

ELECTROZINE



2019

MAGAZINE BY;

**ELECTRICAL
DEPARTMENT**

TEAM ELECTROZINE



Shah Vivek



Nitant Wanjari



Parth Patel



Shaan Patel



Timir Prajapati



Rutesh Rami



Drashti Bhatiya



Od Pooja



Ronak Patel



Shriket Panchal

प्रार्थना



या कुन्देन्दुतुषारहारधवला या शुभ्रवस्त्रावृता।
या वीणावरदण्डमण्डितकरा या श्वेतपद्मासना॥
या ब्रह्माच्युत शंकरप्रभृतिभिर्देवैः सदा वन्दिता।
सा माम् पातु सरस्वती भगवती निःशेषजाड्यापहा॥१॥

अर्थ : जो विद्या की देवी भगवती सरस्वती कुन्द के फूल, चंद्रमा, हिमराशि और मोती के हार की तरह धवल वर्ण की हैं और जो श्वेत वस्त्र धारण करती हैं, जिनके हाथ में वीणा-दण्ड शोभायमान है, जिन्होंने श्वेत कमलों पर आसन ग्रहण किया है तथा ब्रह्मा, विष्णु एवं शंकर आदि देवताओं द्वारा जो सदा पूजित हैं, वही संपूर्ण जड़ता और अज्ञान को दूर कर देने वाली मां सरस्वती हमारी रक्षा करें। ..

शुक्लाम् ब्रह्मविचार सार परमाम् आद्यां जगद्ध्यापिनीम्।
वीणा-पुस्तक-धारिणीमभयदां जाड्यान्धकारापहाम्॥
हस्ते स्फटिकमालिकाम् विदधतीम् पद्मासने संस्थिताम्।
वन्दे ताम् परमेश्वरीम् भगवतीम् बुद्धिप्रदाम् शारदाम्॥२॥

अर्थ : जिनका रूप श्वेत है, जो ब्रह्मविचार की परम तत्व हैं, जो सब संसार में फैले रही हैं, जो हाथों में वीणा और पुस्तक धारण किये रहती हैं, अभय देती हैं, मूर्खतारूपी अन्धकार को दूर करती हैं, हाथ में स्फटिकमणि की माला लिए रहती हैं, कमल के आसन पर विराजमान होती हैं और बुद्धि देनेवाली हैं, उन आद्या परमेश्वरी भगवती सरस्वती की मैं वन्दना करता हूँ। ..



The magazine flashes the "Image of Electrical Department" in our college.

SYMBOL:



- Students of Electrical Department in GEC, Modasa. They are three colours i.e.. Standard colour coding of Electrical Engineering
 - R– Red
 - Y– Yellow
 - B – Blue



- It salutes the effort of Electrozine Team members & their dedication towards the Magazine.

CARING RING :-



- The faculties are always ready to support the students all the time. Black colour indicates Neutral Link. It indicates the neutrality of faculties among students. All students are treated equally. Life is just like a floating river (A.C wave form). This creates awareness in the students about the realities of life. Even though there are Ups & Downs in life, we should remain stable, no matter what.



ABOUT THE MAGAZINE

Greetings!

The magazine comprises of all the events , achievement of students, details of faculty members, their methodology of teaching, articles by students and many more interesting facts.

Our purpose of making this magazine is to encourage each student for their achievements in technical as well as extra co-curricular activity and to enhance the knowledge and wisdom about electrical engineering department.

The magazine also has its own website <https://sites.google.com/site/electrozinemagazine/>

Students can download the previous versions of ELECTROZINE and can be able to get immense knowledge of our department.

Message from Principal's Desk



Dear Students & Faculty members,

Warm greetings to all students and faculty members of this institute.

I have joined this institute as a Principal from 1st, June, 2019. Before that I served here as a Professor & Head of Applied Mechanics Department for about four years. Hence I am quite aware about strength and weakness of this institute. The institute has grown by improving quality and quantity in terms of academic activities as well as extracurricular activities in the last decade. But there is always a scope for improvement. Hence with the effort of all students, faculties and staff, we wish to place the institute to the next level of success.

Today the world is accelerating very fast due to rapid technological developments. Hence it is very difficult to impart engineering education in a conventional classroom method. We insist frequent visit to industries, project based learning, innovative way of teaching learning, pedagogy etc. for making engineering education more meaningful and excited. The institute has very good, qualified, sincere and dedicated faculties as well as very well developed laboratories in all courses it runs. Hence students are requested to take the maximum benefits of the knowledge available from the campus for capacity building of the nation.

Due to technological developments, there is boom across the globe regarding reduction in jobs and due to increasing population there is a cut-throat competition. Hence there is a lot of expectation from the society that engineers should become job giver or job creator rather than job taker. Our Hon'ble Prime Minister has also acted on this issue by initiating various missions like Make in India, Digital India, Skill India, Start Up India etc. I urge all engineering students to put sincere efforts to the best of your capacity to succeed in various mission of our Hon'ble Prime Minister in reducing the problem of unemployment. Institute provide all sorts of help in initiating your start up and making you successful entrepreneur. The only thing you need is, to develop out of box thinking, hard work and stop not till the goal is reached.

With Best Wishes,

Prof. (Dr.) B. J. Shah

**Principal
Government Engineering College, Modasa.**

Message From Head Of Department



PROF. JYOTI R. IYER

Greetings!

It is my pleasure and honour to welcome you all to this new edition of Electrozone Magazine.

The Vision of the Electrical Engineering Department is to thrive for excellence in the field of Electrical Engineering by imparting quality education that produces skilled, innovative and ethical engineers to meet the needs of academia, industry and society.

The department has experienced and well qualified faculty and well equipped laboratories. The department has been growing continuously since its establishment and it cherishes the hope that its graduates will become leaders of tomorrow.

We are committed to give our students an outcome based education through outcome based teaching and learning process which provides them with an environment to develop critical thinking and problem solving skills as they advance through the program. In addition to classroom teaching, the students are guided and which helps them gain confidence and become skilled Engineering Professionals.

The department has organized various co-curricular/extra-curricular activities. There are many students who are involved in the making of Electrozone, a magazine which gives insight into the activities in Electrical Engg. Department, achievements of students/faculty in the academic and general point of view. I wish them all success.

VISION AND MISSION OF OUR DEPARTMENT

VISION

To thrive for excellence in the field of Electrical Engineering by imparting quality education that produces skilled, innovative and ethical engineers to meet the needs of academia, industry and society.

MISSION

- To provide an effective Teaching -Learning environment to acquire skills and knowledge in the field of Electrical Engineering.
- Strengthen industry institute interaction to enable the students to work on innovative and real time problems.
- To foster a culture of entrepreneurship amongst the students.
- To instill values in students for lifelong learning and service to the society.

Faculty Interview



**Dr. HEMANG SURYAKANT
PANDYA**

Designation	: Assistant Professor
Qualification	: PhD, Electrical Engineering
Experience	: 16 Years
Date of joining	: 04-05-2018
Area of Interest	: Electrical Machines, Design and analysis of Advanced Electrical Machines, Microprocessors and Controllers, Smart Grid, Artificial Intelligence, Microgrid, Demand side Management, Renewable Energy
Email	: hemang21278@gmail.com

TALK WITH FACULTY : PROF. H. S. PANDYA

1. Describe the duties and role of your current job.

- My role and duties include:-
 - Mentoring
 - Teaching
 - Evaluating
 - Motivating students

2. Describe about you over all work experience you have.

- My total experience of work about 1.5 years, apart from my current post as assistance professor at GECM ,I have worked as in-charge head of Diploma studies , Nirma University, as well as assistance professor at Institutes of Technology (Degree) , Nirma University.

3. Can you describe your ideology behind solving a problem ?

- My way to solve any problem is initially whole to part and with that vision, part to whole.

4. Your ideal role model in your life and share some experience about him/her.

- **Role model :-** My Father
 - He inspiration me through his hard work, Life long learning attitude, in all circumstances made me to see him as role model
 - He continuously guided the way I think, the way I work till date.



About Electrical Engineering Department

- It is accommodated in main building, This department has various laboratories in the areas of Basic Electrical, Microprocessor, Electrical Machine, Electrical Measurement, Power Electronics, Computer Laboratory, High Voltage and Switchgear & Protection Laboratory. The Department has excellent Computer Centre.
- This department has laboratories in the field of Electrical Measurement, Electrical Machine, Power System, Micro Processor, High Voltage Engineering, Electronics and Control. The department looks after the electrical service/maintenance of the campus.

About Course

- Electrical engineering, one of the core courses of engineering discipline deals with the study of design, development, and maintenance of electrical systems and their components, ensuring quality, safety, reliability, and sustainability. The course focuses on the manufacturing of electrical equipment used in a number of sectors including construction and building and the production and distribution of power. Students pursuing electrical engineering study about semiconductors and microprocessors. The undergraduate course will award a B.Tech / B.E. degree and the postgraduate course, an M.Tech.
- An electrical engineer is someone who designs and develops new electrical systems, solves problems and tests equipment. They study and apply the physics and mathematics of electricity, electromagnetism and electronics to both large and small scale systems to process information and transmit energy. They work with all kinds of electronic devices, from the smallest pocket devices to large supercomputers.

Laboratories

Electrical Machine Lab



It provides the students with a chance to put theory into practice, to get familiar with DC machines, Transformers, Synchronous machines and Induction motors, understand their basic principles of operation and offers an opportunity to explore their experimental skills to calculate various parameters and characteristics of the Electrical machines.

Measurement And Instrumentation Lab



It provides a medium to the students to study the construction, working principle and calibration of various electrical measuring instruments and transducers.

High Voltage Lab



Assists the students in the presence of faculty to perform high voltage experiments for reinforcing the learning of theoretical concepts of impulse voltage generation, dielectric testing, solid insulation testing to name a few and evaluation of results. It inculcates a habit in the students to remain safety conscious in a laboratory environment.

Basic Electrical Engineering Lab

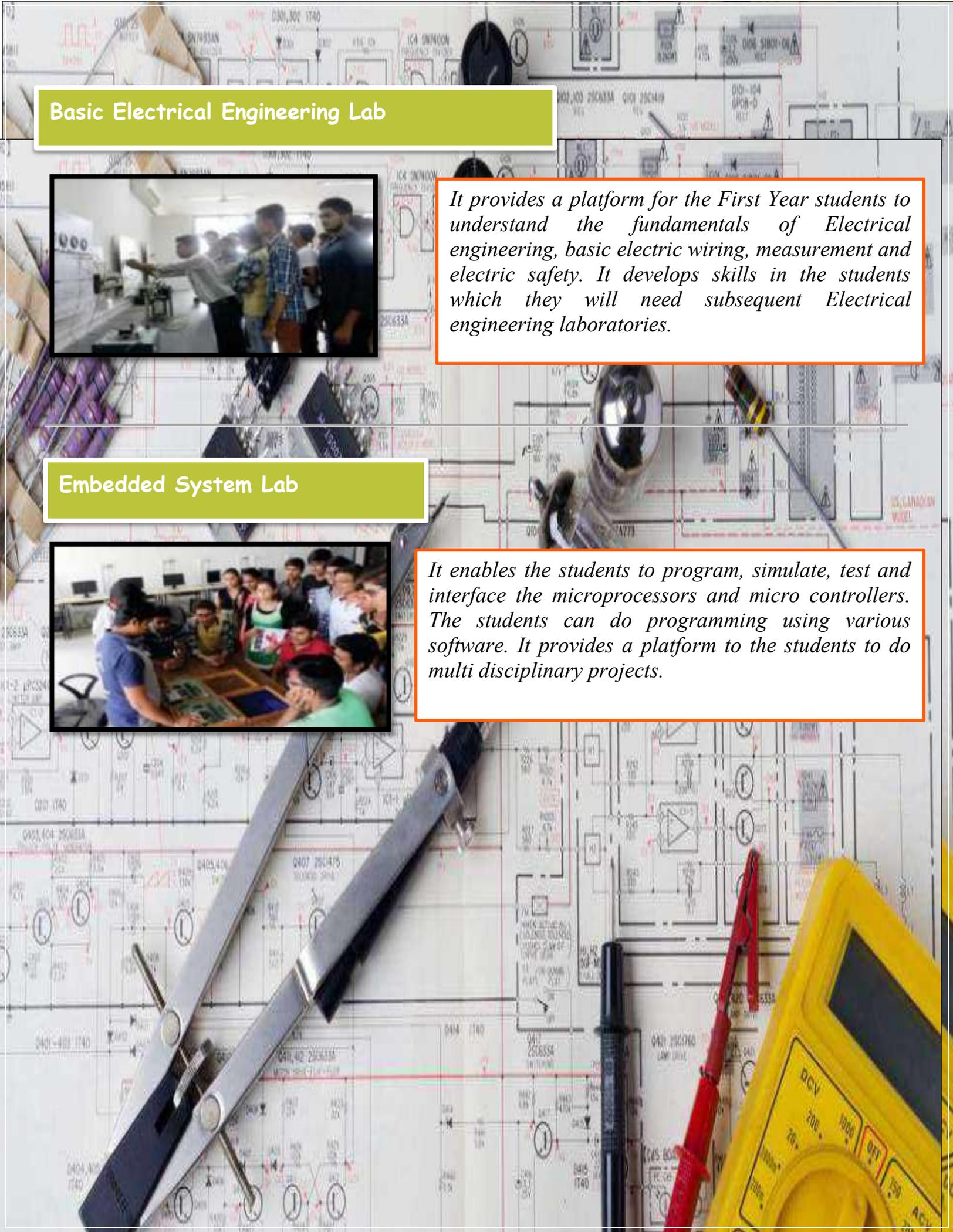


It provides a platform for the First Year students to understand the fundamentals of Electrical engineering, basic electric wiring, measurement and electric safety. It develops skills in the students which they will need subsequent Electrical engineering laboratories.

Embedded System Lab



It enables the students to program, simulate, test and interface the microprocessors and micro controllers. The students can do programming using various software. It provides a platform to the students to do multi disciplinary projects.



FACULTY & STAFF:-

NAME	DESIGNATION	QUALIFICATION
Dr. J.R. Iyer	Associate Professor & Head	Ph.D
Prof.M.J.Patel	Associate Professor	M.E.
Dr. H.D.Mehta	Associate Professor	Ph.D
Prof. N.V.Upadhyay	Assistant Professor	M.Tech
Prof. M.N.Priyadarshi	Assistant Professor	M.Tech
Prof. T.A.Chaudhari	Assistant Professor	M.E.
Prof. C.K.Bariya	Assistant Professor	M.E.
Prof. R.K.Kapadia	Assistant Professor	M.E.
Prof. N.B.Panchal	Assistant Professor	M.E.
Prof. S.V.Banker	Assistant Professor	M.E.
Prof. D.U.Thakar	Assistant Professor	M.Tech
Dr.H.S.Pandya	Assistant Professor	Ph.D
Prof. P.K.Patel	Assistant Professor	M.E.
Prof. K.G.Kharadi	Assistant Professor	B.E.
Prof. G.P.Rathod	Assistant Professor	B.E.
Shri. S.K.Panchal	Electrician	
Shri. S.J.Patel	Electrician	
Shri. A.K.Bhangi	Hamal	



EVENTS

2019



TREE PLANTATION



- What's most essential element of life? 'OXYGEN' correct!
- Well, planting trees provide immense amount of oxygen, it provides us food, you can say life.
- It also helps to reduce pollution all around, since it inhales CO₂ gas.
- Hence, every year, the team of government engineering college, modasa plants a number of tree to maintain and ensure the environment cycle.
- Your small effort can really bring a great change to the environment.



Do You Know?

- 70,000 plant species are utilized for medicine.
- More than 20 percent of the world oxygen is produced in the Amazon Rainforest.

BLOOD DONATION CAMPAIGN



OUR CONTRIBUTION:-

- There was a blood donation as well as Thalassemia test held on the 17th of September, 2019 by Red Cross and Lion's Club.
- Approximately 180 Students and former faculties participate in that event. At least 150 bottles collected by Red Cross Team.
- In Thalassemia test, Maximum number of 1st year students gave their contribution and conducted their test.



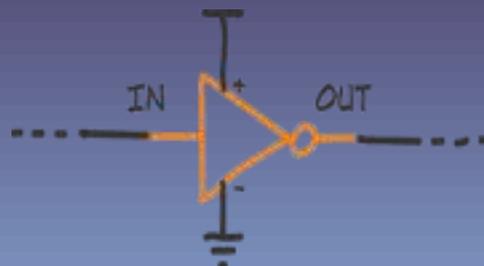
WHY IS BLOOD DONATION IMPORTANT?

- *It is your civic duty.*
- *Because some day, I may need someone to do the same for me.*
- *Because if you need blood one day, you would not hesitate to take it, so why would you hesitate to give it?*
- *Blood donation is important because maintaining an adequate blood supply in our community secures blood transfusions for patient. It gives donors a medical check at no cost.*

TECHNOTHON 2019



- GEC MODASA electrical department conducted technothon on 15 April 2019.
- Students of various Semester took part in this Event and showed their excellence in their domains by presenting working models and charts.
- The main attraction of the Event were:-
 1. Gesture Control Robo Arm,
 2. Automatic Floor Cleaning Mop,
 3. Automatic Shutter Door.





○ *Automatic Mop Cleaner*



○ *Automatic shutter between station*



○ *Gesture Controlled Robo Arm*

INDUCTION PROGRAMME

As per guidelines, from GTU, Institute coordinator and the Head, *Electrical Engineering Dept, GEC-Modasa*, The Department of Electrical Engineering organized three weeks of Students Induction Program from 18th July 2019 to 7th August 2019.

The program included all kind of enriching sessions viz. Introduction to Department and Institute, Lectures by Eminent personalities, Lecture sessions on Universal Human values, Literary, Physical activities, Creative activities, Visit to village etc.

All the experts and faculty contributed to the best of their knowledge and skills and students participated in all the activities with great zeal and enthusiasm.

As a result, after going through three weeks of Induction program, behavioral change was observed, up to the last day was remarkable.

Students have demonstrated comfortable interaction within the peers and faculty members.



Welcome Address by DR. J R Iyer,

Head EE, GEC Modasa



Interaction with senior student volunteer





Introduction of Faculty members



Dr. H S Pandya delivering lecture on Universal Human Values



*Practicing Pranayam-Meditation guided by Expert
Prof. R K Kapadia, Prof. S V Bankar and*



Shree J B Shah delivering lecture on Road Safety



Rishi Nuwal Lecture on Health and Happiness





Motivational speech delivered by Prof. G P Rathore



Tree Plantation by 1st year students

“Dream, Dream, Dream, Dream transform into thoughts and thoughts result in action.”

— Dr. A.P.J. Abdul Kalam



CULTURAL ACTIVITIES

Spandan 2019

The College Activities program provides students with opportunities to engage in cultural, educational, social, and recreational activities, which are an integral part of the living-learning community at GECM Campus. Students develop their talents and abilities in leadership and teamwork through their participation.

ELECTRICAL DEPARTMENT students took an Active Part in the Cultural Event Spandan 2019 held on 2nd April 2019. As Spandan Event is the last Event of the Year, We bid farewell to the Academic Session and Felicitate the students in various fields. Also it gives an Opportunity to the students to showcase their Talents and Electrical Department is way ahead in all aspects.





“The most common thing between a dancer and engineer is to getting a better version of ourselves. The purity of your soul is been described by you art.

Art is the way to look at the world with your own Imagination. Looking with a different angle doesn't change the world but due to the darkest night, the most brightening star is to be seen. Dance is all about to feel yourself, be with yourself, be with your Soul, rest music will describe !”

~ Bhargav TKD



Bhargav and his Friend performing a Dance Duet.



Anchoring Team



Abhishek Jha and Shubhangi Tiwari did the Opening Act of the Spandan Event.



Nitant Wanjari did his Solo Tabla Performance.



*Shubhangi Tiwari and Suraj Singh
hosted the Event.*

TEAM ELECTRICAL at Spandan EVENT 2019.



EXPERT LECTURES ORGANISED IN ELECTRICAL DEPARTMENT

○ Understanding Next Gen Entrepreneurship :-



An expert talk was organized by Department of Electrical Engineering coordinated by Prof.H.S.Pandya, SSIP GECM, and SSIP-iHub jointly on 30th July 2019, during 02.20 p.m. to 04.20 p.m. open for all students of the institute, interested in innovations and startup with a view to enrich learning engineering by the interaction with an invited expert form the industry.

Shri Jigar Jivani, Project Manager, SSIP-iHub and Prof. Vihang Dholakiya, were invited to deliver an interactive session of two hours on “*Understanding Next Gen Entrepreneurship*” covering following topics:

- ✓ Interactive introduction regarding existing understanding with the audience regarding innovations and startup and Govt. policies regarding the same as a prerequisite to the main topic of discussion and breaking an ice.
- ✓ Introduction to the concepts of innovative thinking, Start-up
- ✓ Government (state and center) policies to support student start-ups and SSIP, iHub role.
- ✓ Case studies of successful startups in India and world



Total 102 students Electrical Engg, Mech Engg, Auto Engg, Civil Engg, EC Engineering, CE/IT Engineering have participated actively and made the session very interactive during the lecture.

○ UGVCL pilot projects regarding smart metering technologies:-



- An expert talk was organized by Department of Electrical Engineering on 2nd Aug 2019 Coordinated by Prof, Hemang Pandya , during 10:55a.m. to 12:55 p.m. for sem 5st (EE) with a view to enrich learning engineering by the interaction with an invited expert form the industry. The details are as follows:
- Shri Gautam Modi, Deputy Engg., UGVCL, was invited to deliver an interactive session of two hours on “UGVCL pilot projects regarding smart metering technologies” covering following topics:
 - ✓ Interactive introduction regarding Existing knowledge of measuring energy utilization from consumer’s premises. as a prerequisite to the main topic of discussion and breaking an ice.
 - ✓ Limitations and challenges of existing systems
 - ✓ Advancements in technologies for Energy Metering
 - ✓ Case studies of UGVCL pilot projects regarding smart metering technologies in Gujarat

Total 53 students of 5st semester EE have participated actively and made the session very interactive during the lecture. At the end the students were found enlightened by industrial experience based reach knowledge sharing and found crowded in last moments around the expert asking queries and sharing contact details with the expert. The learning and presentation material was shared by Shri B.A.Modi to forward the same to the students for long lasting take away of the session.



THANGANAAT 2019



The Navratri festival was celebrated for one day in the college which was named as "THANGANAAT"

Many Faculty members and Students of Electrical Engineering Department took part in this and celebrated the event

SPORTS DAY 2019



- Sports day was organized by our GEC, Modasa College, Electrical Engineering Department Students took part in many games.
- Our department team reached to the finals in cricket match. [pic of team is shown in the photo above]





STUDENTS CHAPTER 2019



ACHIEVEMENTS

2019



The following students have performed their best and given their outstanding performance in extra co-curricular activities held on state as well as national level in year 2019:-

Sr No.	Name Of Student	Name Of Event	Position
1.	Nitant Wanjari [Sem-5]	Classical Instrument Solo Percussion - Gtu Xitij 2019 Zonal Youthfestival	1 st
		Debate Competition- Gtu Xitij 2019 Zonal Youthfestival	3 rd
		Fine Arts Installation- Gtu Xitij 2019 Zonal Youthfestival	3 rd
2.	Yadav Dinesh [Sem-7]	Gtu Powerlifting Winner [Selected for AIU- Feb 2020]	1 st
		Open Gujarat State PowerLifting	3 rd
		Open Gujarat State Arm Wrestling Competition [Selected for National Competition]	2 nd
3.	Vivek Shah [Sem-5]	Pud Perti[Verse Completion] -Gtu Xitij 2019 Zonal Youthfestival	1 st
		Poetry Recitation- Gtu Xitij 2019 Zonal Youthfestival	2 nd

POWER LIFTING



Gtu Powerlifting Winner [Selected for AIU- Feb 2020]	1 st
Open Gujarat State PowerLifting	3 rd
Open Gujarat State Arm Wrestling Competition [Selected for National Competition]	2 nd

GTU YOUTHFESTIVAL

XITIJ- 2019



JAY Parekh of Electrical Department presented his Solo Folk Song also he took part in Group Song



They secured 1st Position where the group presented Gujarati Bhajan- Dhuni re Dhakhavi.



Debate:

Nitant Wanjari, Jay Shah
The Topic of the debate was on Swatch Bharat,
both the participants presented their views
and Secured 2nd Runners UP.



Nitant Wanjari secured 1st Runners up in the n
where he performed Taal Teental on Tabla.



FINE ART Installation:

Nitant Wanjari secured 3rd position in Fine art Installation.

He Praised Modi Government in areas of Space and Defence with his Art Form.

Poetry Recitation:

Vivek presented his Poetry titled Bachpan in Hindi Language which led him to secure 1st Runers up in the Event.



Pad Purti(Verse Completion):

In this event the starting lines of the poetry were given, and the participant had to finish the poetry with their Skills, in which Vivek shah secured 1st prize.



S.S.I.P Nurtured Project

ABOUT SSIP

Government of Gujarat has developed a policy for providing assistance to Startups/ Innovation. Under this scheme, any individual/ group of individuals having innovative idea/ Concept will be eligible and/ or Universities/ education institutions, Incubation Centre/ PSUs/ R&D Institutions/ Private and other establishments will be eligible as an institution to support and mentor to innovators as approved by Committee. Startups in an economy's technology sectors is an important indicator of technological performance for several reasons.

ELECTRICAL SSIP PROJECTS SANCTIONED in Year 2019

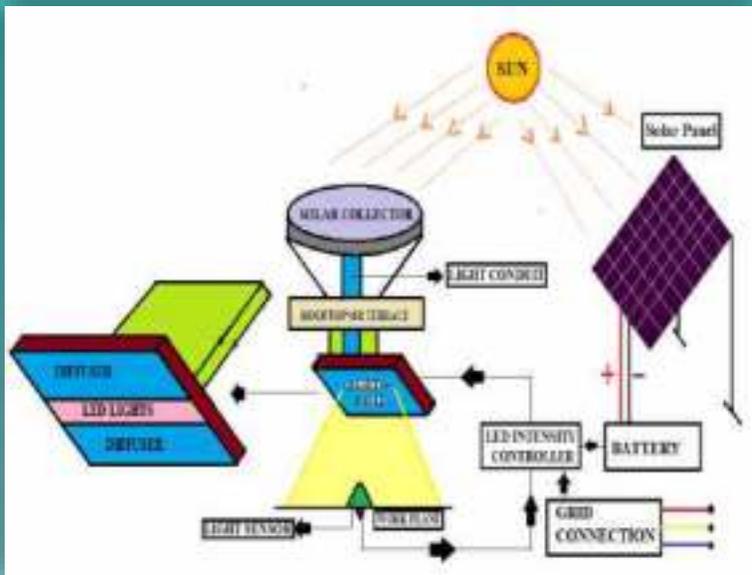
PROJECT TITLE	STUDENTS NAME	ENROLLMENT NO.	SEMESTER
Solar cooker with two axis tracking	Patel Parth	170160109076	5 th
Energy Meter for Smart Homes	Panara Harshil	170160109076	5 th
Portable Solar Inverter	Malek Mohammad Sahil	180160109045	3 rd
Automatic Cable Fault Detector	Patel Rajan	180160109073	3 rd
Smart Hybrid Lightning	Rishi Nuval and Mayank Mehta	160160109046 160160109038	7 th
Mobile Chimney	Shah Hemil and Shah Preet	(160160109092) (160160109093)	7 th



Mobile chimney.



Hemil Shah and Shah Preet displaying their project at technothon 2019



A Brief Idea About Solar Hybrid Lighting System



Rishi Nuval , Mayank mehta and Team displaying their project at technothon 2019

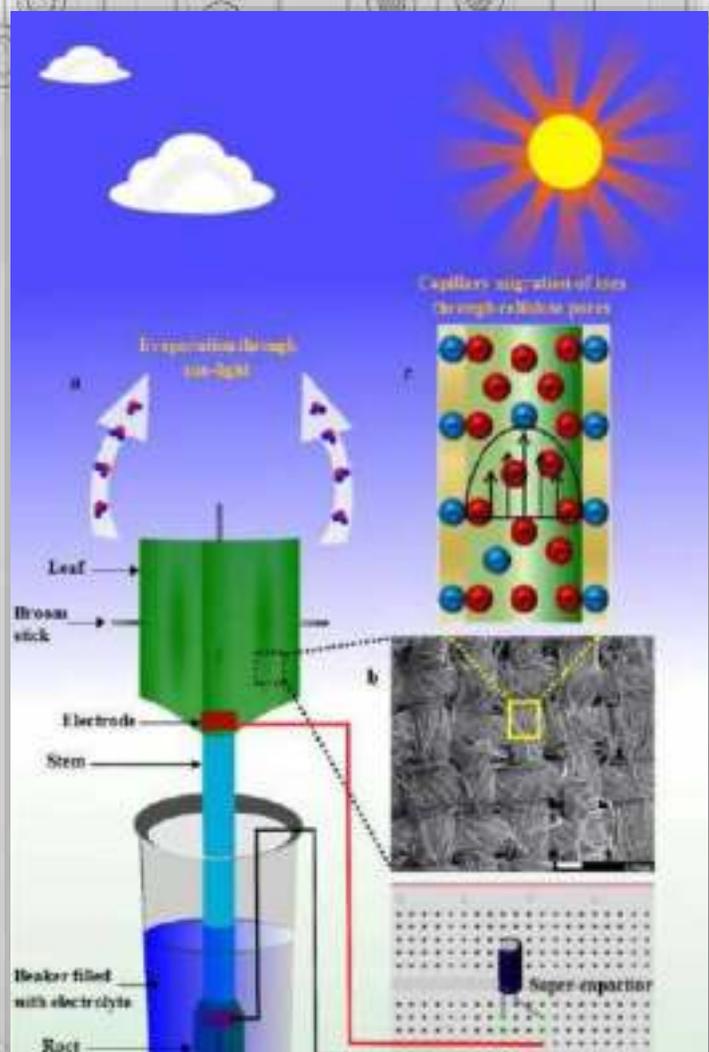
ARTICLES

• IIT Kharagpur researchers use wet clothes at dhobi ghat to generate electricity

KHARAGPUR : Researchers at Indian Institute of Technology (IIT), Kharagpur, Mechanical department here have generated electricity from clothes drying in natural ambience.

The research was done at a 'dhobi ghat' using 50 wet clothes with a surface area of 3,000 square meters which was put for drying by washermen in a remote village.

The clothes were connected to a commercial super-capacitor. In the process, the researchers were able to reliably charge up to around 10 volts in almost 24 hours. This stored energy is enough to glow a white LED for more than 1 hour.



Speaking to ANI Professor Suman Chakraborty of Mechanical Engineering Department, IIT Kharagpur said: "We have done very significant consistent research to figure out that this is indeed a possible phenomenon and developed a technology to source electricity from clothes drying in open space. This power may not be used for large scale application but is good enough to change the lives of a rural community."

Demonstrating the research Professor Chakraborty said: "Clothes are illusively complex, if we look into a cloth we will see that it is made of a very complex yet regular structure of cellulose fibers. These cellulose fibers have certain charges in their walls. Now if you immerse a piece of cloth in a salt solution and have transpiration by surface tension then the salt solution will flow and ionise as it moves along the different passages of the cellulose fibers. The movement of ions in a continuous process generates a continuous voltage. If connected to an external register and can generate small power."

The low-cost technique for electricity generation is in huge demand and till now people have used pressure gradient for migrating the ions from any channels or any devices.

"Now we have developed a technique where we have used a surface energy of the device in order to drive the liquid through the device and also we have utilized the evaporation from the surface so that we get the continuous migration of the ions," said PhD scholar Sankha Shuvra Das of Mechanical Engineering Department, IIT Kharagpur.

He further said that for the first time a cloth-based device has been developed. "The root area of the cloth is in contact with the liquid solution and due to the surface tension of the cloth, it is basically driving the ions in a forward direction or in a downstream direction."

"After some time when the surface gets saturated with the liquid we connect a nanovolt meter probe and the electricity is generated," he added.

"We observed that from a single unit of such devices we are able to get 500 to 700 millivolts. We further have upscale these devices may be up to 40 or 60 unit and have connected those devices in a series and parallel connection. From this experiment we observed that that from that 40-50 connection we are able to generate 12 to 13 volts electric potential," Das said.

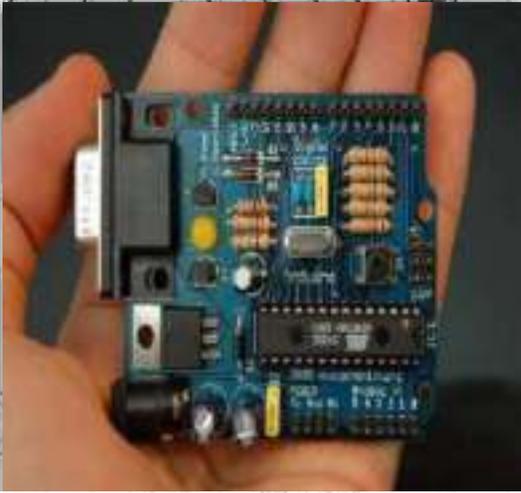
The IIT research team is planning to implement this technology to remote areas where the availability of electricity is a major concern.

• Arduino : Basic Concepts And Introduction

Arduino is an open-source hardware and software company, project and user community that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices. Its products are licensed under the GNU Lesser General Public License (LGPL) or the GNU General Public License (GPL), permitting the manufacture of Arduino boards and software distribution by anyone. Arduino boards are available commercially in preassembled form or as do-it-yourself (DIY) kits.



Arduino board designs use a variety of microprocessors and controllers. The boards are equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards ('shields') or breadboards (For prototyping) and other circuits. The boards feature serial communications interfaces, including Universal Serial Bus (USB) on some models, which are also used for loading programs from personal computers. The microcontrollers can be programmed using C and C++ programming languages. In addition to using traditional compiler toolchains, the Arduino project provides an integrated development environment (IDE) based on the Processing language project.



HARDWARE

Arduino is open-source hardware. The hardware reference designs are distributed under a Creative Commons Attribution Share-Alike 2.5 license and are available on the Arduino website. Layout and production files for some versions of the hardware are also available.

Although the hardware and software designs are freely available under copyleft licenses, the developers have requested the name *Arduino* to be exclusive to the official product and not be used for derived works without permission. The official policy document on use of the Arduino name emphasizes that the project is open to incorporating work by others into the official product. Several Arduino-compatible products commercially released have avoided the project name by using various names ending in *-duino*.

Most Arduino boards consist of an Atmel 8-bit AVR microcontroller (ATmega8, ATmega168, ATmega328, ATmega1280, ATmega2560) with varying amounts of flash memory, pins, and features. The 32-bit Arduino Due, based on the Atmel SAM3X8E was introduced in 2012. The boards use single or double-row pins or female headers that facilitate connections for programming and incorporation into other circuits. These may connect with add-on modules termed *shields*. Multiple and possibly stacked shields may be individually addressable via an I²C serial bus. Most boards include a 5 V linear regulator and a 16 MHz crystal oscillator or ceramic resonator. Some designs, such as the LilyPad, run at 8 MHz and dispense with the onboard voltage regulator due to specific form-factor restrictions.

Arduino microcontrollers are pre-programmed with a boot loader that simplifies uploading of programs to the on-chip flash memory. The default bootloader of the Arduino UNO is the optiboot bootloader.^[27] Boards are loaded with program code via a serial connection to another computer. Some serial Arduino boards contain a level shifter circuit to convert between RS-232 logic levels and transistor–transistor logic (TTL) level signals. Current Arduino boards are programmed via Universal Serial Bus (USB), implemented using USB-to-serial adapter chips such as the FTDI FT232. Some boards, such as later-model Uno boards, substitute the FTDI chip with a separate AVR chip containing USB-to-serial firmware, which is reprogrammable via its own ICSP header. Other variants, such as the Arduino Mini and the unofficial Boarduino, use a detachable USB-to-serial adapter board or cable, Bluetooth or other methods. When used with traditional microcontroller tools, instead of the Arduino IDE, standard AVR in-system programming (ISP) programming is used.



Test Yourself

1) Filters are used to convert

- a. Pulsating dc signal into a pure dc signal
- b. Pure dc signal into a pulsating dc signal
- c. Pulsating dc signal into a pure ac signal
- d. Pulsating ac signal into a pure dc signal

ANSWER: Pulsating dc signal into a pure dc signal

2) The cut - in voltage for silicon and germanium are

- a. 0.3 V, 0.3 V
- b. 0.3 V, 0.7 V
- c. 0.7 V, 0.7 V
- d. 0.7 V, 0.3 V

ANSWER: 0.7 V, 0.3 V

3) The P - type semiconductor impurities are also called as

- a. Acceptor impurities
- b. Donor impurities
- c. Either (a) or (b)
- d. None of these

ANSWER: Acceptor impurities

4) If induction motor is direct switched-on then it will develop

- a. 1.5 times their full load torque
- b. 1.5 to 2.5 times their full load torque
- c. 2.5 times their full load torque
- d. 1.5 to 5 times their full load torque

ANSWER: 1.5 to 2.5 times their full load torque

5) In four - point starter, the no volt release is connected across the

- a. Supply line through a protective resistance
- b. In series with field circuit through a protective resistance
- c. Either (a) or (b)
- d. None of these

ANSWER: Supply line through a protective resistance

6) Electric heaters is made up of

- a. Chromed iron
- b. Brass
- c. Steel
- d. Both (a) and (b)

ANSWER: Both (a) and (b)

7) Slip ring induction motor has

- a. Low starting torque
- b. Medium starting torque
- c. High starting torque
- d. None of these

ANSWER: High starting torque

8) The efficiency of the transformer will be maximum when

- a. Iron losses is equal to the twice of the copper losses
- b. Copper losses is equal to the twice of the iron losses
- c. Iron losses is equal to the copper losses
- d. All of these

ANSWER: Iron losses is equal to the copper losses

9) The number of cycles of the induced emf per second is equal to

- a. No. of cycles per revolutions x no. of revolutions per second
- b. No. of cycles per second x no. of revolutions per second
- c. No. of cycles per revolutions x no. of revolutions per hour
- d. No. of cycles per revolutions / no. of revolutions per second

ANSWER: No. of cycles per revolutions x no. of revolutions per second

10) The wrong statement among the following is

- a. A fuse can be fitted in an outlet socket
- b. A fuse should not get overheated
- c. The current rating of fuse should not exceed the rating of the smallest cable protected
- d. Fuse having rating less than 3 A can be used in radio

ANSWER: A fuse can be fitted in an outlet socket

DID YOU KNOW?

10 FUN FACTS ABOUT ELECTRICITY

1. Electricity travels at the speed of light – more than **186,000 miles per second!**

2. A spark of static electricity can measure **up to 3,000 Volts**

3. Lightning is a discharge of electricity in the atmosphere. Lightning bolts can travel at around 130,000 miles per hour and reach nearly 54,000 °F in temperature.

4. Electric eels can produce strong electric shocks of around 500 volts for both self-defence and hunting.

5. Have you ever wondered why birds sitting on a power line don't get electrocuted? If a bird sits on just one power line it is safe. However, if the bird touches another line with a wing or a foot, it creates a circuit, causing the electricity to flow through the bird's body. This results in electrocution.

6. Two positive charges repel each other, as do two negative charges. On the other hand, opposite charges attract each other.

7. Coal is the world's biggest source of energy for producing electricity. Coal is burned in furnaces that boil water. The steam from the boiling water then spins turbines that are attached to generators.

8. Did you know that electricity plays a role in the way your heart beats? Electricity causes muscle cells in the heart to contract. Electrocardiogram (ECG) machines, used by medical professionals, measure the electricity going through the heart. As the heart beats in a healthy person, the ECG machine displays a line moving across the screen with regular spikes.

9. Electric fields work in a similar way to gravity. Whereas gravity always attracts, electric fields can either attract or repulse.

10. Benjamin Franklin carried out extensive electricity research in the 18th century, inventing the lightning rod amongst his many discoveries. In the event of a lightning strike, the lightning rod conducts the strike through a grounded wire, protecting the building.



ART GALLERY



An Abstract Vector Art Created By

-Ainesh Suthar

Semester- 5th



By Ainesh Suthar

Semester – 5th

POETRY SECTION

वो बचपन भी हमारा ना जाने कितना दौलतमंद था!!!....

दो रुपये जेब मे लेकर ,गलियो मै दोडता फिरता जब मेरा मन था,

वो बचपन भी हमारा ना जाने कितना दौलतमंद था....

किसी बागिचे मै मिले अंजान सक्श को भी यार मे तब्दिल करते ना सोचता मेरा कथन था,

वो बचपन भी हमारा ना जाने कितना दौलतमंद था....

वो जो हर बात पर हस दे, कुदरत ने भरा उसमे ना जाने कैसा रंग था?

पापा ने प्यार से, तो माँ ने ममता से बनाया जैसे कोइ उपटन था. .

जहा गलती पर डाट पडने से ज्यादा भाई का उसे छुपाना भी किसी साज़िश से ना कम था...

वो बचपन भी हमारा ना जाने कितना दौलतमंद था....

समय का दोडना और थके हारे सोना भी अब कि फुर्सत से बेहद दुर्लभ था,

माटि के बने गुल्लक मै हर सिक्को मै बसा एक छोटा सा आशियानो का घर था...

जब खेल कर मैले सिर्फ कपडे हुआ करते थे, मन जाने जैसे कोई साफ़ दरपन था,

वो बचपन भी हमारा ना जाने कितना दौलतमंद था....

-By Shah Vivek [Semester- 5th]

FOR A FATHER :-

कभी उन कंधो को भी दबाने की थोडी सी कोशिश करना...

जिन्के कंधो पर बचपन मै पूरा शहेर घुमा करते थे,

थके हारे से आते थे वो, फिर भी हमारी एक मुस्कान के लिए;

एक पल मै झुका करते थे...

बाज़ुए आज शायद उतनी मज़बूत ना रही माना मगर;

ज़िम्मेदारिया लाख उठाती ना वो थकती है...

तु एक इशारा तो कर उन्की तरफ़ ए शक्श ए बेख़बर;

तेरी एक ख्वाइश के लिये आज भी वो बोझ सम्भाले कप कपाती ही सही,

ताकत का अपनी तकाज़ा करती है...

कभी उन कंधो को भी दबाने की थोडी सी कोशिश करना...

जिन्के कंधो पर मुसीबते लाख सजती है...

-By Shah Vivek [Semester -5]

• WHEN MY SOLDIER WOULD RESIGN!

The gates were open; the night moon shines,
Still she thinks, "When my soldier would resign.."
Eyes full of tears, she's seeking sunshine,
When her soldier would give her time?

Sitting in a corner She's watching spring pass,
She remembers how her son was never apart..
Made his loving food; but no one to eat,
She wept all day to hear those appreciation of sweets..

Festival came; but the soldier didn't,
"I am waiting my son" says feeling hidden...
Hug me son and kiss my forehead,
Please come home before my death..

She saw a child playing in the park,
And remember how little soldier would make a mark..
"Mom I will become a soldier and never be afraid,"
Were the words said byson of a poor maid...

Thoughts were on her mind and someone knocked the door,
She stood up to see, "Is her soldier coming aboard!"
This time he came butn in a coffin box,
Tears wasn't coming and feelings were shocked,

She wept for sometime and said,
"No issue my soldier retired;
He's born somewhere again to serve my country in a different attire.



-By Shah Vivek [Semester-5th]

FEW WORDS FOR THEM:

A given task can only be accomplished by dedication, suggestions, efforts, and loyalty towards the work.

This magazine would never be able to its goal without the constant support provided by the head of department , faculty members, students and our team.

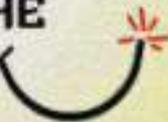
We are thankful to Prof. J. R. Iyer who took the initial efforts towards the development of the magazine by guiding us with the knowledge and information required for creating a good magazine.

We also owe to Prof. H. S. Pandya for providing us the required information and suggestion which led us to work without any ambiguity or difficulty.

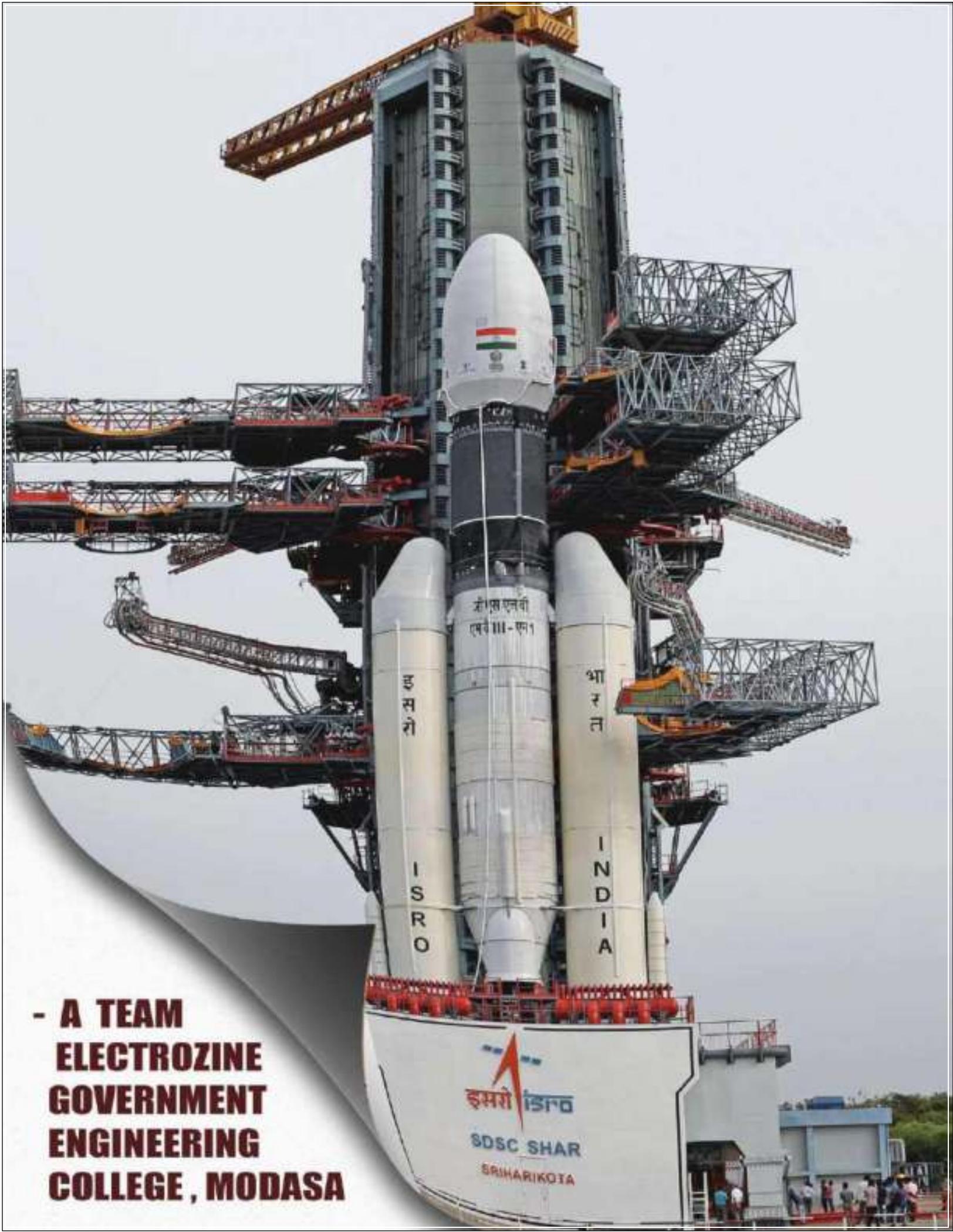
The magazine could tack its final shape because of ideas, suggestions and experiences shared by our faculties and senior students.

We are also thankful to the students of the Electrical Department for providing their kind co operation and suggestion and the faculties of department for their collective efforts and moral support. We acknowledge their contribution.

**ELECTRICAL
ENGINEERS**

HAVE JUST THE
RIGHT SPARK 

Thank you



**- A TEAM
ELECTROZINE
GOVERNMENT
ENGINEERING
COLLEGE , MODASA**