AY-2023-2024

ELECTRO PULSE

Newsletter from

DEPARTMENT OF

ELECTRICAL & ELECTRONICS ENGINEERING



GATES

INSTITUTE OF TECHNOLOGY

Autonomous

Approved by A.I.C.T.E. & Affiliated to JNTUA, Ananthapuramu, Gootyanantapur(v), Gooty, Ananthapuramu(Dist.)-515401

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MESSAGE

From the HoD's Desk

Dear Students, Faculty Members and Well-wishers,

It gives me great pleasure to present this edition of Electro Pulse, the newsletter of the Department of Electrical & Electronics Engineering for the Academic Year 2023–24.

The year was marked by a purposeful calendar of 10 programmes with 801 student participations — ranging from a six-day workshop and certification course on Smart Grid and sessions on advanced power semiconductor switches, control techniques and machine modelling, to field exposure on substation operation and maintenance. Alongside technical depth, we placed equal emphasis on career readiness through soft-skills and communication workshops, GATE and IES awareness, research problem identification and patent filing.

Each activity was planned in line with the Vision and Mission of the Institute and the Department, so that our students graduate not only as competent engineers but as confident, ethical and career-ready professionals. I congratulate all participating students and thank the faculty coordinators and invited resource persons for making every programme a meaningful learning experience.

With best wishes,

Dr. N. Narasimhulu
Head of the Department, EEE · GATES Institute of Technology, Gooty

THE YEAR AT A GLANCE

AY 2023–24 in Numbers

10	801	125	2
PROGRAMMES CONDUCTED	STUDENT PARTICIPATIONS	IN THE LARGEST PROGRAMME	GUEST LECTURES

SUMMARY OF DEPARTMENT ACTIVITIES

Every programme organised by the Department of EEE during AY 2023–24, in chronological order.

No.	Date	Programme	Type	Students
1	03 Jul 2023	**Advanced Power Semiconductor Switches**	Technical Session	65
2	18 Aug 2023	**Guest Lecture on Advanced Control Techniques**	Guest Lecture	64
3	28 Aug 2023	**How to Identify a Problem in Research**	Seminar	86
4	11 – 16 Sep 2023	**Six-Day Workshop & Certification Course on Smart Grid**	Workshop / Certification	125
5	25 – 27 Sep 2023	**Three-Day Workshop on Soft Skills**	Workshop	122
6	26 Sep 2023	**Guest Lecture on Machine Modelling**	Guest Lecture	58
7	30 Sep 2023	**Operation and Maintenance of Sub-station**	Technical Session / Field Exposure	66
8	14 Oct 2023	**Workshop on Communication Skills**	Workshop	65
9	26 Oct 2023	**Awareness Programme on GATE & IES (ESE)**	Career Guidance	64
10	02 Nov 2023	**How to Fill a Professional Patent Application**	Awareness & Practical Session	86
			Total student participations	**801**

HIGHLIGHT OF THE YEAR

Six-Day Workshop & Certification Course on Smart Grid

125 students — the largest participation of the year — studied smart-grid architecture, AMI, demand response, renewable integration and SCADA, and earned course-completion certificates.

MONTH BY MONTH

Department Activities

01 Advanced Power Semiconductor Switches

03 Jul 2023 • Technical Session • 65 students

A one-day technical session on the latest switching devices used in modern power electronic circuits. The session covered the characteristics, gate-drive requirements, switching behaviour and thermal management of IGBTs, power MOSFETs and wide-bandgap devices such as SiC MOSFETs and GaN transistors, with practical comparisons of their performance in inverter, converter and motor-drive applications.

Outcome: Students can compare power devices on switching speed, losses and thermal limits and select a suitable device for a given converter application.



Students in hands-on practice during the session

02 Guest Lecture on Advanced Control Techniques

18 Aug 2023 • Guest Lecture • 64 students

An invited guest lecture introducing control methods beyond the undergraduate syllabus: model predictive control, fuzzy logic control, sliding mode control and adaptive control, with their applications in power electronics, motor drives and process automation.

Outcome: Students gained exposure to modern controller design and how advanced controllers optimise the performance of industrial EEE systems.



Students attending the guest lecture

03 How to Identify a Problem in Research

28 Aug 2023 • Seminar • 86 students

A one-day seminar on identifying, defining and articulating meaningful research problems. Topics included conducting a literature review, recognising research gaps, framing research questions and hypotheses, writing a problem statement, and using IEEE Xplore, Scopus and Google Scholar for problem identification.

Outcome: Students learned a structured approach to literature survey and problem definition for their mini and major projects.



Seminar on research problem identification

04 Six-Day Workshop & Certification Course on Smart Grid

11 – 16 Sep 2023 • Workshop / Certification • 125 students

The flagship programme of the year, with the largest student participation. Over six days, participants studied smart grid architecture, advanced metering infrastructure (AMI), demand-side management and demand response, renewable energy integration, SCADA-based grid monitoring, power quality management and cyber security in energy networks. Structured assessments and practical exercises led to a course-completion certificate for participants.

Outcome: Students understood how conventional power delivery is evolving into an intelligent, two-way network and earned a certificate that strengthens their professional profile.





Control and monitoring panels (left) and a technical session (right)

05 Three-Day Workshop on Soft Skills

25 – 27 Sep 2023 • Workshop • 122 students

A three-day intensive workshop on the competencies employers expect from engineers: communication, résumé preparation, professional etiquette, teamwork and leadership, conflict resolution, time management, goal setting, interview preparation and group discussion. Role-plays and mock group discussions made the sessions highly interactive.

Outcome: Students built confidence and workplace readiness for campus placements and team-based project work.



Session on résumé preparation

06 Guest Lecture on Machine Modelling

26 Sep 2023 • Guest Lecture • 58 students

An invited lecture on the mathematical modelling of electrical machines: Park's (d-q) transformation, space-phasor theory and reference-frame transformations; steady-state and dynamic models of DC, induction, synchronous and permanent-magnet machines; and simulation of machine behaviour in MATLAB/Simulink.

Outcome: Students extended their Electrical Machines knowledge into dynamic modelling and simulation-based design used in modern drives.



Students at the guest lecture on Machine Modelling

07 Operation and Maintenance of Sub-station

30 Sep 2023 • Technical Session / Field Exposure • 66 students

A technical session with field exposure on HT and EHV substations. Students studied substation layout and equipment — power transformers, bus bars, isolators, circuit breakers, CTs, PTs and protection relay panels — along with preventive maintenance schedules, high-voltage safety procedures, earth-fault protection and condition monitoring.

Outcome: Students related Switchgear & Protection and Power Systems theory to real utility practice and its safety requirements.



Students with faculty at the substation

08 Workshop on Communication Skills

14 Oct 2023 • Workshop • 65 students

A one-day workshop on technical presentation, professional e-mail and report writing, effective résumé writing, active listening, body language and group-discussion strategies, reinforced through role-plays, mock presentations and peer feedback.

Outcome: Students improved their written and oral communication for academic, placement and workplace settings.



Resource person on effective résumé writing

09 Awareness Programme on GATE & IES (ESE)

26 Oct 2023 • Career Guidance • 64 students

A career-guidance session on the GATE and IES/ESE examinations: exam pattern, mapping of the syllabus to the B.Tech EEE curriculum, subject-wise preparation strategy, study resources and time management, PSU recruitment through GATE scores, and careers in central engineering services.

Outcome: Students were motivated towards higher studies and public-sector careers and given a clear preparation roadmap.



Awareness session on GATE & IES

10 How to Fill a Professional Patent Application

02 Nov 2023 • Awareness & Practical Session • 86 students

A one-day session on intellectual property rights and the Indian patent process: types of patents, criteria for patentability (novelty, inventive step, industrial applicability), drafting claims, abstract, drawings and specifications, and a step-by-step walkthrough of the Indian Patent Office online filing system.

Outcome: Students learned how to protect their innovations and project outcomes through the patent system.

WITH GRATITUDE

Our Resource Persons

No.	Programme	Resource person(s)
1	**Advanced Power Semiconductor Switches**	Dr. S. Chaitanya, GEETAM, Bengaluru
2	**Guest Lecture on Advanced Control Techniques**	Dr. D. Lenine, RGMCET, Nandyal
3	**How to Identify a Problem in Research**	Dr. G. Jaya Krishna, HITS, Hyderabad
4	**Six-Day Workshop & Certification Course on Smart Grid**	Mr. A. Murali, Mr. E. Sreekanth, Mr. B. Vinay Kumar, Mr. K. Kesava
5	**Three-Day Workshop on Soft Skills**	Mr. Y. V. Siva Kumar & Mrs. A. Srinidhi (GPREC); Dr. C. Lakshmi Narayana (SRIT)
6	**Guest Lecture on Machine Modelling**	Dr. S. Harish, Vidyanikethan, Tirupati
7	**Operation and Maintenance of Sub-station**	Mr. K. Ramanjaneyulu, Deputy Project Manager, NBCC
8	**Workshop on Communication Skills**	Mr. Anand Dampella, PVKKIT, Anantapur
9	**Awareness Programme on GATE & IES (ESE)**	Mr. Bhavani
10	**How to Fill a Professional Patent Application**	—

PHOTO GALLERY

Industrial Tour — Glimpses from Mysuru

EEE students and faculty during the department's industrial tour, which included visits to the heritage landmarks of Mysuru and Srirangapatna.



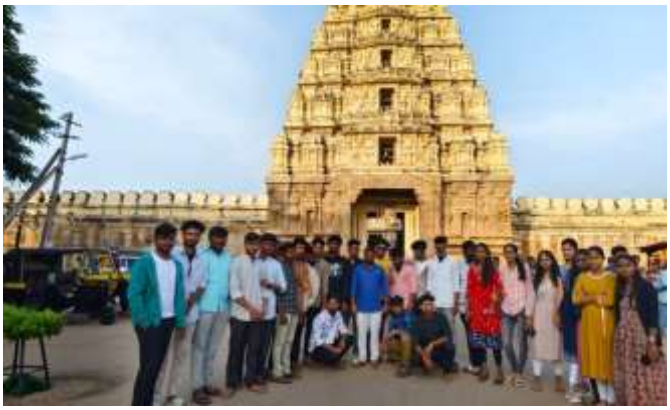
Sri Chamundeshwari Temple, Chamundi Hills, Mysuru
INDUSTRIAL TOUR · AY 2023–24



Gumbaz, Srirangapatna
INDUSTRIAL TOUR · AY 2023–24



The tour group at Chamundi Hills
INDUSTRIAL TOUR · AY 2023–24



Sri Ranganathaswamy Temple, Srirangapatna
INDUSTRIAL TOUR · AY 2023–24

> **Editorial note:** This edition brings together Issue I and Issue II of the AY 2023–24 newsletter; programmes that appeared in both issues are shown once.

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.