion cell chemistries, battery packs and their ratings, and the functions of a BMS: cell-voltage and temperature monitoring, state-of-charge and state-of-health estimation, cell balancing and protection. The course also covered traction motors and inverters, on-board chargers, charging standards and safety. Tech EEE programme.

05 Certificate Program on PSPICE/Multisim

01 Dec 2025 • Certificate Program

This certificate program trained students to design and test electronic circuits on the computer before building them on the bench. Participants learned schematic entry, component libraries and the main analyses — DC operating point, DC sweep, AC frequency response and transient analysis. They simulated rectifiers, amplifiers, op-amp circuits, filters and simple power-electronic converters, and compared simulated waveforms with theory. Multisim's virtual instruments — oscilloscope, function generator and multimeter — made the experience close to working in a real laboratory.

06 Awareness Session on NPTEL Certification

05 Jan 2026 • Awareness Session

In this session the Head of the Department introduced students to NPTEL — the national online-learning programme of the IITs and IISc. He explained how to choose courses that match the EEE curriculum and career goals, how enrolment and the proctored certification exam work, and how NPTEL credits can be transferred under the autonomous regulations. Students were shown popular courses in power electronics, electrical machines, power systems, control and programming, and were encouraged to form study groups and enrol in the coming semester.



07 Guest Lecture on Smart Grid & Electric Mobility

12 Jan 2026 • Guest Lecture

This guest lecture explained how two of the biggest changes in electrical engineering — smart grids and electric vehicles — are connected. The speaker described the smart-grid layers of sensing, communication and control, smart meters and distribution automation, and then the impact of EV charging on distribution feeders and transformers. Smart charging, time-of-day tariffs and vehicle-to-grid (V2G) operation were presented as ways of turning EVs from a burden into a resource that helps balance a grid rich in solar power.

08 Six-Day FDP on Smart Grid Technologies and Future Power Systems

19 – 24 Jan 2026 • Faculty Development Programme

The department organised a six-day Faculty Development Programme on smart-grid technologies and future power systems. Expert speakers covered smart-grid architecture, advanced metering infrastructure, integration of solar and wind energy, battery energy storage, microgrids, wide-area monitoring with phasor measurement units, demand response, and cyber security of power networks. Simulation sessions and case studies showed how these ideas can be brought into the classroom and into student projects.

09 Guest Lecture on Power System Protection

27 Jan 2026 • Guest Lecture

This lecture dealt with the systems that keep the power grid safe when faults occur. The speaker explained the types of faults, the role of current and voltage transformers, and the principles of overcurrent, distance and differential protection. The move from electromechanical to numerical relays, protection coordination, and the IEC 61850 standard for digital substations were discussed, together with examples of how fast fault clearing prevents equipment damage and wide-spread blackouts.

10 Seminar on Engineering Project Management & Cost Analysis

08 Feb 2026 • Seminar

This seminar introduced the management skills that every engineer needs when leading real projects. Topics included the project life cycle, work-breakdown structure, scheduling with Gantt charts, CPM and PERT, and resource planning. The cost-analysis part covered estimation, budgeting, cash flow, payback period and simple life-cycle costing, with examples from electrical installations such as a rooftop solar plant and a substation upgrade.

11 Guest Lecture on Control Systems in Modern Power Networks

16 Feb 2026 • Guest Lecture

The speaker showed how control theory keeps a large power network stable. Topics included load-frequency control and automatic generation control, excitation and voltage control, and the control of inverter-based resources such as solar and battery plants, which now supply a growing share of power. Grid-forming and grid-following inverters, and the role of SCADA and energy-management systems in control centres, were explained with block diagrams and simulation results.

12 Industrial Visit – Power Grid, Gooty

19 Feb 2026 • Industrial Visit

Students visited the Power Grid substation at Gooty, an important node of the inter-state transmission network. Engineers explained the layout of the switchyard and the function of each item of equipment — power transformers and reactors, circuit breakers, isolators, current and voltage transformers, lightning arresters and wave traps. In the control room, students saw how protection relays, SCADA screens and communication links are used to monitor and operate the substation round the clock, and learned about the strict safety rules followed near extra-high-voltage equipment.



DEPARTMENT ACTIVITIES · FEBRUARY – MARCH 2026

13 Seminar on Traditional Knowledge & Patent Issues

28 Feb 2026 • Seminar

This seminar on intellectual property explained what can and cannot be patented, the criteria of novelty, inventive step and industrial application, and the steps involved in filing an Indian patent application. A special focus was the protection of India's traditional knowledge — the role of the Traditional Knowledge Digital Library and well-known cases where patents based on traditional knowledge were challenged. Students were encouraged to search patent databases before starting their projects.

14 Guest Lecture on Sustainable Engineering & Future Trends

11 Mar 2026 • Guest Lecture

This lecture looked at how engineers can design for a sustainable future. The speaker discussed life-cycle thinking, energy efficiency, renewable energy and storage, electric mobility, recycling of batteries and solar panels, and green buildings. Future trends such as artificial intelligence in energy management, green hydrogen and smart cities were introduced, with a call to students to make sustainability part of every design decision.

15 Guest Lecture on Advancements in Electrical Machines

24 Mar 2026 • Guest Lecture

The final guest lecture of the year covered new developments in electrical machines. The speaker explained permanent-magnet synchronous and brushless DC motors, switched- and synchronous-reluctance motors, and axial-flux machines used in electric vehicles and drones. High-efficiency IE3/IE4 induction motors, new magnetic and insulation materials, finite-element design tools and condition monitoring of machines were also discussed.

ACHIEVEMENTS

Proud Moments

Paper Presentation Prize

★ Mr. B. Yugandhar Reddy and Ms. N. Radhika won the First Prize in Paper Presentation at a national-level technical symposium on 12 February 2026.

Best NSS Volunteer

★ Mr. B. Yugandhar Reddy received the Best NSS Volunteer Award of GATES Institute of Technology for his service to the community.

YUKTI 2025 Finalist

★ The innovation “Optimized Wireless Charging of EVs Using Regenerative Braking and Battery–Supercapacitor Systems” was shortlisted for the final round of the AICTE Productization Fellowship (YUKTI); the team presented at the IIC Regional Meet 2025, Bengaluru, on 2 December 2025.

Innovation Ambassadors

★ Mr. S. Rafi and Ms. N. Radhika (IV B.Tech EEE) completed the Innovation Ambassador training of MoE’s Innovation Cell and AICTE.



YUKTI team, IIC Regional Meet 2025



Symposium prize, 12 Feb 2026



Best NSS Volunteer Award

FACULTY ACHIEVEMENTS 2025–26

1	1	10	7	1	3
PH.D. AWARDED	SCI/SCOPUS PAPER	CONFERENCE PAPERS	FDPS ATTENDED	NET QUALIFIED	AWARDS

PHOTO GALLERY

Moments of the Year





The YUKTI team with their faculty mentor at the IIC Regional Meet 2025, Bengaluru (2 Dec 2025)





Classroom sessions in the department





Students on the cricket ground at the GATES campus

TECH BYTES

Latest Technologies & Developments 2025–26

Six developments that shaped electrical engineering this year. Read the full stories in ElectroSphere 2025–26.

CLEAN POWER

55.3 GW

Non-fossil capacity added in FY 2025-26 — the highest ever

Half of India's power capacity is now clean

India set itself the goal of getting half of its installed power capacity from non-fossil sources by 2030. 82 GW capacity came from renewables, large hydro and nuclear.

ENERGY STORAGE

30 GWh

Battery storage supported by the 2025 VGF scheme

Batteries scale up for the grid

Solar output peaks at noon but demand peaks in the evening. Battery energy storage systems (BESS) shift that energy across the day.

ELECTRIC MOBILITY

24.5 lakh

EVs sold in FY 2025-26 (Vahan)

A record year for electric vehicles

Electric vehicles continued their rapid rise. 45 million EVs were sold in FY 2025-26, up 25% on the previous year.

SEMICONDUCTORS

Vikram 3201

Indigenous 32-bit processor shown at Semicon India, 2 Sep 2025

Made-in-India chips arrive

At Semicon India 2025 in New Delhi, the first made-in-India 32-bit microprocessor, Vikram 3201, was presented to the Prime Minister. Designed by ISRO and built at the Semiconductor Laboratory, it is a space-grade processor for launch-vehicle electronics — a milestone in self-reliance.

NUCLEAR ENERGY

SHANTI Act

New nuclear law passed by Parliament, Dec 2025

Nuclear power opens up

Nuclear power supplies steady, carbon-free base-load electricity, but India's capacity has stayed around 8–9 GW. The Union Budget 2025-26 launched a Nuclear Energy Mission with ₹20,000 crore for research on Small Modular Reactors (SMRs), aiming for at least five indigenous SMRs in operation by 2033 and 100 GW of nuclear capacity by 2047.

GRID RELIABILITY

245.4 GW

Winter peak met on 9 January 2026

The grid meets record demand

Heatwaves, more air-conditioners and a growing economy pushed India's electricity demand to new highs. 1 GW on 25 April 2026 — met without any shortfall.

Sources: MNRE and Ministry of Power releases (PIB, 2025–26); Vahan data via Autocar Professional; Semicon India 2025 reports; World Nuclear News; Ministry of Power peak-demand data.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

DEPARTMENT VISION

To impart the best technical education instilled with discipline, values and leadership qualities that will produce professional technocrats in Electrical and Electronics Engineering.

DEPARTMENT MISSION

M1: To impart fundamental Electrical and Electronics Engineering concepts and a broad set of technical skills.

M2: To prepare Electrical and Electronics Engineering graduates who will engage effectively and responsibly in practicing engineering.

M3: To impart practical exposure on latest technological developments in Electrical and Electronics Engineering.

Program Educational Objectives (PEO's)

On successful completion of UG in Electrical and Electronics Engineering, the Graduates will:

PEO1: Have a successful professional career with a strong foundation in basic sciences, along with in-depth knowledge of electrical engineering.

PEO2: Pursue higher studies to contribute for the betterment of the society.

PEO3: Continue in their chosen profession by practicing lifelong learning.

Program Specific Outcomes (PSO's)

PSO1: Using Power Electronics knowledge in conjunction with Electrical Machines understanding to create an engineering solution in the domains of Electrical Drives.

PSO2: Develop innovative cutting-edge technologies in power systems related to efficient electrical power conversion and control.