



About GMRIT

www.gmrit.edu.in

GMR Institute of Technology is situated in Rajam, a small industrial town approximately 100 kilometers away from the 'city of destiny,' Visakhapatnam in Andhra Pradesh. The institute's campus spans over a sprawling 117 acres of land. The lush, sylvan, and idyllic surroundings in the heart of the agricultural belt provide an ideal setting for higher studies. The institute is affiliated with Jawaharlal Nehru Technological University Gurajada, and approved by AICTE New Delhi. It has been accredited with NAAC - 'A' grade by UGC. The Department of EEE has been accredited by the National Board of Accreditation (NBA) in Tier-I for the academic years 2025-26 to 2027-28.

GMRIT offers 4-year B.Tech. programs in eight core disciplines and 2-year M. Tech programs in five specializations. The institution has received a grant extension of autonomous status for a period of ten years, starting from 2018-19 to 2027-2028.

About EEE Department

Vision

To be a preferred department of learning for students and teachers alike, with a commitment towards Academics & Research, serving the students in an atmosphere of innovation, critical thinking and making them Industry ready.

Mission

- M1. To provide adaptable education in a collaborative and innovative environment in skilling the graduates to solve real world problems in the field of Electrical & Electronics Engineering
- M2. To prepare the students as critical thinking professionals with multidisciplinary research orientation and Innovation
- M3. To instill ethical values and nurture the graduates who will be able to contribute to the society

Overview

The Department of Electrical & Electronics Engineering was established in 1997. The department offers four-year B.Tech and two-year M.Tech programs. It has a rich tradition and well-qualified faculty, along with widely recognized laboratories. The department aims to provide a strong foundation in Electrical and Electronics Engineering fundamentals, emphasizing mathematical and scientific principles. Additionally, the course focuses on developing skills in the application of design processes for innovative engineering solutions. The annual intake of students in this department is 120.

Facilities & Infrastructure

- Sophisticated Laboratories include:
 - Electrical Machines Lab
 - Electrical Engineering Lab
 - Electrical Measurements Lab
 - Power Systems Lab
 - Power Electronics Lab
 - Electrical Systems Simulation
 - Power Electronics and Drives Lab (PG)
- A well-stocked department library
- To enable the students and provide opportunities, to understand in the industrial eco-systems and work on latest technological developments in the industries, MoUs are signed with various industrial organizations
- Committed and dedicated faculty

Major Courses Offered

- Electrical Machines
- Electrical Circuit Analysis
- Measurements and Instrumentation
- Semiconductor Devices & Circuits
- Linear and Digital integrated circuits
- Electromagnetic Field Theory
- Control Systems
- Power Generation, Transmission and Distribution
- Power System Protection
- Green Energy Technologies
- Power Electronics
- Electrical Vehicle Technologies
- Signals and Systems Theory
- Electrical Drives
- Power System Analysis and Control
- Engineering Economics and Project management

Research and Academic Achievements

Conference Publications

- Enhancing Power Quality Using Coati Optimized Cascaded Proportional Integral Derivative Proportional Integral (CCPID-PI) Controller in a Wind Energy Connected Power System Under Dynamic Load Condition. In: Mohanty, M.N., Das, S. (eds) Advances in Intelligent Computing and Communication. ICAC 2024. Lecture Notes in Networks and Systems, vol 1325. Springer,

- Singapore. https://doi.org/10.1007/978-981-96-4071-3_31
- Patnaik, R.K., Chatrapathi, P., Patnaik, R.K. (2025). Detailed View of Fault Analysis with Signal Energy Operator Method to a DFIG-Based Micro Grid System. In: Mohanty, M.N., Das, S. (eds) Advances in Intelligent Computing and Communication. ICAC 2024. Lecture Notes in Networks and Systems, vol 1325. Springer, Singapore. https://doi.org/10.1007/978-981-96-4071-3_32
 - Joddumahanthi, V., Muppidi, R., Kampara, R., & Doggam, R. R. (2025, July), "Optimum interconnection of connection weights of an ANN employing metaheuristic approaches: A comparative analysis", In AIP Conference Proceedings (Vol. 3298, p. 040037). AIP Publishing. <https://doi.org/10.1063/5.0280243>
 - R. Pilla, V. Guntreddi, R. S. R. K. Naidu, S. Radha, S. R. Sura, and V. Manoj, "Wind energy integration in electric vehicle charging: A comprehensive examination of technologies and their utilizations," AIP Conference Proceedings, vol. 3298, p. 030005, Jan. 2025, doi: 10.1063/5.0279231. Available: <https://doi.org/10.1063/5.0279231>
 - V. Manoj, V. Guntreddi, R. S. R. K. Naidu, S. Radha, S. R. Sura, and R. Pilla, "Smart grid technologies for optimizing renewable energy utilization in electric vehicle charging infrastructure," AIP Conference Proceedings, vol. 3298, p. 030007, Jan. 2025, doi: 10.1063/5.0279672. Available: <https://doi.org/10.1063/5.0279672>
 - G. S. Tharun et al., "Solar-powered unmanned aerial vehicle with backup system: Hardware implementation for industrial and power plant applications," AIP Conference Proceedings, vol. 3298, p. 040035, Jan. 2025, doi: 10.1063/5.0279228. Available: <https://doi.org/10.1063/5.0279228>
 - P. G, A. Walikar, S. R. Ahammed, Y. Suresh, H. Parihar and V. Manoj, "Deep Learning Applications in Embedded Systems and IoT Devices," 2025 13th International Conference on Smart Grid (icSmartGrid), Glasgow, United Kingdom, 2025, pp. 518-526, doi: 10.1109/icSmartGrid66138.2025.11071811.
 - S. V. D. Kumar, N. Kumar, S. Kumar, Y. Suresh, H. R and V. Manoj, "Integrating AI and IoT for Smart Antenna Systems in 5G Networks," 2025 13th International Conference on Smart Grid (icSmartGrid), Glasgow, United Kingdom, 2025, pp. 510-517, doi: 10.1109/icSmartGrid66138.2025.11071768
 - N.V.A. Ravikumar, Kumar Pakki Bharani Chandra and Ramana Pilla, "A comparative performance analysis of robust control strategies applied on an uncertain wind turbine", AIP Conference Proceedings, vol. 3298, July - 2025, pp.030008-1 to 030008-15 <https://doi.org/10.1063/5.0279673>

- Mudadla Venkatesh, Guntuku, I.K., Chittala, P.K "Sliding mode control for high voltage gain DC-DC converter in renewable energy systems" International Conference on AI Powered Technology Integration for Sustainability, Aip Conference Proceedings, vol. 3298(1), July 5-6, 2024. <https://doi.org/10.1063/5.0279747>.
- N. J, T. Burle, S. B M, P. P. Kumar, R. Begam and D. K. Sahoo, "Integration of Renewable Energy Sources to Smart Grid Using Machine Learning-Based Forecasting Models for Grid Stability Enhancement," 2025 13th International Conference on Smart Grid (icSmartGrid), Glasgow, United Kingdom, 2025, pp. 351-357, doi: 10.1109/icSmartGrid66138.2025.11071799.
- N. Shetty, S. R. Kothuri, N. S. Patil, P. P. Kumar, H. R and D. K. Sahoo, "AI-Powered Production Forecasting and Optimization of Energy Generation in Smart Grid Technologies," 2025 13th International Conference on Smart Grid (icSmartGrid), Glasgow, United Kingdom, 2025, pp. 358-366.
- K. D. Syam Prasad, K. S. Babu, A. Ali, M. L. Kakupa, B. J. M and P. P. Kumar, "AI-Driven Multi-Objective Optimization for Energy Transformation from Renewable Sources to Smart Grid Infrastructure," 2025 13th International Conference on Smart Grid (icSmartGrid), Glasgow, United Kingdom, 2025, pp. 422-427, doi: 10.1109/icSmartGrid66138.2025.11071821.
- G. Indira Kishore et al., "Adaptive Sliding Mode Control for Stabilizing DC-DC SEPIC Converters with Uncertain Dynamics," 2025 International Conference in Advances in Power, Signal, and Information Technology (APSIT), Bhubaneswar, India, 2025, pp. 1-5, doi: 10.1109/APSIT63993.2025.11086202.
- Challa Priyanka, Ganta Sai Keerthi, G. Indira Kishore, "A survey on battery management system in electric vehicles", AIP Conf. Proc. 9 July 2025; vol. 3298, no, 1: 030009. <https://doi.org/10.1063/5.0279385>
- Ayyarao, Tummala SLV, and Marpina Ganesh, "Enhanced direct torque control of PMSM drives using adaptive sliding mode strategy", In AIP Conference Proceedings, vol. 3298, no. 1, p. 040039. AIP Publishing LLC, 2025.
- Srinivasa Kishore Teegala, Sagar Gumpa, Upendra Kumar Potnuru, "Design and implementation of SPV based sustainable electric vehicle charging station with energy storage", AIP Conf. Proc., Volume-3298, Issue-1, July-2025, <https://doi.org/10.1063/5.0279569>.
- Sammingi Nirmala, Bura Vijay Kumar, Lakshmana Rao Kalabarige, Upendra Kumar Potnuru, "Classification of ischemic stroke subtypes with HOG features and XGBOOST" AIP Conf. Proc., Volume-3298, Issue-1, July-2025, <https://doi.org/10.1063/5.0279770>.

- Upendra Kumar Potnuru, Nagendar Yamasani, Lakshmana Rao Kalabarige, Attada Venkata Ramana, "Real-time CNN-VGG based system for deaf community communication through ASL recognition and live subtitling", AIP Conf. Proc., Volume-3298, Issue-1, July-2025, <https://doi.org/10.1063/5.0279623>.
- Lakshmana Rao Kalabarige, Nagendar Yamasani, Upendra Kumar Potnuru, Attada Venkata Ramana, "Improving enzyme thermo stability through ProtBert-XGB-based prediction and sequence design", AIP Conf. Proc., Volume-3298, Issue-1, July-2025.
- D. Sowjanya, Bura Vijay Kumar, Upendra Kumar Potnuru, Lakshmana Rao Kalabarige, "Efficient automated attendance system utilizing YOLO and siamese networks for enhanced classroom management", AIP Conf. Proc., Volume-3298, Issue-1, July-2025, <https://doi.org/10.1063/5.0279624>
- Dayanithy, M., Sekhar, G.C., Thivayarathi, R.C. et al. Synergistic integration of NiCo₂O₄ and NiWO₄ nanosheets on Ni foam for advanced supercapacitor applications. Journal of Porous materials (July 2025), ISSN:1380-2224, E-ISSN: 1573-4854. (Indexed on SCIE, I.F:2.8, Q2, <https://doi.org/10.1007/s10934-025-01829-3>)
- R. B. Damala, R. Pilla, V. Manoj, S. R. K. Joga, C. Saiprakash, and T. a. T. Kambo, "A novel TKEO with the Decision Tree–Based Method for Fault Analysis of the HVDC transmission link fed by offshore wind and solar farms," International Transactions on Electrical Energy Systems, vol. 2025, no. 1, Jan. 2025.(Indexed on SCIE, I.F:1.9, Q3, <https://doi.org/10.1155/etep/9105156>)
- P.Chakraborty, Partha; P., Sinha, Pampa; S., Debdas, Subhra; K., Paul, Kaushik; C., Saiprakash, Chidurala; V., Manoj, Vasupalli; T.S., Ustun, Taha Selim; A., Onen, Ahmet, "Smart Power Systems Transformation: Advanced Fault Detection with Edge Computing and Signal Processing in LV Networks with EV Charging Stations," IEEE Access, p. 1, Jan. 2025. (Indexed on SCIE, I.F:3.9, Q2, <https://doi.org/10.1109/access.2025.3586062>)
- Kottala, R.K.; Mogaligunta, S.; Gupta, M.S.; Praveenkumar, S.; Raghutu, R.; Patro, K.K.; Murthy, A.S.D.; Gurram, D., "Numerical Investigation Using Machine Learning Process Combination of Bio PCM and Solar Salt for Thermal Energy Storage Applications", Symmetry

Journal Publications

- P., Madasamy, P.; M., Rambabu, M.; S.B., Tilak Babu, S. B.G.; D., Koshti, Dipali; S., Kamoji, Supriya; R.K., Dubey, Rajesh Kumar, "Neural Networks for Real-Time Power Grid Stability Analysis in EEE Systems", Int. J. Environ. Sci., pp. 287–293, Jun. 2025. (Scopus Indexed, I.F: 3.13, <https://doi.org/10.64252/oc897t46>)

- 2025, 17, 998. (Indexed by SCIE, Impact Factor: 0.85, Q2 <https://doi.org/10.3390/sym17070998>)
- Rambabu, M., Rama Krishna, K., Tripathi, M. A., Kataria, J., Srivastava, P., & Dixit, A. (2025), "Green computing: Advancing energy-efficient data centers with AI", *International Journal of Environmental Sciences*, vol. 11, no. 5, pp.65–73, 2025 (Indexed by Scopus, Impact Factor: 3.4, <https://doi.org/10.64252/5m56y357>)
 - Madasamy, P., Rambabu, M., Tilak Babu, S. B. G., Koshti, D., Kamoji, S., & Dubey, R. K. (2025), "Neural networks for real-time power grid stability analysis in EEE systems", *International Journal of Environmental Sciences*, vol. 11, no. 4, pp. 287–293, 2025 (Indexed by Scopus, Impact Factor: 3.4, <https://doi.org/10.64252/oc897t46>)
 - P. Ramana et al., "Dual architecture mechanism for robust cybersecurity in relay systems," *International Journal of Electrical and Electronics Engineering*, vol. 12, no. 6, Jun. 2025, (Indexed by Scopus, Impact Factor: 2.339)
 - R. B. Damala, R. Pilla, V. Manoj, S. R. K. Joga, C. Saiprakash, and T. a. T. Kambo, "A novel TKEO with the Decision Tree–Based Method for Fault Analysis of the HVDC transmission link fed by offshore wind and solar farms," *International Transactions on Electrical Energy Systems*, vol. 2025, no. 1, Jan. 2025, (Indexed by Scopus, Impact Factor:2, Q3, <https://doi.org/10.1155/etep/9105156>)
 - Sethuraman, S., M. Karthikeyan, Samatha Chowdary Ponduri, Kishore.G, Sellamuthu Baskar, Jim Philip. "Microplastics In Avian Respiratory Systems with Impact on Environmental and Human Health Risks." *Oxidation Communications*, vol.48, no. 2, pp.722, 2025 (Indexed by Scopus, Impact Factor:0.52)
 - vendoti, S., Tulasi, N.P., Jalli, R.K. et al, "Grid tied hybrid PV fuel cell system with energy storage and ANFIS based MPPT for smart EV charging", *Scientific Reports* 15, 27392 (2025). (Indexed by SCI, Impact Factor:3.9, Q1, DOI link: <https://doi.org/10.1038/s41598-025-09626-3>)
 - Kishore, G. I., Kumar, L. V. S., & Kezhiyur, A. J. (2025), "Performance of three different high voltage gain DC-DC converter with solar PV array in standalone applications," *International Journal of Ambient Energy*, 46(1). (Indexed by Scopus, Impact Factor:2.99, <https://doi.org/10.1080/01430750.2025.2534726>)

Professional Development Activities by Faculty Members

- Mr. M. Santhosh Kumar attended an online FDP on "Capacity Building in Higher Education Institutions (HREIS): The Challenges & Opportunities" at Don Bosco Institute of Technology from July 14–18, 2025.
- Dr. K. Karthick attended an online FDP on "Artificial Intelligence for Computer Vision and

Medical Image Processing" at the Electronics and ICT Academies from July 14–24, 2025.

- Dr. L. V. Suresh Kumar attended an online FDP on "Python Programming for Engineering Applications" at the Electronics & ICT Academy from July 28 to August 8, 2025.
- Dr. S. P. Mishra attended an FDP on "Renewable Energy and EV Integration" at NITTTR Kolkata from July 28 to August 1, 2025. He also attended a training program for Lean Consultants organized by MSME, Govt. of India, at KIT University from June 30 to July 4, 2025.
- Dr. L. V. Suresh Kumar participated in a one-month collaborative research project with Dr. Sreeshar Madichetty, Professor at Mahindra University, at Centrale Lille in France, from June 4 to July 4, 2025.
- Dr. P. Ramana and Dr. M. Rambabu attended a one-week online Skill Development Programme on "Research Documentation and Proposal Writing: LaTeX, IPR & Beyond," organized by CVR College of Engineering, Hyderabad, Telangana, from June 23–28, 2025.

Guest Lecture / Events Organized

- On 16 July 2025, the Department of Electrical and Electronics Engineering and IIC, GMRIT Rajam, organized a department-level sensitization program on research and higher education. The event featured an expert talk titled "Sensitization

on Research and Higher Education," focusing on innovation and career design. A total of 47 students from the Electrical and Electronics Engineering (EEE) department participated in the session.

The poster is for a seminar titled "Sensitization on Research and Higher Education" presented by the IEEE Transportation Electrification Council Student Branch Chapter in association with the Department of Electrical and Electronics Engineering at GMR Institute of Technology. The expert member is Dr. Subbarao Boddu, Assistant Professor at Mahindra University, Hyderabad. The event is scheduled for 16th July 2025 at 3:00 PM at the CDC Seminar Hall. Logos for GMRIT, IEEE, and TEC are visible.



- The Department of EEE, in association with the IEEE Transportation Electrification Council (TEC) Student Branch Chapter, organized a seminar on "Next-Gen Unmanned Aerial Vehicles" on 25 July 2025, from 4:00 PM to 5:00 PM at the Civil Seminar Hall. The session was delivered by Dr. K. Karthick, Professor/EEE and Senior Member – IEEE, GMR Institute of Technology, Rajam and 17 students participated in the event. The speaker began by defining a drone/UAV as an aircraft without a human pilot on board, remotely controllable for multiple activities and particularly useful in hard-

to-reach environments. He highlighted diverse applications including underwater port maintenance, agricultural spraying, search-and-rescue operations, solar-PV and wind-turbine inspection, and entertainment using drone swarms.



IEEE Transportation Electrification Council Student Branch Chapter

IEEE TEC
Transportation Electrification Council

IEEE

GARIT
Training Tomorrow's Engineers Today

SEMINAR ON NEXT-GEN UNMANNED AERIAL VEHICLES

Date : 25/07/2025
Venue : Civil Seminar Hall
Timings : 4 pm to 5pm
Faculty Co-ordinator : Dr.K.Karthick (9894821761)

Contacts :
B.Lakshmi Prasad -9381895296
V.Poojitha -9515912949



- The Department of EEE, in association with the IEEE Transportation Electrification Council (TEC) Student Branch Chapter, organized a seminar on “Advancing EV Performance and Safety with Battery Management Systems” on 13 August 2025 at the Simulation Lab from 4:00 PM to 5:00 PM. The session focused on the role of battery management systems in enhancing electric vehicle performance and ensuring operational safety, and provided insights into current trends and challenges in EV technology.

A total of 48 students participated in the seminar and actively engaged with the resource person through queries and discussion.




GMR Institute of Technology
An Autonomous Institute Affiliated to JNTUGV, Vizianagaram

IEEE
Advancing Technology for Humanity

GARIT
Training Tomorrow's Engineers Today

IEEE Transportation Electrification Council Student Branch Chapter
In Association with
Department of Electrical and Electronics Engineering

Seminar on
Advancing EV Performance and Safety with Battery Management Systems

Resource Person
Dr. S.P.Mishra,
Senior Member – IEEE,
Associate Professor/EEE,
GMR Institute of Technology,
Rajam

Date & Time: 13th August 2025 @ 4:00 PM
Venue: Simulation Lab

GMR Nagar, Rajam, Andhra Pradesh - 532127, India.
www.gmrIt.edu.in | edu.ieee.org/n-gmrIt

IEEE TEC
Student Branch (57810281)



- The Department of EEE, in association with the IEEE Transportation Electrification Council (TEC) Student Branch Chapter, organized a seminar on "Revolution of Electrical Machines" on 18/08/2025 from 11:00 AM to 12:00 PM in Room 3-S-12. The resource person for the session was Dr. K. Karthick, Senior Member – IEEE, Professor/EEE, GMR Institute of Technology, Rajam.

The session began with a review of the fundamentals of electro-mechanical energy conversion and the operating principles of motors and generators. The speaker revisited Faraday's law of electromagnetic induction, torque

production, interaction of magnetic fields and the concept of torque angle, using illustrative examples involving soft iron pieces, permanent magnets and electromagnets placed in a magnetic field. He then traced the evolution of electrical motors from conventional DC and induction machines to advanced types such as brushless DC motors, permanent-magnet synchronous machines and flux-switching permanent-magnet machines, highlighting their suitability for modern electric-vehicle (EV) applications.

Dr. Karthick discussed the growing penetration of EVs, their advantages in terms of running cost, maintenance and environmental impact, and the challenges related to charging infrastructure, initial cost and renewable-energy integration. He presented data on the Indian power system, the share of renewables and the current EV car landscape in India, including performance and range comparisons under standard driving cycles. The talk also introduced the concept of Vehicle-to-Load (V2L) and its role in enabling EVs to act as portable power sources.



- The Department of Electrical and Electronics Engineering, in association with the IEEE - TEC Student Branch Chapter, conducted an IEEE Membership Drive on 25 August 2025 at the CDC Seminar Hall. The programme aimed to introduce students to the vision and activities of IEEE and to motivate them to join as student members. The session began with an overview of IEEE, its global structure and the role of student branches and technical societies. The speaker IEEE TEC Student Branch Chapter advisor Dr.K.Karthick explained the benefits of IEEE membership, including access to digital libraries and technical magazines, participation in conferences and contests, funding opportunities for student projects and the value of IEEE on a professional résumé.



- "FUN TECH AUCTION" was a central event organized by ISTE student coordinators: A. Gayathri, A. Ganesh Kumar, T. M. Srinivas Rao, V. Harika, N. Sivamani, K. Sai Manikanta, M. Dharshini, and K. Varshitha. The event comprised two rounds and saw 56 participants. It was team-based, with 2–4 members per team, and questions covered the fundamentals of multiple domains as well as general knowledge.

Winners

- R. Varun Kumar (24341A03A0) – II Mech B
 V. Kartheek (24341A03C5) – II Mech B
 Y. Meghanadh (24341A03Do) – II Mech B
 V. Gopi (24341A03C2) – II Mech B

Runners-up

- V. Suryahemanth (24341A02C7) – II EEE B
 N. Aravind (24341A0284) – II EEE B V. Ramcharan (24341A02C5) – II EEE B
 V. Chandrasekhar (24341A02B8) – II EEE B





- “Tech Mind Quest” is an event organized by the student coordinators V. Harika, A. Gayathri, A. Ganesh Kumar and T. M. Srinivas Rao. “Tech Mind Quest” is a single-round event with 26 participants. It is a team-based event, with each team consisting of two members. The event is conducted on the basics of electrical and electronics topics. The main motive of this event is to familiarize participants with technical events and help them recall fundamental concepts.



Editorial Borad Members

Chief Editors

Dr.Ramana Pilla

Dr.K.Karthick

Section Editors (Faculty)

Research and Academic Achievements

Dr G Indira Kishore

Guest Lecture / Expert talk / Events Organized

Dr L V Suresh Kumar

Section Editors (Students)

Student-Centric Events and Engagement

AMBAKANDI GANESH KUMAR (23341A0203)

ANDHAVARAPU GAYATHRI (23341A0205)

TARIGOPPULA MANIKANTA SRINIVASA RAO (23341A02B9)

VEMAKOTI HARIKA (23341A02C5)

BORA LAKSHMI PRASAD (23341A0222)

GOSALA INDU (23341A0245)

VANAPALLI POOJITHA (23341A02C2)

KANDULA SAI MANIKANTA (24341A0257)

KARRA SRI VARSHITHA (24341A0260)

BHASURU SAMEERA (24341A0214)

EDDUM YASHWANTH SAI KUMAR (24341A0235)

MUDDANA DARSHINI (24341A0278)

NIKKU SIVAMANI (24341A0288)

KOTNANA MOHIT MANIKANTA (24341A0267)

PATTA LAHARI (24341A0294)