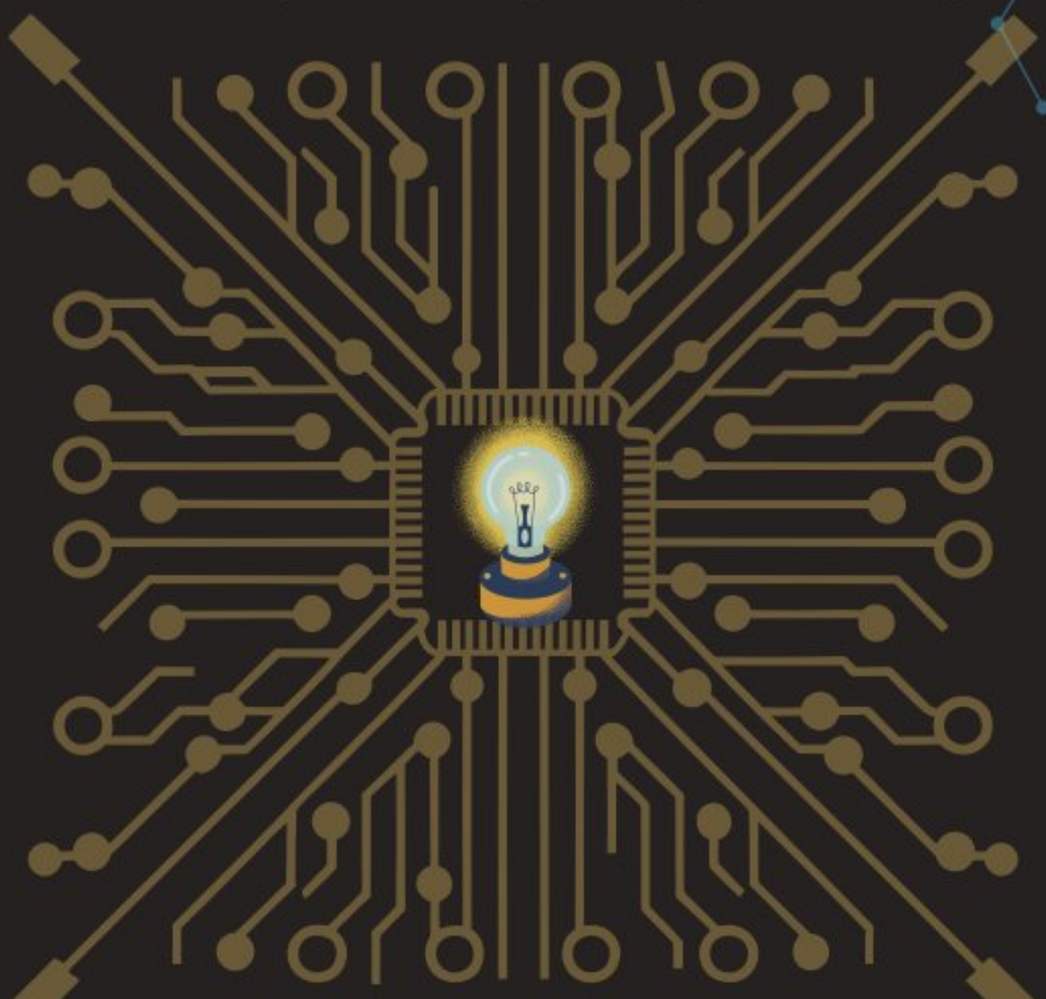
THE ELECTRIC PULSE

DEPARTMENT OF ELECTRICAL ENGINEERING



Section:-2025-2026

GOVERNMENT POLYTECHNIC SIWAN

DEPARTMENT OF SCIENCE TECHNOLOGY AND TECHNICAL EDUCATION

GOVERNMENT OF BIHAR

Vision & Mission

Vision of the Department

Toemerge as a Centre ofExcellence in Diploma-level Electrical Engineering education, nurturing competent, ethical and industry-ready electrical professionals through performance-oriented learning, multidisciplinary exposure, innovation and sustainable practices, aligned with contemporary national educational reforms, and contributing meaningfully to societal and national development.

Mission of the Department

TheDepartment ofElectricalEngineering is committed to:

- **M1:** Deliver competency-based electrical engineering education with strong practical orientation.
- **M2:** Foster ethics, innovation, sustainability and professional skills.
- **M3:** Promote lifelong learning, industry linkage and societal engagement.

Vision of the Institute

“To beaninstitute ofexcellence in technical education, empowering individuals to realize their potential and contribute to societal advancement through innovative teaching, training and community engagement.”

Mission of the Institute

- To provide holistic education that fosters critical thinking, creativity and ethical leadership.
- To train students to thrive in a rapidly evolving global landscape.
- To prepare students to drive innovation for the betterment of society.

Program Educational Objectives (PEOs)

- **PEO 1:** Develop technically competent and employable diploma engineers with strong practical skills.
- **PEO 2:** Instil ethical values, teamwork and societal responsibility in professional practice.
- **PEO 3:** Promote lifelong learning, innovation and career progression through continuous skill enhancement.

About Government Polytechnic Siwan

Government Polytechnic Siwan, situated at Bawandih, Chainpur, Siwan (Bihar), functions under the Department of Science, Technology and Technical Education, Government of Bihar. The institute offers diploma-level technical education and gives equal importance to classroom learning, laboratory practice, skill training and student activities. The Department of Electrical Engineering is one of its key branches, preparing students for careers in power systems, industrial maintenance, automation, renewable energy and electric mobility.

Our Core Values

Competence Strong basics and hands-on skills	**Integrity** Honesty in study and work	**Innovation** New ideas for real problems	**Sustainability** Energy-wise, eco-friendly thinking	**Collaboration** Teamwork with peers and industry

Program Outcomes (POs)

What a diploma graduate should know and be able to do

Program Outcomes describe the knowledge, skills and attitudes that every diploma engineer of the department is expected to develop by the end of the programme. They connect classroom learning with laboratory work, projects and real industry needs.

PO1 **Basic and Discipline-specific Knowledge**
Applyknowledge ofbasicmathematics, science and engineering fundamentals to solve problems in the specific engineering discipline.

PO2 **Problem Analysis**
Identifyandanalyze well-defined engineering problems using codified standard methods.

PO3 **Design / Development of Solutions**
Designsolutionsforwell-defined technical problems and assist with the design of system components or processes to meet specified needs.

PO4 **Engineering Tools, Experimentation and Testing**
Apply modernengineeringtoolsand appropriate techniques to conduct standard tests and measurements.

PO5 **Engineering Practices for Society, Sustainability and Environment**
Demonstrateengineeringpractices that consider safety, societal and environmental aspects.

PO6 **Project Management**
Planand executeprojects while managing resources, timelines and technical requirements.

PO7 **Life-long Learning**
Analyzeindividualneeds and engage in independent and life-long learning to keep pace with changing technology.

Program Specific Outcomes (PSOs)

Outcomes specific to Electrical Engineering

PSO1 **Installation, Operation & Maintenance**
Perform installation, operation and maintenance of electrical systems using safe and professional practices.

PSO2 **Emerging Technologies**
Apply emergingelectricaltechnologies ethically with adaptability, teamwork and continuous learning.

> *Theory builds the foundation; practice builds the engineer.*

Editorial Committee



Mr. Pranav Kumar Nirala
CHIEF EDITOR



Mr. Vicky Kumar Baitha
EDITOR



Ms. Anamika Kumari
ASSOCIATE EDITOR



Mr. Prashant Kumar
ASSOCIATE EDITOR

Student Members



Shahil Kumar
Roll no :- 26/EE/24
Electrical engineering



Dilip kumar
Roll no :- 55/EE/24
Electrical engineering

About the Editorial Team

Theeditorial team of TheElectric Pulse is made up of faculty members and student volunteers of the Department of Electrical Engineering. The faculty editors guide the content, check technical accuracy and maintain the quality of language, while the student members collect photographs, report on events and help with the layout. Working together on a magazine teaches the same things a good engineering project does: planning, deadlines, coordination and attention to detail.

What You Will Find in This Edition

- AmessagefromtheHeadoftheDepartment and details of the department's vision, mission and outcomes.
- Photo reports of hands-on workshops and training programmes held during the session 2025–26.
- Glimpses of student participation in practical learning: motor winding, LED circuits, IoT, laser cutting, circuit design and electric vehicles.

Our Editorial Aim

- Encourage students to write, photograph and document their technical journey.
- Recognise the efforts of faculty, trainers and organisers who support practical learning.
- Build a lasting record of department activities for future batches.

Message from the Chief Editor & Head of Department



Mr. Pranav Kumar Nirala
HEAD OF THE DEPARTMENT & CHIEF EDITOR
Department of Electrical Engineering, Government Polytechnic Siwan

It gives me immense pleasure to present this edition of the Departmental Magazine of Electrical Engineering. This magazine is a reflection of the academic strength, creativity and innovative spirit of our students and faculty members.

The field of Electrical Engineering is continuously evolving, playing a crucial role in power systems, renewable energy, electric vehicles, automation, smart grids and modern industrial applications. Our department is committed to imparting quality technical education that blends strong theoretical foundations with hands-on practical exposure. We strive to prepare our students to meet the challenges of emerging technologies and industry requirements.

I am proud of the efforts made by our students in academics, projects, seminars, technical events and extracurricular activities. This magazine provides a platform for students to express their technical ideas, research insights, creative writing and innovative thoughts. Such initiatives not only enhance technical knowledge but also develop communication skills, confidence and teamwork.

I appreciate the sincere efforts of the editorial team, faculty coordinators and all contributors who have worked tirelessly to bring out this magazine. Their dedication and teamwork deserve special commendation.

I sincerely hope that this magazine will inspire students to think innovatively, explore new ideas and strive for excellence in their academic and professional careers. I wish the Department of Electrical Engineering continued success and growth in the years to come.

Best wishes to all,

Mr. Pranav Kumar Nirala
Head of the Department & Chief Editor

In this issue

- **Technical Articles:** six student articles on EVs, regenerative braking, energy conservation, GIS and automation
- **Literary Section:** a Hindi essay on civilisation and culture and an article on technical education
- **Events & Campus Life:** hackathon, EV and IoT workshops, science and mathematics days, Umang, yoga and more

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About this issue

This issue records the activities, achievements and ideas of the department during the session.

- Student writing: The Last Spark, Electricity – The Heartbeat of Modern Life, The Transformer
- Technical events: MotorX, laser cutting, IoT, fan winding, circuit design, LED and EV training
- Seminar: National Seminar on Electric Vehicles in collaboration with ISTE, 24–25 January 2026

Technical Education: The Foundation of a Self-Reliant India



Prashant Kumar

Lecturer,Departmentof Electrical Engineering · Government Polytechnic Siwan, Bihar

Today, we live in an era of science, technology and innovation. Technical education plays a vital role in the development of a nation by equipping students with practical skills, problem-solving abilities and the confidence to become self-reliant.

Polytechnic institutions provide students with opportunities to gain practical experience through laboratories, workshops and projects. In Electrical Engineering, emerging technologies such as solar energy, electric vehicles, automation and energy conservation are creating new career opportunities. To succeed in these fields, students must combine theoretical knowledge with hands-on experience.

> *The purpose of technical education is not merely to secure employment but to develop skilled, innovative and responsible citizens.*
>
> — Prashant Kumar

The role of a teacher extends beyond completing the syllabus. A teacher inspires students to develop curiosity, creativity, discipline and a habit of lifelong learning. Similarly, students should look beyond examinations and use their knowledge to solve real-life problems.

Along with technical competence, safety, honesty and social responsibility are equally important. A skilled professional is one who uses knowledge to develop safe, efficient and sustainable solutions for society.

Ultimately, the purpose of technical education is not merely to secure employment but to develop skilled, innovative and responsible citizens. When young people contribute their knowledge and abilities to society and national development, the vision of a self-reliant India becomes a reality.

Key Messages

1. **Practical Skills** — Laboratories, workshops and projects turn theory into real competence.
2. **Inspiring Teachers** — Teaching goes beyond the syllabus: curiosity, creativity and discipline.
3. **Safety & Honesty** — Technicalcompetence must go hand in hand with responsibility.
4. **Self-Reliant India** — Skilled, innovative citizens drive national development.

GOVERNMENT POLYTECHNIC SIWAN

AT BAWANDIH CHAINPUR

DEPARTMENT OF ELECTRICAL ENGINEERING



THE LAST SPARK

An Inspirational Story of Dreams, Determination and the Power of Electricity

1. A Village Without Light



In a small village surrounded by fields and narrow roads, rkness was a part of everyday life. Electricity was unreliable, d students often studied under the weak light of kerosene lamps.

Among them lived a young boy named Aarav. He was not born o a wealthy family, but he possessed something far more luable—a curious mind and an extraordinary dream.

Every night, while others complained about power cuts, Aarav ked at the darkness and asked himself a question:

" If humans can send machines to space, why can't we create a reliable source of light for every home? "

That question became the beginning of his journey.

2. The Beginning of a Dream



Aarav developed a fascination with electrical circuits. He lected discarded wires, damaged switches, old batteries and ctronic components. His first experiment failed. His second periment produced smoke. His third attempt caused a short cuit. His friends laughed at him.

"Why waste your time on broken machines?" they asked.

But Aarav believed that every failed experiment was a lesson lden inside a mistake. His teacher once told him:

An engineer is not someone who never faces failure. An engineer someone who finds a solution when failure becomes inevitable."

ose words remained in his heart.

3. The Night of the Challenge



One evening, a severe storm damaged the village's electrical pply. The power remained unavailable for several days. rav noticed that several students were unable to prepare for ir examinations. Even the small village clinic struggled thout dependable lighting.

He decided to build a small solar-powered emergency lighting tem using an old solar panel, a rechargeable battery, an LED cuit and a charge controller. He worked continuously, testing nnections, calculating voltage, checking current and correcting stakes. After several unsuccessful attempts, the circuit finally rked. A small LED illuminated his room. It was not just a light. was the first visible result of his determination.

4. The Power of Innovation



Aarav improved his design and created a few more units for nearby families. The system was simple, affordable and useful during power interruptions.

Soon, his project attracted the attention of his teachers and the local community. The same people who once laughed at his experiments now appreciated his innovation.

He understood something important:

" Technology becomes meaningful when it solves real problems faced by real people. "

5. Beyond the Village



Years later, Aarav became an electrical engineer. He worked on renewable energy systems, smart grids and energy-efficient technologies. However, he never forgot the village where his journey had begun. He returned with a team of engineers and helped develop a community-based solar energy project. The village that once struggled with darkness gradually became a symbol of local innovation and sustainable development.

6. The Final Message



One day, a young student asked Aarav:

" Sir, what is the greatest achievement of an electrical engineer? "

Aarav smiled and replied:

" It is not merely designing a complex circuit, operating a powerful machine or generating thousands of megawatts of electricity. The greatest achievement is using knowledge to illuminate someone's life. "

He looked towards the glowing village and added:

" Never underestimate a small spark. Sometimes, the smallest spark has the power to eliminate the darkest night. "

Name : **Prince Kumar**

Semester : **5th**

Roll No. : **07/EE/24**

MORAL OF THE STORY

"Dreams create vision, knowledge creates possibilities, and determination transforms possibilities into reality."

An engineer does not simply work with electricity; an engineer works with possibilities.

बिजली: आधुनिक जीवन की धड़कन

(Electricity – The Heartbeat of Modern Life)



Abhinav Tiwari
Diploma in Electrical Engineering · Batch 2024–27 · Roll No. 36/EE/24

प्रस्तावना

आज का युग विज्ञान और तकनीक का युग है। इस आधुनिक दुनिया की कल्पना बिजली के बिना करना लगभग असंभव है। सुबह उठने से लेकर रात को सोने तक हम अनेक ऐसे उपकरणों का उपयोग करते हैं, जो बिजली पर निर्भर हैं। पंखा, लाइट, मोबाइल, कंप्यूटर, मशीनें और बड़े-बड़े उद्योग सभी बिजली से चलते हैं। वास्तव में बिजली केवल ऊर्जा का स्रोत नहीं, बल्कि आधुनिक जीवन की धड़कन है।

विकास में बिजली का योगदान

बिजली ने मानव जीवन को पूरी तरह बदल दिया है। पहले जिन कार्यों को करने में घंटों या दिनों का समय लगता था, आज वे कुछ मिनटों में पूरे हो जाते हैं। कृषि क्षेत्र में सिंचाई पंप, उद्योगों में बड़ी मशीनें, अस्पतालों में जीवनरक्षक उपकरण और शिक्षा के क्षेत्र में कंप्यूटर एवं इंटरनेट बिजली के कारण ही संभव हो पाए हैं।

आज भारत भी सौर ऊर्जा, पवन ऊर्जा और जल विद्युत जैसे स्वच्छ ऊर्जा स्रोतों की दिशा में तेजी से आगे बढ़ रहा है।

Electrical Engineer की भूमिका

किसी भी देश के विकास में Electrical Engineers की महत्वपूर्ण भूमिका होती है। एक Electrical Engineer केवल तारों और मशीनों के साथ काम नहीं करता, बल्कि वह भविष्य की तकनीक को विकसित करने में भी योगदान देता है।

बिजली का सुरक्षित उत्पादन, ट्रांसमिशन, डिस्ट्रीब्यूशन और सही उपयोग सुनिश्चित करना एक Electrical Engineer की जिम्मेदारी है। आज Electric Vehicles, Smart Grid, Solar Power और Automation जैसी तकनीकें Electrical Engineering के महत्व को और बढ़ा रही हैं।

ऊर्जा संरक्षण की आवश्यकता

बिजली हमारे लिए जितनी महत्वपूर्ण है, उसका संरक्षण करना भी उतना ही जरूरी है। हमें अनावश्यक लाइट और पंखे बंद रखने चाहिए, LED बल्बों का उपयोग करना चाहिए और सौर ऊर्जा को बढ़ावा देना चाहिए।

हमें हमेशा याद रखना चाहिए कि ऊर्जा की बचत ही ऊर्जा का उत्पादन है।

बिजली कहाँ-कहाँ काम आती है

- कृषि में सिंचाई पंप
- उद्योगों में बड़ी मशीनें
- अस्पतालों में जीवनरक्षक उपकरण
- शिक्षा में कंप्यूटर और इंटरनेट
- सौर, पवन और जल विद्युत जैसे स्वच्छ स्रोत

ऊर्जा बचाने के उपाय

- अनावश्यक लाइट और पंखे बंद रखें
- LED बल्बों का उपयोग करें
- सौर ऊर्जा को बढ़ावा दें

ऊर्जा की बचत ही ऊर्जा का उत्पादन है।

The Transformer: The Silent Workhorse of the Power GridPower Systems | Electrical Engineering Feature



Vikash Kumar
Diploma in Electrical Engineering Batch 2024-27-Roll No. 20/EE/24

The Transformer: The Silent Workhorse of the Power GridPower Systems | Electrical Engineering FeatureIntroductionThe transformer is a static electrical device with no moving parts that transfers power between AC circuits at differentvoltage levels without changing the frequency. Without it, electricity could not be carried economically over hundreds ofkilometres, nor made safe for homes and industry.Working PrincipleBased on Faraday's Law of Electromagnetic Induction: an alternating voltage on the primary winding drives analternating flux in the core, which links the secondary winding and induces an EMF in it.V1/V2 = N1/N2 = I2/I1A step-up transformer raises voltage (and lowers current) for transmission; a step-down transformer does the reversefor safe distribution.Why Voltage Transformation MattersLine loss is proportional to I2R. Stepping generation voltage (11–33 kV) up to 132, 220 or 400 kV and beyond cuts thecurrent for the same power, and so the losses. Near the load, voltage is stepped down to 415 V three-phase or 230 Vsingle-phase.Key Components• Core: laminated CRGO silicon steel; low reluctance, limits eddy-current and hysteresis losses.• Windings: insulated copper or aluminium primary and secondary coils.• Oil and insulation: mineral oil gives dielectric strength and carries heat away; conservator takes oil expansion,silica-gel breather keeps moisture out.• Buchholz relay: gas-actuated early warning of internal faults.• Tap changer: adjusts the turns ratio to hold output voltage steady (off-circuit or on-load, OLTC).Types of TransformersPower (transmission level, high efficiency near full load); Distribution (final voltage to consumers, handles fluctuatingloads); Instrument (CT and PT, scale down current and voltage for meters and relays); Auto (shared winding,compact and economical for modest ratios); Isolation (galvanic separation for safety and noise reduction).Losses and EfficiencyIron (core) loss from hysteresis and eddy currents is essentially constant with load. Copper loss (I2R) varies with thesquare of load current. Maximum efficiency occurs when iron loss equals copper loss. Modern large powertransformers reach 98–99.5% efficiency.Cooling MethodsHeat is the main enemy, as insulation life falls sharply with temperature. ONAN (Oil Natural, Air Natural) for smallerunits; ONAF (Air Forced, with fans) for more capacity; OFAF (Oil Forced, Air Forced) for large units; ODWF (OilDirected, Water Forced) for very high ratings.Protection and MaintenanceA failure can disrupt supply to an entire region, so protection and monitoring are essential:• Differential protection for internal winding faults; Buchholz relay for gas and oil surges; overload andover-temperature protection against thermal damage.• Dissolved Gas Analysis (DGA) reveals developing faults (overheating, partial discharge) early; oil tests (BDV,moisture) confirm insulation health.The Road AheadRenewables, EV charging and two-way power flows are changing demands. Smart transformers with embeddedsensors enable real-time monitoring and predictive maintenance. Solid-state transformers (SSTs) promise compactsize, active voltage control and direct DC interfacing, though cost and reliability challenges remain.ConclusionWith sound design, proper cooling, vigilant protection and systematic maintenance, a power transformer can servereliably for 25 to 40 years or more, and it will remain at the heart of an increasingly smart and green grid.

MotorX at Technovation: Hands-On with a Motorcycle

4December2025 | TechnovationEvent

Technovation brings students of different branches together to learn by doing, and the **MotorX** activity held on **4 December 2025** was one of its most lively sessions for electrical students. Instead of a conventional lecture, participants gathered around a real motorcycle and worked on it directly, learning how mechanical, electrical and electronic parts come together in a modern two-wheeler.



Students working together on the motorcycle during the MotorX session.



Participants and trainers examine the vehicle in the lab.

Key Learning Points

- Layout of the drive system and the role of the motor, controller and wiring.
- Safe handling of tools and electrical connections.
- Dividing work in small teams: one person fixes, one guides, one records.
- Connecting classroom ideas such as torque, power and energy with a working machine.

Why MotorX Matters

With electric two-wheelers becoming common on Indian roads, tomorrow's electrical diploma engineers will be asked to inspect, maintain and improve such vehicles. Touching real components, seeing how they are fitted and discussing faults with trainers builds confidence that no textbook diagram can give. MotorX showed that learning becomes easier, and far more enjoyable, when students are allowed to open, assemble and ask questions.

Teamwork in Action

Students sat, knelt and crouched around the machine, passing tools and sharing observations. Some groups worked on the wheel and brake area, others on body panels and wiring, which is exactly how real service teams divide work in industry.

Hands-On Training on Laser Cutting

5–6April2025 | OrganisedbytheDepartmentofMechanicalEngineering

A two-day hands-on training on **laser cutting** was conducted at Government Polytechnic Siwan on **5 and 6 April 2025**. The workshop was organised by the Department of Mechanical Engineering under the patronage of the Principal, with the Head of the Mechanical Department and a lecturer as convenor. Students of the Electrical Engineering department also took part to see how digital design and modern machines are used to make precise parts.



Official poster of the workshop.

Workshop at a Glance

- **Dates:** 5–6 April 2025
- **Organiser:** Dept. of Mechanical Engineering
- **Format:** Hands-on, machine-based
- **Venue:** Government Polytechnic Siwan



The laser cutting machine with a sample cut sheet.



Students watching the machine and control computer.

What Students Learned

A laser cutter uses a focused beam of light, controlled by a computer, to cut or engrave sheets of wood, acrylic and similar materials with great accuracy. Participants learned how a design is prepared on the computer, sent to the machine and cut in a few minutes, and why settings such as power and speed decide the quality of the cut. They also noted safety rules: protective covers, ventilation and never leaving a running machine unattended.

Relevance for Electrical Students

Electrical projects need neat panels, enclosures, switch boards, name plates and mounting parts. Laser cutting makes it possible to build such parts quickly and cleanly, turning a project idea into a professional-looking model. The workshop also showed the value of collaboration between engineering branches.

IoT with Hardware Prototyping Workshop

2-DayWorkshop | Innovating&TrainingClub,GovernmentPolytechnicSiwan

The **Internet of Things (IoT)** connects everyday devices to sensors, software and the internet so that they can be monitored and controlled from anywhere. To introduce students to this field, the Innovating & Training Club organised a two-day workshop on **IoT with Hardware Prototyping**. Instead of only discussing theory, participants gathered around a laptop and a microcontroller board and learned how a simple idea becomes a working device.



Participants and the trainer working on an IoT hardware prototype.

What Was Covered

- Basics of microcontroller boards and how they connect to a laptop through a cable.
- Writing and uploading simple programs, then watching the hardware respond.
- Connecting sensors and output devices such as LEDs to the board.
- Testing, finding mistakes and correcting the circuit step by step.

IoT in Electrical Engineering

IoT is already changing the power sector. Smart energy meters send readings automatically, street lights switch on and off with light levels, and industrial machines report faults before they break down. Students who understand sensors, wiring and basic programming can work in all of these areas. Prototyping teaches an important lesson: build a small model first, test it, improve it, and only then move to a bigger system.

Key Takeaway

A good engineer does not wait for a perfect plan. Start with a small working prototype, learn from it, and keep improving it.

Fan Winding Practical Training

17July2025 | ElectricalWorkshop

Rewinding a fan is a classic skill of every electrical technician, and on **17 July 2025** students of the department practised it in a live workshop session. Standing around the workbench, they watched the trainer demonstrate how copper coils are prepared and fitted, and then tried the work with their own hands.



Students observing the winding demonstration.



Winding wire and bobbins in use.

Steps Followed in the Session

- **Understanding the motor:** identifying the stator, rotor and capacitor of a fan motor.
- **Recording the data:** noting the number of turns, wire gauge and coil arrangement of the old winding.
- **Winding the coils:** turning enamelled copper wire on a former with a winding machine and counting turns carefully.
- **Insulation and fitting:** placing insulated coils in the slots and securing them neatly.
- **Testing:** checking continuity and insulation before connecting to the supply.

Tools and Materials Used

Enamelled copper wire wound on bobbins, a winding machine or hand former, insulating sleeves, cutters, and a multimeter or test lamp for continuity checks.

Skills and Safety

Winding demands patience, accuracy and steady hands. A single wrong turn count or damaged insulation can make a motor run hot or fail. Students therefore learned to work slowly, check each stage and always isolate the supply before touching any part. These habits matter in every branch of electrical work, from small fans to large industrial motors.

> **Why It Matters**
> Motor winding and repair is a practical skill that gives diploma engineers direct employment and self-employment opportunities in local markets and industries.

Circuit Design & Implementation Workshop

Hands-OnTraining | DepartmentofElectricalEngineering

Every electrical device, from a small night lamp to a large control panel, begins as a circuit design. The **Hands-On Training on Circuit Design and Implementation** gave students a chance to move from drawing a circuit on paper to actually building it. A trainer demonstrated a lit-up model circuit on the table while students watched closely, asked questions and followed each step.



The trainer demonstrates a working circuit to an attentive group of students.

From Idea to Working Circuit

- **Identify the need:** decide what the circuit should do.
- **Draw the schematic:** show components and connections with standard symbols.
- **Select components:** choose resistors, LEDs, batteries and wires with suitable ratings.
- **Assemble and solder:** join the parts neatly and securely.
- **Test and improve:** check voltage, correct faults and refine the design.

Common Components and Their Purpose

Component	Purpose
Resistor	Limits current and protects other parts
LED	Gives light; works only with correct polarity
Battery / supply	Provides the energy for the circuit
Breadboard / soldering	Temporary or permanent joining of components

Learning Outcomes

Participants understood how current flows through a circuit, why a resistor is needed to protect an LED, and how loose joints or wrong polarity can stop a circuit from working. They also learned good workshop habits: tidy wiring, correct soldering, and testing before powering the circuit. The session linked directly to the Program Outcomes on design, tools and testing, and it encouraged students to turn their own ideas into small projects.

LED Training Program: Lighting Up Skills

Hands-OnTraining | DepartmentofElectricalEngineering

Light-emitting diodes (LEDs) have replaced old bulbs in homes, streets, vehicles and screens because they are bright, long-lasting and energy-efficient. In the **LED Training Program**, students built glowing LED circuits themselves, learning the basics of lighting technology through practical work rather than only through theory.



Students connecting LEDs and wires on the workbench.



Participants with their glowing LED string circuit.

What Participants Practised

- Identifying the positive and negative legs of an LED and connecting them with correct polarity.
- Using a resistor or suitable supply to limit current and protect the LED.
- Joining several LEDs in a string and powering them from a small source.
- Fixing common problems such as loose wires, reversed LEDs and weak connections.

Why LEDs Matter

An LED uses much less electricity than an incandescent bulb to give the same light, and it lasts many times longer. This makes LED lighting a simple and powerful way to save energy and reduce electricity bills. Students also saw that LED assembly and repair is a skill with real local demand: decorative lighting, street lamps, display boards and household bulbs all need technicians who can fix them.

Feature	LED lamp	Old filament bulb
Electricity used	Very low	High
Working life	Very long	Short
Heat produced	Little	A lot of wasted heat

Think green: switching to LED lighting is one of the easiest steps towards energy conservation. Small savings in every home add up to a large saving for the nation.

Electric Vehicle Training: Driving Towards the Future

Hands-OnTraining | GovernmentPolytechnicSiwan

Electric vehicles (EVs) are among the fastest-growing areas in electrical engineering. To prepare students for this future, the department hosted a hands-on **Electric Vehicle Training** conducted by trainers from **BPH Mobility**. Students saw real EV bodies and parts in the training hall and learned how an electric vehicle is put together from the chassis upwards.



The trainer is welcomed and felicitated by the department with a bouquet and shawl.



Students studying the vehicle chassis at close quarters.

Main Parts of an EV

- **Battery pack:** stores energy for driving.
- **Motor:** converts electrical energy into motion.
- **Controller:** controls speed and power to the motor.
- **Charger:** refills the battery from the supply.
- **Wiring and chassis:** connect and support all parts.

Learning and Future Scope

The session explained how an EV differs from a petrol vehicle, why maintenance needs are different, and how regenerative braking returns some energy to the battery. With charging stations, e-rickshaws and electric two-wheelers spreading fast, trained technicians will be in great demand. We thank the trainers for sharing their experience and the students for their enthusiastic participation.

National Seminar on Electric Vehicles: Innovation, Infrastructure and Intelligent Systems

24–25 January 2026 | In collaboration with ISTE | Dept. of Electrical Engineering



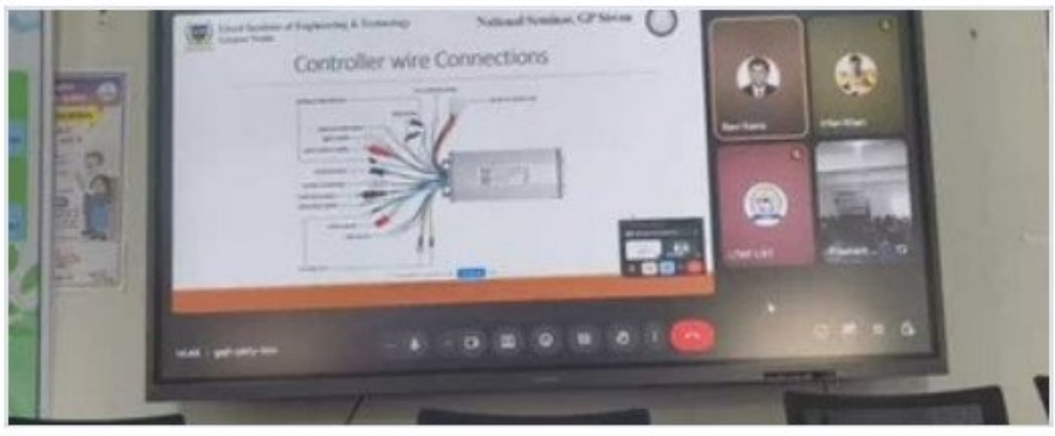
Introduction. The Department of Electrical Engineering, Government Polytechnic Siwan, organized a two-day National Seminar on “Electric Vehicles: Innovation, Infrastructure and Intelligent Systems” in collaboration with the Indian Society for Technical Education (ISTE). The seminar focused on the development of electric vehicles and the latest technologies related to electric mobility.

Objectives. The main objective was to increase students’ knowledge of EV technology, charging infrastructure, intelligent systems and modern developments in the automobile industry, and to connect technical education with industrial knowledge and emerging career opportunities.

Speakers and technical sessions. The seminar featured experts from the academic and industrial fields, who shared their knowledge and experiences related to electric vehicles. The sessions highlighted innovations in EV technology, charging systems, infrastructure development and intelligent control systems.

Learning outcomes. The seminar helped students understand the importance of electric vehicles in sustainable transportation and encouraged them to explore new technologies, develop technical skills and learn about the growing role of electrical engineers in the EV industry.





Patron: Dr. Praveen Pachauri, Principal, GP Siwan · **Convenor:** Mr. Pranav Kumar Nirala, HoD (Electrical Engineering)
Organising Committee: Mr. Vicky Kumar Baitha, Mr. Prashant Kumar, Ms. Anamika Kumari, Dr. Dhananjay Kumar Singh, Mr. Sujeet Kumar Patel, Mr. Shashi Bhushan Kumar