

ELECTRICAL ENGINEERING

*ELECTRIFY
2024-25*

**ELECTRICAL DEPARTMENT
MAGAZINE**



VISION

'We will empower youth by imparting quality technical education and strive to prepare students with excellent technical skills'.



MISSION

- We will offer value added quality technical education & excellent academic training to our students.
- We will provide state of art infrastructure with latest facilities.
- We will strengthen industry institute interaction.
- We will make continual improvement in all institutional activities.



I bow down to Goddess Sharda, the bright, Full of noble thoughts, all pervading, holding flute, book and rosary removing ignorance and conferring wisdom

CS SPEECH FOR ANNUAL MAGAZINE

Dear All, Being the Cultural Secretary of T. B. Girwalkar Polytechnic Ambajogai was a great experience indeed. It was an exciting and responsible role that allowed us to actively contribute to the vibrant cultural life of the campus. This position requires a passion for the arts, organization skills, and the ability to bring people together in the pursuit of creativity and entertainment. The Cultural committee of T. B. Girwalkar Polytechnic Ambajogai gives a platform to the students through which they get a chance to showcase their talents and improve their capabilities. We encourage students to participate actively and to be committed to developing and polishing their talents. The students were able to showcase their talent and creativity through the various activities and functions organized under our Cultural Committee such as - Vocal and Instrumental Music, Semi-Classical, Western and Indian forms of dance, singing, etc. Such functions are held throughout the year at various levels. In which the students participated enthusiastically. A big Thanks to them! Serving as a cultural secretary of this college offered us an opportunity to make a lasting impact on the college community and create memorable experiences for students. In addition, we would like to add that this role also provided us with opportunity for personal growth and development. If you have a passion for the Culture and want to make a difference, we'd like to say being a Cultural Secretary is a position worth considering. We are truly grateful to the college for providing us an opportunity to be a part of this beautiful ramify and express ourselves through the vivid creative expressions inspired by our cultural heritage.

Thank You.



Aditya Autade



Yogita Nile



Om Bhagat

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PRINCIPAL MESSAGE

T.B. GIRWALKAR POLYTECHNIC HAS PROUDLY STEPPED INTO A LEGACY OF CONTRIBUTING TO NATION'S DEVELOPMENT BY A PROMISE TO PRODUCE HIGHLY SKILLED ENGINEERS FOR MANY YEARS TO COME. THE INSTITUTION HAS BEEN CARVED OUT AND ERECTED BY VISIONARIES OF INDIA WHO TAKE A DISTINGUISHED IN TODAY AND TOMORROW'S GLOBALIZED ETHOS OF TECHNOLOGY. STUDENTS ARE NURTURED INTO TECHNICALLY SOUND LEADERS WHO CAN DESIGN AND DRIVE THE GLOBAL MARKET. IT EPITOMIZES THE BELIEF THAT AN INSTITUTE IS NOT JUST A PLACE FOR PROMOTING ACADEMIC EXCELLENCE BASED ON ROTE LEARNING BUT UPHOLDING AN ACADEMIC EXCELLENCE BASED ON UNDERSTANDING OF THE BASICS AND LOGIC BEHIND EACH SUBJECT, WHICH PROMOTE INNOVATIONS, DISCOVERY AND THE WILL TO DRIVE THE NATION TO NEW HEIGHTS! THE POOL OF TALENT IN THE FORM OF THE FACULTY IS TRAINED TO TAKE CARE OF OVERALL DEVELOPMENT OF THE STUDENTS. VARIOUS FORUMS AND SPECIAL CELLS PROVIDE A PLATFORM FOR THE STUDENTS TO EXPAND THE LEARNING HORIZON AND INTERACT WITH STALWARTS FROM ALL WALKS OF LIFE. TO SYNCHRONIZE WITH OTHER RAPIDLY GROWING GLOBALIZATION & TECHNICAL ADVANCEMENT ACROSS SECTORS, T.B.GIRWALKAR POLYTECHNIC HAS DEVELOPED A WELL EQUIPPED STRONG INFRASTRUCTURE AND WELL-DESIGNED LABORATORIES AND WORKSHOPS, TO FACILITATE THE BEST OF LEARNING AMBIENCE.



**PRINCIPAL
PROF. L.V.BAGALE**

HOD MESSAGE



**HOD OF EE Department
Prof.Mrs.A.A.Kulkarni**

IN TODAY'S WORLD OF TECHNOLOGICAL REVOLUTION, IT HAS BECOME MANDATORY FOR EVERY TECHNICAL INSTITUTE TO KEEP ABREAST WITH THE LATEST UP-COMING TECHNOLOGIES. FOR MEETING THIS NEED HIGHLY SKILLED & PROFESSIONAL ENGINEERS ARE REQUIRED. WE AT T.B.GIRWALKAR POLYTECHNIC MAKE EVERY EFFORT TO MEET THE RAPIDLY GROWING DEMANDS OF FIERCELY EXPANDING TECHNICAL WORLD BY PRODUCING QUALITY SKILLED ENGINEERS WHO CAN BE WORTHY OF CONTRIBUTING TO THE DEVELOPMENT OF THE NATION; WITH THEIR INCREDIBLE TECHNICAL KNOWLEDGE, WILL TO INNOVATE AND PROFESSIONALISM.

ABOUT T.B. GIRWALKAR POLYTECHNIC

Mahatma Basweshwar Education Society (Estd. 1963) runs a network of educational institutions, which have today gained a formidable reputation in their respective disciplines

The uniqueness of Mahatma Basaveshwar Education Society is that practicing positive values such as selflessness, compassion, integrity, and respect towards all beings, forms an integral part of education.

TB. Girwalkar Polytechnic being established during the academic year 1983 with a commitment to inculcate an ancient Indian culture with modern technology and to impart qualitative, complete technical education to make complete technocrats. Our Institute is affiliated to Maharashtra State Board Technical Education Mumbai & approved by A.I.C.T.E. New Delhi. The Institute is located in the rural area of Marathwada region of Maharashtra with a view to cater the technical education to poor and economically backward class of society. The Institute strives to develop the personality of students & helps to build their character through series of well-planned co-curricular and extra co-curricular activities.

Institute's philosophy is "Success will come running towards students if they are committed to succeeding." Over the years, the growth and development of the Institute has been progressive & rapid. The vast academic experience and leadership qualities of its Principals provided the necessary fillip to institution building and development.

Education is the movement from darkness to light

EDITORIAL PANEL

STAFF

PROF. L.V.BAGALE (PRINCIPLE)	MRS. A. A. KULKARNI (HOD)
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MS. M.C.JOGDAND	MR. A.R.PANCHAL

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SAHIL S. BAGWAN	KSHITIJ S. MAYKAR
ATHARV S. AGHAV	OM A. BHAGAT

DEPARTMENT OF ELETRICAL



CULTURAL ACTIVITIES

Cultural incharge : Prof. Ms. M.C. Jogdand

Cultural Faculty

- Prof. Mr. A. R. Panchl (EE DEPT)
- Prof. Ms. S. S. Bhise (EE DEPT)
- Prof. Mr. S. B. Jagdale (EE DEPT)

Evet Co-Ordinator

Kshitij Maykar

Sandip Dhakne

Creative Head

Siddhi Shinde

CS

Om Bhagat

Student Co-Ordinator

Atharv Aghav

Sahil Bagwan

Creative Members

Mukta Bidgar

Saraswati Bansode

Akansha Mungale

Kirti Korde

Technical Head

Dipak Dugane

Photography

Sumit More

Tressurer

Rangnath Korde

TREE PLANTATION

THE TREE PLANTATION EVENT AT T. B. GIRWALKAR POLYTECHNIC AMBAJOGAI WAS A RESOUNDING SUCCESS, PROMOTING ENVIRONMENTAL AWARENESS AND CONTRIBUTING TO THE BEAUTIFICATION OF OUR COLLEGE CAMPUS. HELD ON 26 JAN. THE EVENT SAW STUDENTS AND FACULTY MEMBERS COME TOGETHER TO PLANT TREES, INCLUDING. THE EVENT WAS INAUGURATED BY MR. SUNIL MITKARI , WHO EMPHASIZED THE IMPORTANCE OF TREE PLANTATION IN MAINTAINING A HEALTHY ENVIRONMENT. PARTICIPANTS WORKED TOGETHER TO DIG PITS, PLANT TREES, AND WATER THEM, WHILE ALSO PARTICIPATING IN AN AWARENESS CAMPAIGN ON THE IMPORTANCE OF TREE PLANTATION AND ENVIRONMENTAL CONSERVATION. AS NOTED, "TREE PLANTATION IS A SMALL STEP TOWARDS A BIG CHANGE. WE HOPE TO INSPIRE OTHERS TO JOIN US IN THIS INITIATIVE." MR. SUNIL MITKARI ADDED, "IT'S HEARTENING TO SEE OUR STUDENTS TAKE THE LEAD IN ENVIRONMENTAL CONSERVATION EFFORTS. WE'RE PROUD OF THEIR INITIATIVE." THE EVENT NOT ONLY PROMOTED ENVIRONMENTAL AWARENESS BUT ALSO ENCOURAGED STUDENTS TO TAKE AN ACTIVE ROLE IN CONSERVATION EFFORTS, WHILE BEAUTIFYING THE COLLEGE CAMPUS WITH

THE NEWLY PLANTED TREES.







REPUBLIC DAY

**TODAY, WE GATHER TO COMMEMORATE THE 76TH
REPUBLIC DAY OF INDIA, A DAY THAT MARKS THE
ADOPTION OF OUR CONSTITUTION AND THE TRANSITION OF
OUR NATION FROM A BRITISH COLONY TO A SOVEREIGN
REPUBLIC.**

**AS WE CELEBRATE THIS MOMENTOUS OCCASION, WE
HONOR THE VISIONARIES WHO SHAPED OUR NATION'S
DESTINY, THE BRAVE MEN AND WOMEN WHO FOUGHT FOR
OUR FREEDOM, AND THE COUNTLESS INDIVIDUALS WHO
HAVE CONTRIBUTED TO OUR COUNTRY'S GROWTH AND
DEVELOPMENT.**

**AT T. B. GIRWALKAR POLYTECHNIC AMBAJOGAI WE TAKE
PRIDE IN OUR RICH CULTURAL HERITAGE AND OUR
COMMITMENT TO FOSTERING A COMMUNITY THAT VALUES
DIVERSITY, INCLUSIVITY, AND SOCIAL RESPONSIBILITY.**

**AS WE CELEBRATE REPUBLIC DAY, WE REAFFIRM OUR
PLEDGE TO UPHOLD THE PRINCIPLES OF JUSTICE,
EQUALITY, AND FREEDOM ENSHRINED IN OUR
CONSTITUTION. WE RECOGNIZE THE POWER OF
EDUCATION IN SHAPING THE FUTURE OF OUR NATION AND
RECOMMIT OURSELVES TO EXCELLENCE IN ALL THAT WE
DO.**

**JOIN US AS WE CELEBRATE THIS SPECIAL DAY WITH
PATRIOTIC FERVOR, CULTURAL PERFORMANCES, AND
INSPIRING SPEECHES!**



Galaxy A34 5G

SHIV JAYANTI, COMMEMORATING THE BIRTH ANNIVERSARY OF CHHATRAPATI SHIVAJI MAHARAJ, IS CELEBRATED WITH GREAT ENTHUSIASM ACROSS VARIOUS EDUCATIONAL INSTITUTIONS, EACH HONORING THE LEGACY OF THE MARATHA WARRIOR THROUGH DIVERSE EVENTS AND ACTIVITIES. FOR INSTANCE, IN 2025, T. B. GIRWALKAR POLYTECNIC AMBAJOGAI T. B. GIRWALKAR POLYTECNIC AMBAJOGAI T. B. GIRWALKAR POLYTECNIC AMBAJOGAI ORGANIZED "SHIVGARZANA 2025," FEATURING CULTURAL PERFORMANCES SUCH AS DRAMAS, SONGS, POEMS, AND POSTER COMPETITIONS CENTERED ON SHIVAJI MAHARAJ'S LIFE AND ACHIEVEMENTS. THE EVENT WAS INAUGURATED BY "SHAHIR GANESH MAMA KALE" AND WITNESSED ACTIVE PARTICIPATION FROM FACULTY AND STUDENTS, MARKING IT AS ONE OF THE MOST SUCCESSFUL PROGRAMS IN THE INSTITUTION'S HISTORY.





ELETRICAL DEPARTMENT ACTIVITIES

- **SOLAR POWER PLANT VISIT**

ON 15 MAR. A GROUP OF 2ND YEAR AND 3RD STUDENTS AND PROF. MS. M. C. JOGDAND AND PROF. MR. A. R. PANCHAL FACULTY MEMBERS FROM T. B. GIRWALKAR POLYTECNIC AMBAJOGAI VISITED A SOLAR POWER PLANT LOCATED AT M.B.E.S. COLLAGE OF ENGINEERING AMBAJOGAI THE OBJECTIVE OF THE VISIT WAS TO EDUCATE STUDENTS ABOUT RENEWABLE ENERGY SOURCES, SPECIFICALLY SOLAR POWER, AND PROVIDE HANDS-ON EXPERIENCE WITH SOLAR POWER PLANT OPERATIONS. DURING THE VISIT, STUDENTS WERE BRIEFED ABOUT THE PLANT'S CAPACITY, TECHNOLOGY, AND OPERATIONS, AND WERE TAKEN ON A GUIDED TOUR OF THE PLANT, WHERE THEY SAW THE SOLAR PANELS, INVERTERS, AND OTHER EQUIPMENT UP CLOSE. THE VISIT ALSO INCLUDED A PRESENTATION ON THE BENEFITS OF SOLAR POWER, ITS APPLICATIONS, AND THE FUTURE PROSPECTS OF RENEWABLE ENERGY. STUDENTS GAINED A DEEPER UNDERSTANDING OF SOLAR POWER TECHNOLOGY AND ITS APPLICATIONS, AND LEARNED ABOUT THE IMPORTANCE OF RENEWABLE ENERGY SOURCES IN REDUCING CARBON EMISSIONS. THE VISIT PROVIDED STUDENTS WITH VALUABLE INSIGHTS AND HANDS-ON EXPERIENCE, MAKING LEARNING MORE EFFECTIVE.



2ND YEAR EE

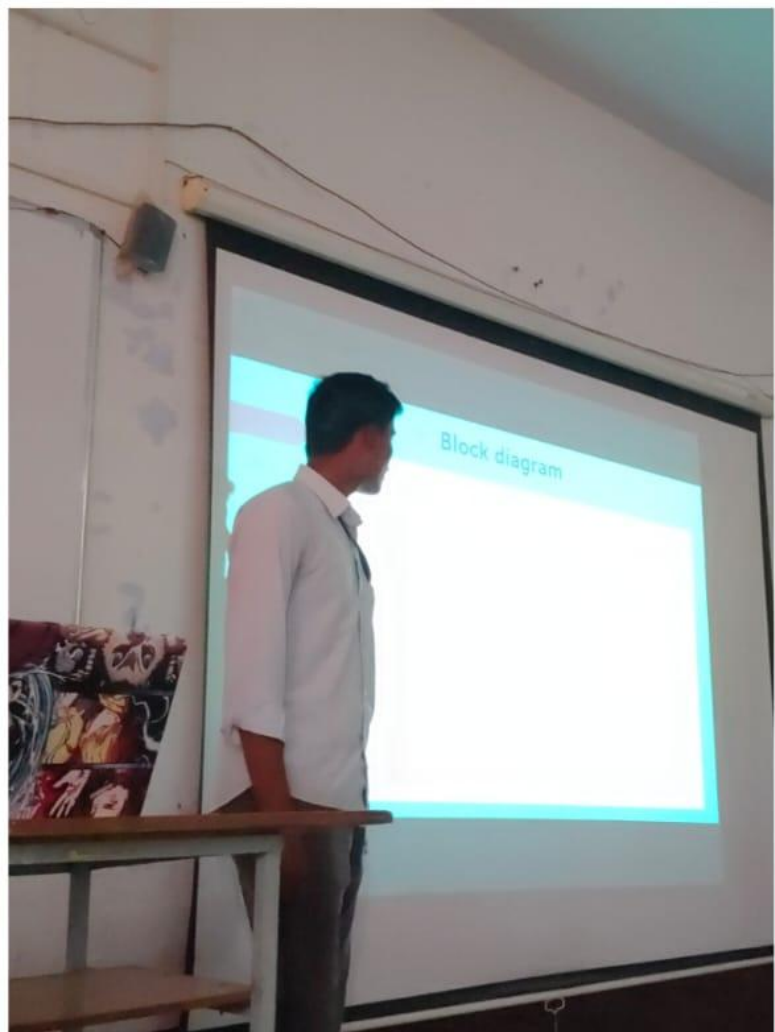
- **WATER TREATMENT PLANT**

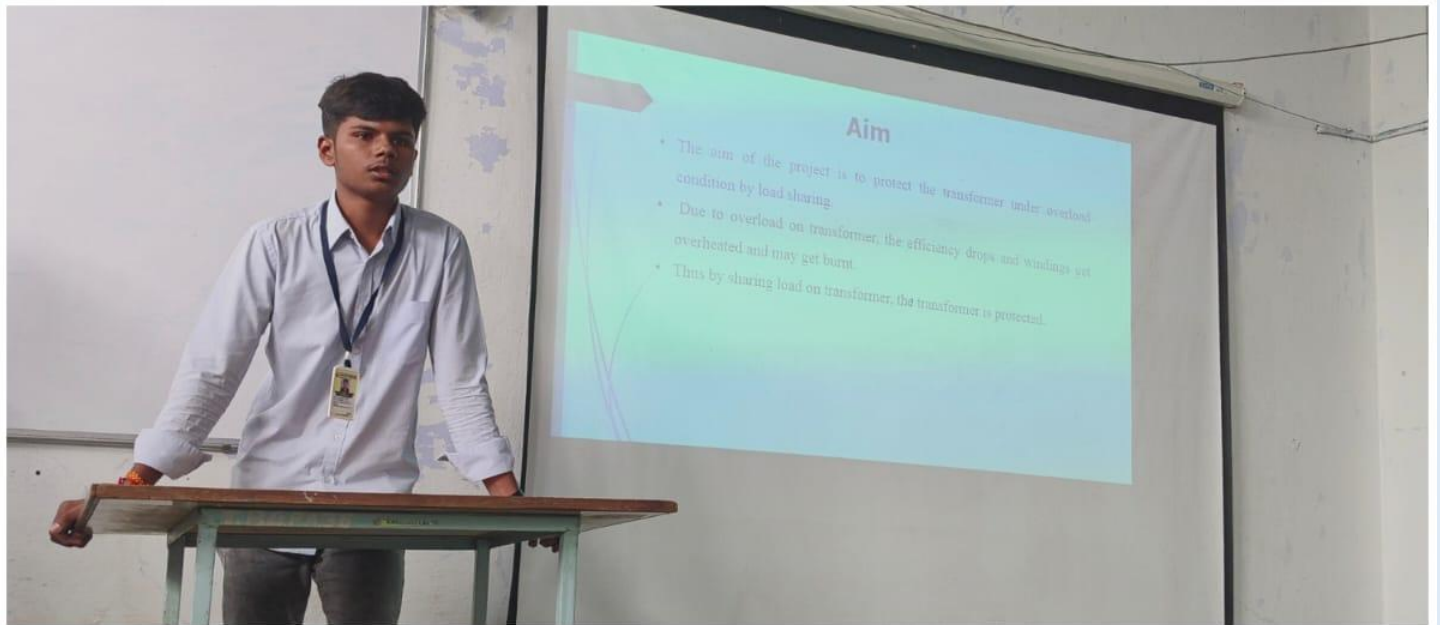
ON 15 MAR. STUDENTS AND FACULTY MEMBERS PROF. MS. M. C. JOGDAND AND PROF. MR. A. R. PANCHAL FROM T. B. GIRWALKAR POLYTECHNIC AMBAJOGAI VISITED A WATER TREATMENT PLANT AT M.B.E.S. COLLAGE OF ENGINEERING AMBAJOGAI GAINING VALUABLE INSIGHTS INTO THE WATER TREATMENT PROCESS. THE GUIDED TOUR SHOWCASED THE PLANT'S OPERATIONS, INCLUDING COAGULATION, SEDIMENTATION, FILTRATION, AND DISINFECTION, AS WELL AS THE INTAKE OF RAW WATER, TREATMENT TANKS, AND DISTRIBUTION OF TREATED WATER. A PRESENTATION HIGHLIGHTED THE IMPORTANCE OF WATER CONSERVATION, CHALLENGES FACED BY WATER TREATMENT PLANTS, AND THE LATEST TECHNOLOGIES USED IN WATER TREATMENT. THIS HANDS-ON EXPERIENCE DEEPEDED STUDENTS' UNDERSTANDING OF THE WATER TREATMENT PROCESS AND THE IMPORTANCE OF CLEAN DRINKING WATER, MAKING LEARNING MORE EFFECTIVE.



- **CPP PROJECT PRESENTATION**

THE ELECTRICAL BRANCH STUDENTS OF T. B. GIRWALKAR POLYTECHNIC AMBAJOGAI PRESENTED THEIR FINAL YEAR PROJECTS ON 16 NOV AT T. B. GIRWALKAR POLYTECHNIC AMBAJOGAI. THE EVENT SHOWCASED THE INNOVATIVE IDEAS AND TECHNICAL SKILLS OF THE STUDENTS, WITH A TOTAL OF [7] PROJECTS PRESENTED ON VARIOUS TOPICS, INCLUDING POWER SYSTEMS, CONTROL SYSTEMS, ELECTRICAL MACHINES, AND RENEWABLE ENERGY. STUDENTS DEMONSTRATED THEIR PROJECTS, EXPLAINING THE DESIGN, DEVELOPMENT, AND IMPLEMENTATION OF THEIR IDEAS, AND RECEIVED FEEDBACK FROM INDUSTRY EXPERTS AND FACULTY MEMBERS. THE BEST PROJECTS WERE AWARDED PRIZES, RECOGNIZING THE STUDENTS' HARD WORK AND INNOVATIVE IDEAS. THE EVENT PROVIDED A PLATFORM FOR STUDENTS TO DEVELOP THEIR TECHNICAL SKILLS, BUILD CONFIDENCE IN PRESENTING THEIR IDEAS, AND SHOWCASE THEIR EXPERTISE IN ELECTRICAL ENGINEERING.





- **PANAL WIRING AND DEBUGGING**

A PANEL WIRING AND DEBUGGING COMPETITION WAS HELD AT TB GIRWALKAR POLYTECHNIC COLLEGE, AMBAJOGAI ON 27TH MARCH. THE EVENT AIMED TO TEST THE TECHNICAL SKILLS AND PROBLEM-SOLVING ABILITIES OF STUDENTS IN THE FIELD OF ELECTRICAL ENGINEERING. PARTICIPANTS WERE REQUIRED TO WIRE A PANEL ACCORDING TO A GIVEN CIRCUIT DIAGRAM AND DEBUG IT WITHIN A SPECIFIED TIME FRAME. THE COMPETITION SAW ENTHUSIASTIC PARTICIPATION FROM STUDENTS, WHO DEMONSTRATED THEIR EXPERTISE IN ELECTRICAL WIRING AND TROUBLESHOOTING. A PANEL OF JUDGES EVALUATED THE PARTICIPANTS' WORK, AND THE WINNERS WERE AWARDED PRIZES FOR THEIR OUTSTANDING PERFORMANCE. THE EVENT PROVIDED A VALUABLE LEARNING EXPERIENCE FOR STUDENTS, HELPING THEM TO DEVELOP THEIR PRACTICAL SKILLS AND BUILD CONFIDENCE IN THEIR ABILITIES.



TECH-KIRTI EVENT

THE TECH-KIRTI EVENT WAS HELD AT TB GIRWALKAR POLYTECHNIC COLLEGE, AMBAJOGAI ON 27TH MARCH, CULMINATING IN A PRESTIGIOUS PRIZE DISTRIBUTION CEREMONY. THE EVENT WITNESSED ENTHUSIASTIC PARTICIPATION FROM STUDENTS, WHO SHOWCASED THEIR TECHNICAL PROWESS IN VARIOUS COMPETITIONS. THE PRIZE DISTRIBUTION CEREMONY WAS ATTENDED BY DISTINGUISHED GUESTS, FACULTY MEMBERS, AND STUDENTS. THE WINNERS OF VARIOUS COMPETITIONS, INCLUDING PROJECT PRESENTATIONS, TECHNICAL QUIZZES, AND CODING CHALLENGES, WERE FELICITATED WITH TROPHIES, CERTIFICATES, AND CASH PRIZES. THE CHIEF GUEST CONGRATULATED THE WINNERS AND ENCOURAGED THE PARTICIPANTS TO CONTINUE STRIVING FOR EXCELLENCE IN THEIR TECHNICAL PURSUITS. THE CEREMONY CONCLUDED WITH A SENSE OF ACCOMPLISHMENT AND PRIDE AMONG THE STUDENTS, MARKING A MEMORABLE DAY IN THE COLLEGE'S CALENDAR



TRAINING AND PLACEMENT

HEARTIEST CONGRATULATIONS TO THE STUDENTS OF ELECTRICAL BRANCH! 🎉

WE ARE HAPPY THAT THE FOLLOWING STUDENTS HAVE BEEN SELECTED IN BAJAJ AUTO LTD. (WALUJ, CH. SAMBHAJINAGAR PLANT):



Mukta Bidgar



Atharv Aghav



Om Bhagat



Sahil Bagwan



Ranganth Korde



Dipak Dugane

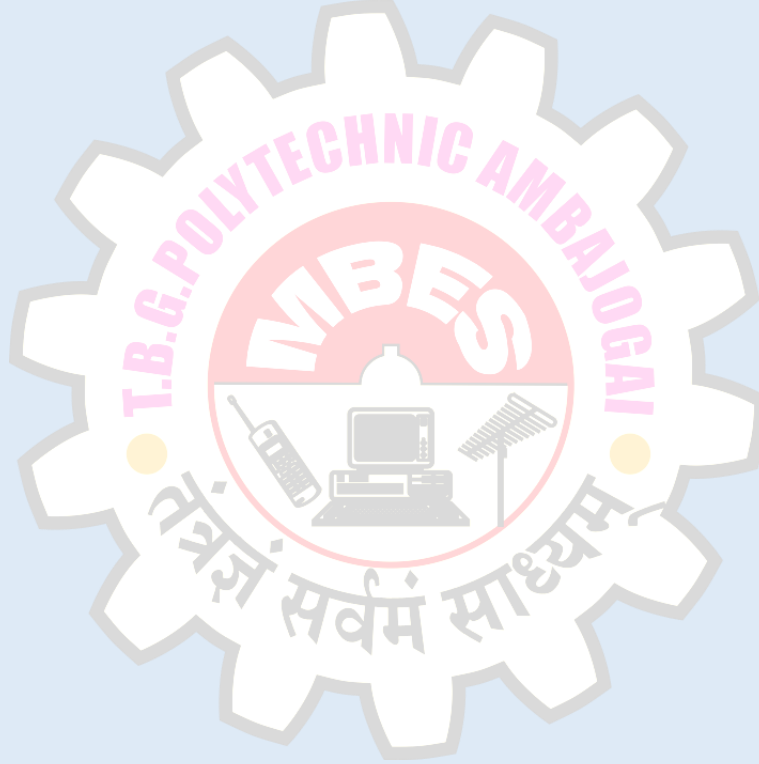
**ON BEHALF OF THE COLLEGE MANAGEMENT, PRINCIPAL,
HEAD OF DEPARTMENT, TEACHERS AND NON-TEACHING
STAFF, WE CONGRATULATE THESE STUDENTS!**

WE WISH THEM ALL THE BEST FOR THEIR BRIGHT FUTURE!



REGARDS,

T. B. GIRWALKAR POLYTECHNIC, AMBAJOGAI



SPORTS ACTIVITIES

T.B. GIRWALKAR POLYTECHNIC COLLEGE, AMBAJOGAI, EMPHASIZES THE IMPORTANCE OF SPORTS AND PHYSICAL FITNESS, OFFERING A RANGE OF SPORTS ACTIVITIES FOR ITS STUDENTS. THE COLLEGE HAS A SPRAWLING SPORTS COMPLEX WITH STATE-OF-THE-ART FACILITIES, INCLUDING A CRICKET GROUND, FOOTBALL FIELD, BASKETBALL COURT, AND VOLLEYBALL COURT. STUDENTS PARTICIPATE IN VARIOUS INTER-COLLEGIATE AND INTRA-COLLEGIATE TOURNAMENTS, SHOWCASING THEIR SKILLS IN SPORTS LIKE CRICKET, FOOTBALL, KABADDI, AND ATHLETICS. THE COLLEGE ALSO ORGANIZES ANNUAL SPORTS EVENTS, INCLUDING THE SPORTS DAY AND THE INTER-BRANCH TOURNAMENT, WHICH FOSTER A SPIRIT OF HEALTHY COMPETITION AND TEAMWORK AMONG STUDENTS. UNDER THE GUIDANCE OF EXPERIENCED COACHES AND PHYSICAL EDUCATION INSTRUCTORS, STUDENTS DEVELOP THEIR PHYSICAL AND MENTAL PROWESS, LEADING TO A WELL-ROUNDED PERSONALITY.



PROF. C.N. THAKUR

Career Growth Opportunities of Electrical Engineering After Diploma

After completing a diploma in electrical engineering, you have multiple career growth opportunities, including jobs, further studies, and entrepreneurship. Here's a breakdown of your career path:

1. Job Opportunities After Diploma

You can start working as a **junior engineer, technician, or supervisor** in various industries, such as:

- **Power & Energy Sector** (Electricity boards, power plants, renewable energy)
- **Manufacturing & Automation** (Factories, robotics, automation industries)
- **Electronics & Telecommunications** (Embedded systems, IoT, networking)
- **Construction & Infrastructure** (Electrical site engineer, maintenance)
- **Government & Public Sector** (Railways, Metro, DRDO, BHEL, NTPC, etc.)

2. Higher Education Options (Better Career Growth)

Pursuing further studies can open up higher-paying and more stable job roles. Options include:

- ☒ **B.Tech/B.E. in Electrical Engineering** (Direct 2nd-year entry through lateral admission)
- ☒ **B.Sc. in Electrical Engineering** (For theoretical research-based learning)
- ☒ **Specialized Certifications** (PLC, SCADA, AutoCAD Electrical, IoT, Electric Vehicles)

3. Government Jobs (Stable Career & Good Salary)

After a diploma, you can apply for government jobs in:

- **Railways (RRB JE, Technician, Loco Pilot)**
- **State Electricity Boards (Sub Engineer, Technician)**
- **PSUs (BHEL, NTPC, ONGC, GAIL, SAIL, ISRO, DRDO, PGCIL, etc.)**
- **Defense (Indian Army, Navy, Air Force as Technical Officers)**

4. Private Sector Jobs (Higher Salary & Growth)

Companies like **Tata Power, L&T, Siemens, ABB, Schneider Electric, and Bosch** hire diploma electrical engineers.

5. Entrepreneurship & Freelancing

If you want to start your own business, you can explore:

- **Electrical Contracting & Maintenance Services**
- **Home Automation & Solar Panel Installation**
- **Electrical Consultancy (Wiring, Circuit Design, Load Calculation)**
- **Repair & Servicing (Transformers, Motors, Generators, Inverters, UPS, etc.)**

Recommended course: -

A) Industry-Oriented Certification Courses (For Skill Upgrade & Quick Jobs)

⚡ Automation & Industrial Control Courses

Best for jobs in **automation, manufacturing, and industrial plants**

- ☒ **PLC & SCADA** (Automation industry, used in factories)
- ☒ **DCS (Distributed Control Systems)** (Power plants, process industries)
- ☒ **HMI & Industrial Robotics** (Manufacturing automation)

Where to Learn?

- Institutes: Siemens, Mitsubishi, Schneider Electric, Yokogawa Training Centers
- Online: Udemy, Coursera, LinkedIn Learning

⚡ Power Systems & Renewable Energy

Best for jobs in **power generation, distribution, and renewable energy sectors**

- ☒ **Solar PV System Design & Installation** (For solar energy jobs, freelancing)
- ☒ **Electric Vehicles (EV) Technology** (Growing demand in the automobile industry)
- ☒ **Smart Grid & Energy Management** (For power sector jobs)
- ☒ **Substation Design & Maintenance** (Electrical utility jobs)

Where to Learn?

- Institutes: National Power Training Institute (NPTI), Skill-Lync
- Online: Coursera, Udemy, FutureLearn

Electrical Design & Software Courses

Best for **electrical design engineer, R&D, and construction sector**

- ☒ **AutoCAD Electrical** (For circuit & panel designing)
- ☒ **MATLAB for Electrical Engineers** (For simulations, research, and automation)
- ☒ **ETAP (Electrical Power System Analysis)** (Used in power plants and substations)

Where to Learn?

- Institutes: CAD Training Centers, Skill-Lync
- Online: Udemy, Coursera, EdX

B) Entrepreneurship & Business-Oriented Courses

If you want to **start your own business**, consider:

- ☒ **Electrical Contracting & Licensing** (To start an electrical service business)
- ☒ **Solar Panel Installation & Business Setup**
- ☒ **EV Charging Station Business Training**
- ☒ **Industrial Wiring & House Wiring Certification**

C) Concept Building YouTube Source

1. NPTEL (IIT & IISc Lectures)

- ✂ **Best For:** In-depth electrical engineering courses from IIT professors
- 🔗 [NPTEL IIT \(National Programme on Technology Enhanced Learning\)](#)

2. The Engineering Mindset

- ✂ **Best For:** Electrical circuits, power systems, transformers, and HVAC basics
- 🔗 [The Engineering Mindset YouTube Channel](#)

3. RealPars

- ✂ **Best For:** Industrial automation, PLC, SCADA, and control systems
- 🔗 [RealPars YouTube Channel](#)

4. Great Learning

- ✂ **Best For:** Online free courses on electrical engineering, AI, and IoT
- 🔗 [Great Learning YouTube Channel](#)

5. Kreatryx

- ✂ **Best For:** Online free youtube lectures on electrical machine, power system,
- 🔗 [Kreatryx YouTube Channel](#)



PROF. MS. M. C. JOGDAND

THE INDUSTRIAL REVOLUTION 4.0, OFTEN REFERRED TO AS INDUSTRY 4.0, IS THE ONGOING TRANSFORMATION OF MANUFACTURING AND INDUSTRIAL PROCESSES THROUGH DIGITALIZATION, AUTOMATION, AND INTERCONNECTIVITY. IT BUILDS UPON EARLIER INDUSTRIAL REVOLUTIONS, PARTICULARLY THE THIRD REVOLUTION, WHICH INTRODUCED COMPUTERS AND AUTOMATION, BUT ADDS MORE ADVANCED TECHNOLOGIES SUCH AS:

INTERNET OF THINGS (IOT): DEVICES AND MACHINES ARE CONNECTED THROUGH THE INTERNET, ALLOWING THEM TO COMMUNICATE AND SHARE DATA, IMPROVING EFFICIENCY AND DECISION-MAKING.

ARTIFICIAL INTELLIGENCE (AI) AND MACHINE LEARNING: AI ALGORITHMS CAN ANALYZE VAST AMOUNTS OF DATA IN REAL TIME, ENABLING SMART DECISION-MAKING, PREDICTIVE MAINTENANCE, AND AUTOMATION OF COMPLEX TASKS.

CYBER-PHYSICAL SYSTEMS (CPS): THESE ARE SYSTEMS WHERE PHYSICAL PROCESSES ARE CONTROLLED BY COMPUTER-BASED ALGORITHMS, OFTEN CONNECTED THROUGH THE INTERNET.

BIG DATA AND ANALYTICS: THE COLLECTION AND ANALYSIS OF MASSIVE DATA SETS FROM CONNECTED DEVICES ALLOW BUSINESSES TO MAKE MORE INFORMED DECISIONS, OPTIMIZE PROCESSES, AND ENHANCE PRODUCTIVITY.

3D PRINTING/ADDITIVE MANUFACTURING: THIS TECHNOLOGY ENABLES THE CREATION OF COMPLEX PARTS DIRECTLY FROM DIGITAL DESIGNS, REDUCING THE NEED FOR TRADITIONAL MANUFACTURING METHODS AND INCREASING CUSTOMIZATION.

ROBOTICS AND AUTOMATION: ADVANCED ROBOTS ARE NOW CAPABLE OF PERFORMING A VARIETY OF TASKS AUTONOMOUSLY, SIGNIFICANTLY IMPROVING EFFICIENCY, REDUCING HUMAN LABOR, AND ENHANCING SAFETY IN INDUSTRIES LIKE MANUFACTURING.

AUGMENTED REALITY (AR) AND VIRTUAL REALITY (VR): THESE TECHNOLOGIES ARE USED FOR DESIGN, TRAINING, AND IMPROVING DECISION-MAKING THROUGH ENHANCED VISUALIZATIONS AND SIMULATIONS.

INDUSTRY 4.0 AIMS TO CREATE "SMART FACTORIES" WHERE EVERYTHING FROM MACHINERY TO PRODUCTS AND PEOPLE ARE INTERCONNECTED, LEADING TO GREATER EFFICIENCY, FLEXIBILITY, AND CUSTOMIZATION IN PRODUCTION PROCESSES. IT'S RESHAPING INDUSTRIES ACROSS SECTORS LIKE AUTOMOTIVE, ENERGY, HEALTHCARE, AND LOGISTICS.

IS THERE A SPECIFIC ASPECT OF INDUSTRY 4.0 YOU'D LIKE TO EXPLORE FURTHER?



PROF. MR. A. R. PANCHAL

ELECTRICAL ENERGY CONSERVATION TECHNIQUES
ELECTRICAL ENERGY CONSERVATION IS ESSENTIAL FOR REDUCING ENERGY COSTS AND MINIMIZING ENVIRONMENTAL IMPACT. HERE ARE SOME EFFECTIVE TECHNIQUES:

- 1. HOME & OFFICE CONSERVATION TECHNIQUES**
- USE LED LIGHTING: REPLACE INCANDESCENT AND CFL BULBS WITH LED LIGHTS TO REDUCE ENERGY CONSUMPTION.**
 - UNPLUG UNUSED DEVICES: DEVICES IN STANDBY MODE STILL CONSUME ELECTRICITY. UNPLUG CHARGERS, APPLIANCES, AND ELECTRONICS WHEN NOT IN USE.**
 - USE SMART POWER STRIPS: THESE CUT OFF POWER TO DEVICES WHEN THEY'RE NOT IN USE.**
 - OPTIMIZE HEATING & COOLING: USE PROGRAMMABLE THERMOSTATS, SEAL WINDOWS, AND ENSURE PROPER INSULATION.**
 - SWITCH TO ENERGY-EFFICIENT APPLIANCES: LOOK FOR ENERGY STAR-RATED APPLIANCES.**
 - USE NATURAL LIGHTING: KEEP CURTAINS OPEN DURING THE DAY TO REDUCE LIGHTING NEEDS.**

2. INDUSTRIAL & COMMERCIAL CONSERVATION TECHNIQUES

UPGRADE TO ENERGY-EFFICIENT MOTORS: HIGH-EFFICIENCY MOTORS CONSUME LESS POWER.

IMPLEMENT POWER FACTOR CORRECTION: REDUCES WASTED ENERGY IN INDUSTRIAL SETTINGS.

USE VARIABLE FREQUENCY DRIVES (VFDs): THESE ADJUST MOTOR SPEED BASED ON LOAD DEMAND.

OPTIMIZE PRODUCTION SCHEDULES: REDUCE PEAK-TIME ELECTRICITY USE TO LOWER COSTS.

REGULAR MAINTENANCE: CLEANING AND SERVICING MACHINES IMPROVE EFFICIENCY.

3. RENEWABLE ENERGY INTEGRATION

INSTALL SOLAR PANELS: REDUCE DEPENDENCY ON GRID POWER.

USE WIND TURBINES: GENERATE RENEWABLE ENERGY WHERE FEASIBLE.

ADOPT HYBRID ENERGY SYSTEMS: COMBINE SOLAR, WIND, AND CONVENTIONAL SOURCES FOR EFFICIENCY.

4. SMART ENERGY MANAGEMENT

INSTALL ENERGY METERS: MONITOR AND ANALYZE ELECTRICITY USAGE.

USE IoT AND AUTOMATION: SMART SENSORS AND AUTOMATION SYSTEMS OPTIMIZE ENERGY USE.

IMPLEMENT DEMAND RESPONSE PROGRAMS: SHIFT USAGE TO OFF-PEAK HOURS FOR COST SAVINGS.

5. BEHAVIORAL CHANGES

ENCOURAGE ENERGY-SAVING HABITS: TRAIN EMPLOYEES AND HOUSEHOLD MEMBERS ON ENERGY CONSERVATION.

TURN OFF UNUSED EQUIPMENT: ENSURE LIGHTS, COMPUTERS, AND ACs ARE OFF WHEN NOT NEEDED.

MAGAZINE CONTENT CREATION TEAM



विद्या विनयेन शोधते

विद्या म्हणजे तुमच्या अंतःकरणाला संतुष्ट करणारा.
विनय म्हणजे स्वतःला नीचा समजणे, विनम्रपणा.
म्हणजे ज्या मानवाला नम्रपणा असेल त्यालाच विद्या होय.

॥ श्रीगुरुभ्यो नमः ॥
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