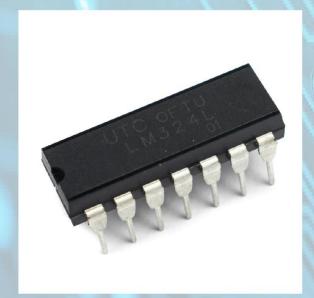


VIDYUT

Volume-1 | Issue-4 | April-2023

Department of Electrical and Electronics Engineering
Official Newsletter



LM324

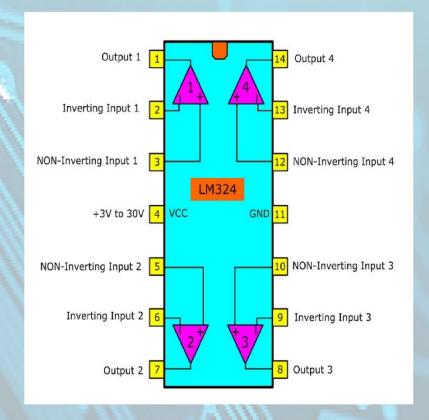




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Vision of the Institution

To be a leader in Higher Technical Education and Research by providing the state of the art facilities to transform the learners into global contributors and achievers.

Mission of the Institution

To develop SVCE as a "CENTRE OF EXCELLENCE" offering Engineering Education to men and women at undergraduate and postgraduate degree levels, bringing out their total personality, emphasizing ethical values and preparing them to meet the growing challenges of the industry and diverse societal needs of our nation.

Vision of the Department

The vision of Electrical and Electronics Engineering Department is to provide a high standard of education in Electrical and Electronics Engineering so as to meet the industry standards through domain.

Mission of the Department

M1: To create state of the art facilities such that the students excel in Electrical and Electronics Engineering education.

M2: To equip students with a well defined curriculum to meet the requirements of industries and society.

M3: To promote a culture of research, innovation and entrepreneurship in the thrust and allied areas of Electrical and Electronics Engineering.

M4: To inculcate soft skills and foster ethical values and shape the total personality of the students.

Program Educational Objectives (PEOs) UG-EEE

PEOI: Graduates of EEE transformed to engineering contributors in the fields of Electrical, Electronics and Computer Engineering.

PEO2: Succeed in becoming entrepreneurs through human centered design thinking and innovation.

PEO3: Become eligible to pursue higher studies in their chosen areas of engineering or management

PEO4: Effective, conscious and ethical team player in the field of green energy management and sustainability

Program Outcomes (POs) for UG-EEE

- 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. Design/development of solutions: Design solutions for complex engineering problems and design system components processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5. Modern tool usage: Create, select and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- 6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the

consequent responsibilities relevant to the professional engineering practice.

- 7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- 9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- 10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- 11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and lead.
- 12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs) for UG-EEE

PSO1: The ability to build, implement, test and maintain analog and/or digital systems and implement Electronic control of Drives for Industrial automation and Electric Vehicle.

PSO2: The ability to analyze Power System network encompassing stability, control and protection and interconnection of Renewable Energy Sources with Micro and smart grid.

Program Outcomes (POs) for PG-PED

PO1: An ability to independently carry out research/investigation and

development work to solve practical problems.

PO2: An ability to write and present a substantial technical report/document.

PO3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

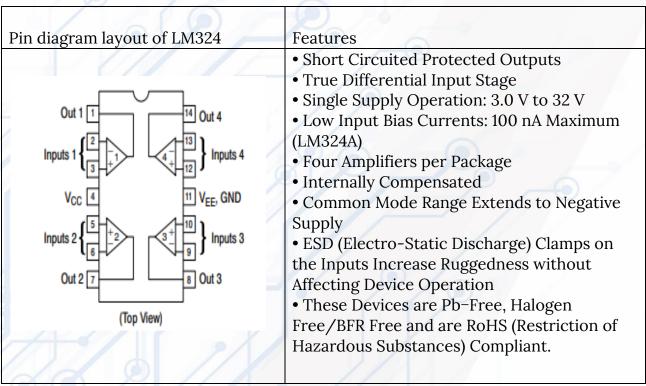
Program Specific Outcomes (PSOs) for PG-PED

PSO1: The ability to design and analyze Power Electronic converters and control of Electric drives for Industrial applications.

PSO2: The ability to apply Power Electronic Circuits in Transmission and distribution network of Power System and interconnection of Renewable Energy.

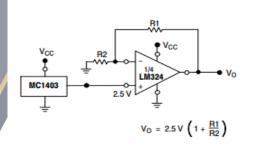
An Article on Single Supply Quad Operational Amplifiers

The Single Supply Quad Operational Amplifier manufactured by Onsemi, released in the series of LM324 such as LM324A, LM324E, LM224, LM2902, LM2902E, LM2902V, and NCV2902. The LM324 series are low-cost, quad operational amplifiers with true differential inputs. They have several distinct advantages over standard operational amplifier types in single supply applications. The quad amplifier can operate at supply voltages as low as 3.0 V or as high as 32 V with quiescent currents about one-fifth of those associated with the MC1741 (on a per amplifier basis). The common mode input range includes the negative supply, thereby eliminating the necessity for external biasing components in many applications. The output voltage range also includes the negative power supply voltage. Application areas include transducer amplifiers, DC gain blocks and all the conventional op amp circuits which now can be more easily implemented in single power supply systems. The IC plays a major role in the design of signal conditioning circuits. It can be used in IoT, AI and Industrial Automation applications.

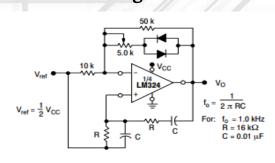


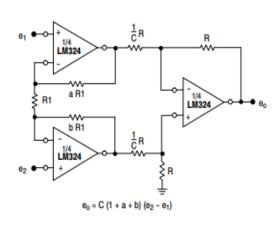
Application Circuits With LM324

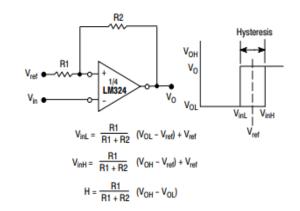
Voltage Reference



Wien Bridge Oscillator







High Impedance Differential Amplifier and Comparator with Hysteresis

Reference:

https://www.onsemi.com/pdf/datasheet/lm324-d.pdf



Article by Ms.S.Aklia, Assistant Professor

Department Achievements MOU Signed

Department of EEE signed MOU with M/s Controlsoft Company on 12th April. Controlsoft Engineering India Private Limited provides automation and engineering solutions to the customers in India and Overseas, using the state-of-the-art software tools to design and engineer any instrumentation project, right from the concept to commissioning. The software tools will bring in speed, consistency, accuracy and quality to the international standards. Controlsoft Engineering aim is to provide all these solutions in less than half the current lead time. (www.controlsoftengg.in).

Based on a study of the objectives and strengths of both the organizations, an MoU is agreed upon which envisages the following:

Joint Interdisciplinary Research and Developmental projects: Applying for joint proposals called from UGC, AICTE or other similar agencies for funding of research grants which would result in joint publications. Project work by UG/PG/PhD students with active guidance of senior personnel from Controlsoft Engineering and SVCE. Sharing of resources such as computers, sophisticated equipment, instruments, library facilities etc. according to the rules and regulations of each institution.

Liaison officers from SVCE

- i. Dr.KR.Santha, Vice Principal & HOD ii. Dr. K.B.Sudhakar, Professor
- iii. Dr.S.G.Bharathidasan, Associate Professor



Project Completion

SVCE - Gulf Engineering (P) Ltd interaction

Our department has successfully developed a product "Electronic Wild Animal deterrent system" and implemented PV powered smart pole with Light and Sound deterrent system.

Faculty Contributors

- Dr.KR.Santha, Professor & HOD,
- Dr. KB Sudhakar, Professor,
- Dr.S.Kumaravel, Associate Professor,
- Dr.S.G.Bharathidasan, Associate Professor

Supporting Staff Contributor

• Mr. B.Madhavan, Mechanic.



PV Powered Electronic Wild Animal deterrent system

Official meetings / Events organized by the department Parents Day Meet - I (Seniors)

Parents' day meet for senior students for the EVEN semester of academic year (2022-2023) was held on 01.04.2023, Saturday. The reception desk was managed by Mrs. S. Akila, Dr. N. Shanmugavadivu, Mrs. M. Sasikala and Mr. Balakrishnan. Dr. KR. Santha, Professor & HoD discussed elaborately about the autonomous stream and importance of regular class attendance, Laboratory class attendance, CAT exams, Special classes and Career planning on a one-to-one basis. Parents clarified their doubts through interaction with HoD. Dr. R. J.Venkatesh, Mr.E.Naveenkumar and Mr.M.Ranjithkumar received and recorded the feedback from parents. Parents were served high tea.

The moments captured during the parent day meet are depicted as follows.









Bos Meeting for R2022 Regulation

The Second meeting of Board of Studies in the academic year 2022-23 for Electrical and Electronics (EE) and Electronics and Communication (EC) Engineering, was held on 10.04.2023 Monday through Online mode with the following members.

Sl.No	Member	Designation
Expert	nominated by the Vice-o	chancellor
1	Dr.K.Selvi	Professor, Department of Electrical & Electronics Engineering, Thiagarajar College of Engineering, Madurai.
Repres	sentative from Industry	
2	Mr.K. Sendil Vel	CEO, Malar Electronics, Anna Nagar West, Chennai.
Expert	s in the Subject from out	side the College
3	Dr.P.Somasundaram	Professor, Department of Electrical and Electronics Engineering, CEG, Anna University, Chennai.
4	Dr.P.K.Jawahar	Professor, Department of Electronics and Communication Engineering, B.S.Abdur Rahman University, Chennai.
Alumni	i P	2
5	Mr.Vineeth Vijayaraghavan	Director - Research and Outreach, Solarillion Foundation, Chennai
6	Dr.Arun Janarthanan	Sr. Staff, QUALCOMM, TVH Agnito Tech Park, Thaazhambur, Chennai.
Chairn	nan-Board of Studies (EE	E & ECE)
7	Dr.KR.Santha	Professor and Head, Vice Principal, Department of Electrical and Electronics Engineering.
8	BoS Members (Faculty	members of EEE & ECE)

- Dr KR.Santha Chairman-Board of Studies welcomed the BoS members for the meeting and mentioned the Agenda as follows.
- Consideration and approval of Revised Curriculum for the following programmes under R2022 (CBCS).
 - ➤ B.E. (Electrical and Electronics Engineering)
 - ➤ M.E. (Power Electronics and Drives)
 - ➤ B.E. (Electronics and Communication Engineering)
 - ➤ M.E. (Communication Systems)
- Consideration and approval of Syllabus for the courses in Semesters III & IV of B.E Electrical and Electronics Engineering curriculum under R2022(CBCS).
- Consideration and approval of Syllabus for the course "Electrical Drives and Electronics Engineering" included in semester III of B.E. Mechanical Engineering and B.E. Mechanical and Automation Engineering Curriculum under R2022 (CBCS).
- Consideration and approval of Syllabus for the courses "Marine Electrical Machines-I and Marine Electrical Machines-II" included in semester III & IV of B.E. Marine Engineering Curriculum under R2022 (CBCS).
- Dr KR.Santha, HOD/EEE has presented the syllabus of courses in the Third and Fourth semesters of B.E (EEE). The four Second year Theory courses of R2018 B.E. (EEE) are converted into Theory with Laboratory in R2022.

- Dr KR.Santha ,HOD/EEE conveyed that, the Curriculum and Syllabus for M.E. (Power Electronics & Drives) Programme was approved by BoS members on 07.10.2022 and by Academic Council on 08.10.2022.
- Finally, BoS members recommended the proposed R2022 (CBCS) Curriculum and course Syllabus for semesters III and IV of the programme B.E. (Electrical and Electronics Engineering), M.E. (Power Electronics and Drives) to the Academic Council for approval.

Faculty Development and Training Program

The Department of Electrical and Electronics Engineering organized a three days FDTP on "Modeling and Control of Electric Vehicles using Simulink and Simscape" in association with MATHWORKS India Pvt Ltd from 24.04.2023 to 26.04.2023. Faculty members from all the departments around 17 members benefited through the event. **Mr.Apurva Kulkarni, Training Engineer, MathWorks India Pvt. Ltd** has shared his experience with faculty members. The program was inaugurated by Dr KR.Santha ,Vice Principal, HOD/EEE giving welcome Address and Felicitation of Chief Guest.

- Day 1: Fundamentals of modeling and basic of motor control were the topics of discussion in forenoon session. In the afternoon session the participants had hands-on training of Modeling with Simulink basic blocks.
- Day 2: The trainees concurrently practiced with the trainer system modeling with Simscaps facility in simulink.

• Day 3: Complete design & simulation and control of PMSM motor was carried out through hands-on and interactive mode of training.







Student's Achievements

E-BAJA SAEINDIA 2023 Competition, Himachal Pradesh

Our College team TRAXION OFFROADING consisting of 13 Automobile, 10 Mechanical and 3 Electrical and Electronics Engineering students, along with the Faculty Advisor Mr. R. Sakthivel AP/AUT participated in a National level all-terrain vehicle competition EBAJA SAEINDIA 2023 held at Chitkara University, Baddi, Himachal Pradesh from 05.04.2023 to 10.04.2023. The team secured the 15th position out of 27 teams that cleared technical inspection and participated in the Final Endurance Race. Additionally, the team was awarded the 2nd runner-up position in the 'Technology Innovation Event for using "Portal Axle system". The team was mentored by Dr.V. Ganesh ASP/AUT, Mr.R. Sakthivel, AP/AUT, Dr. S G Bharathidasan ASP/EEE, Dr. M. Sankar AP/EEE and Mr. J.Sivaramapandian,

AP/MEC. The Team TRAXION OFFROADING thanks the SVCE Management for extending a Sponsorship of Rs. 1.0 Lakh for the event.

Student Members from EEE



Mr.S.Gowrishankar



Mohamed Mansoor Ibrahim O M S



Ms.M.Anushri



EBAJA TRAXION Team

Placement and Internship details



- Ms. M. Anushri, final year student got placed in Expeditors International (India) Pvt.Ltd,As Associate Developer 5.25 LPA.
- Ms.M.Anushri, final year student also got placement offer from Anand Automotive Private Limited, as Graduate Engineer Trainee in Level-1 under the ANAND Talent Acquisition (ATA) Program with 8 LPA, through EBaja Placement Drive.



- Ms.Harini .N , third year student got placed in
 M/S. EmbedUR Systems , with 8 LPA
- ❖ Ms.Harini .N , third year student got intern for a period of 2 months in embedded product development team of Muphil Labs Private Ltd.

Events organized by Professional Society

IEI Sponsored 2 Days Workshop On Modeling And Control of Electric Vehicles Using MATLAB.

The "Modeling and Control of Electric Vehicles using MATLAB" workshop was conducted by IEI SVCE EEE student chapter in association with MATHWORKS India Pvt. Ltd. during 20 th – 21 st April 2023. The objective of the workshop was to provide insights into electric vehicle modeling and simulation using MATLAB and its real-world applications. Followed by an inaugural speech by Dr. KR. Santha, Vice-Principal, Professor & Head, Department of Electrical & Electronics Engineering, a guest lecture was delivered by the expert speaker **Ms. Sree Varshini, Application Engineer, MathWorks.** She gave examples of how companies use simulation software in the design and testing of electric vehicles. The topics covered in the workshop includes Vehicle Dynamics, Power converter modeling for EV, Modeling and control of DC motor using Simulink and Simscape, PMSM motor and its simulation model. Totally 48 participants including II and III year EEE students of SVCE attended this workshop.



IEI Sponsored two days workshop on "Application of Deep Learning in Power System Resilience Study"

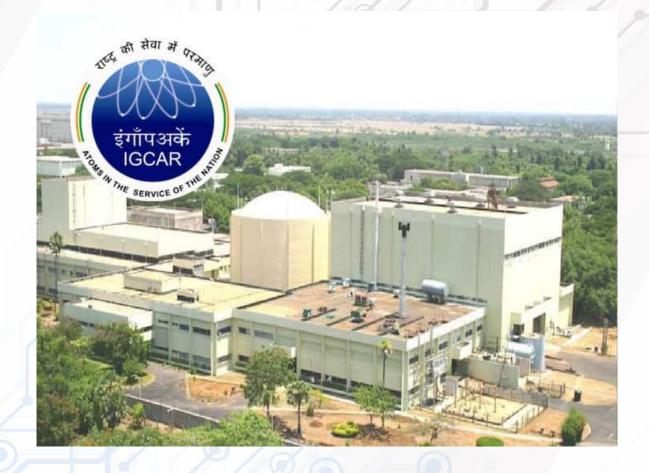
A two days workshop on "Application of Deep Learning in Power System Resilience Study" was organised under IEI SVCE EEE Student Chapter during 24th-25th April 2023. The expert speaker Mrs.Kamatchi Nathan, Founder and Managing Director of SEN EDS, presented the details on Electric Flash Analysis and Data Population using ETAP. She presented a real-time simulation of an Oil and Gas Plant Arc Flash Analysis using ETAP and report generation from which the ARC Flash Data can be populated for developing DL models. The topics covered in the workshop include Facts and Prospects of ML and DL in power systems, Power Systems Resilience Metrics, AI modeling for arc fault detection and clearing and Developing AI model for Power System to self-heal during a contingency. A total of 70 students from II year and III year EEE attended this workshop.



Expert Lecture by Mrs.Kamatchi Nathan, Founder and Managing Director of SEN EDS

Industrial Visit

Around 80 Second year students of EEE along with two faculty members visited Indira Gandhi Centre for Atomic Research, (IGCAR), Kalpakkam on 28th April, 2023 (Friday).



Indira Gandhi Centre for Atomic Research, (IGCAR), Kalpakkam

International Conference Publications

Mr.S.Bharadwaj, Asstistant Professor, Dr.KR Santha, Professor & HoD and Ms.S.Arulmozhi, Asstistant Professor has presented and published a paper "Design and Analysis of Integrated Dual-Input Dual-Output DC-DC Converter for Electric Vehicle and Drives Applications" in 9th International Conference on Electrical Energy Systems (ICEES-2023) Organized by department of Electrical and Electronics Engineering, SSN College of Engineering, Kalavakam, during March 23-25,2023. pp.681-686, DOI: 10.1109/ICEES57979.2023.10110154.







ABSTRACT

To enable efficient and reliable operation of Electric Vehicles (EV)/Drives, optimization of power electronic converters in terms of size and cost is necessary. EVs and also some drive applications require a minimum of two different DC voltage levels, one for supplying the electric motor and the other for auxiliary loads. To supply these loads, electric vehicles utilize a battery along with renewable sources like solar panels and fuel cell. Incorporation of several sources and loads into a single system is usually achieved using two or more conventional DCDC converters. But this increases the size and complexity of the converter system. A new Dual-Input Dual-Output (DIDO) DCDC converter with reduced component count is introduced as an effective alternative. This converter

integrates a PV system with a battery to provide boost and buck voltages at the two output ports capable of feeding the EV loads, namely DC motor and auxiliary load rated at 72V and 24V respectively. The proposed converter is operated in battery charging and discharging mode and a system efficiency of around 90% is obtained. Performance of the converter is analyzed and compared with other DIDO topologies. Simulation of the converter is carried out using MATLAB-Simulink and the results are validated.

Dr.C.Gopinath, ASP, Mr.P.Karthikeyan, Mr.R.Srihari, Mr.M.Yuvaraj has presented and published a paper "Integrated Renewable Energy Charging System for Electric Vehicle" in 9th International Conference on Electrical Energy Systems (ICEES-2023) Organized by department of Electrical and Electronics Engineering, SSN College of Engineering, Kalavakam, during March 23-25,2023. DOI: 10.1109/ICEES57979.2023.10110228.









ABSTRACT

High levels of emission on the earth and depletion of fossil fuels, sustainable environment is a real case,e- vehicle technology has grown up and becomes the coming of age transportation system that reduces global emissions. For enhancing the widespread use of electric vehicles, the on road mileage must be sufficiently high. For obtaining extended mileage there exist specific ways. One the ampere hour value of battery can be raised or the charging stations must be increased.

This system deals with charging method by increasing the EV range by having less number of charging stations and also without increasing battery capacity. This charging mechanism comprises of a integrated system i.e., micro wind turbine with aerofoil blades and charging from irradiance using solar panel with charge controller system mounted in the electric vehicle, collectively termed as Integrated renewable energy charging system (IRECS) for electric vehicles. By incorporating this system, the range capability can be increased than thenormal, reduced charging station dependency, thereby increasing sustainability in environment.

Faculty participation in Conferences/FDTP/Workshops

 Ms. Akila S, Asstistant Professor has participated and successfully completed the 6 -days online UHV-II FDP organized By AICTE from 20th to 25th March, 2023.



- Dr. C Gopinath, Associate Professor, has participated in one day online International Webinar "ChatGPT: Its Impact on Higher Education & Academic Libraries" by Brady D.Lund, UNT, USA organised by IEEE Computer Society and DELNET, on 16th March ,2023.
- Dr.N.K.Mohanty, Professor, has participated in 6 days online workshop on "Effective Filing of NAAC AQAR Streamlining Institutional Performance" from 13th to 18th March 2023.
- Dr. C Gopinath, Associate Professor, acted as session chair in the 9 th International Conference on Electrical Energy Systems (ICEES-2023) Organized by department of Electrical and Electronics Engineering, SSN College of Engineering, Kalavakam during March 23rd to 25th, 2023.
- Dr. C. Kamal, Assistant Professor, has delivered a guest lecture on "Importance of Special Electrical Machines in Electric Vehicle Technology" organized by the Department of Electrical and Electronics Engineering, P.T.Lee. Chengalvaraya Naicker College of Engineering & Technology, on 3rd April 2023.
- Dr. N. Shunmugavadivu, Assistant Professor, Mr. M. AnuBharanidharan, Mr. G. Sathish, Mr. VijayAnandhan has participated and presented a paper "Lead Acid Battery Monitoring System using ESP8266" in International Conference on Smart Grid & Electric Vehicle, on 3rd and 4 th April, organized by Hindustan Institute of Technology and Science, Chennai, India.
- Dr. C Gopinath, ASP, has participated in 5 days Sponsored Short Term Course on "Grid Power Electronics Technology, NaMPET (Under Phase IIII, MeitY, Govt. of India), organized by Indian Institute of Information Technology, Design & Manufacturing Kancheepuram (IIITDM) from 26th to 30th April, 2023.

Following faculty members from EEE participated in the three days
 FDTP on "Modeling and Control of Electric Vehicles using Simulink and
 Simscape" in association with MATHWORKS India Pvt Ltd from 24th to 26th
 April, 2023.

Sl	Name of Faculty	Designation
no		
1	Dr.S.Kumaravel	ASP
2	Dr.S.S.Sethuraman	ASP
3	Dr.T.Annamalai	ASP
4	Dr.N.Shanmugavadivu	AP
5	Dr.C.Venkatesan	AP
6	Ms.K.Suganthi	AP
7	Dr.D.Amudhavalli	AP
8	Mr.D.S.Purushothaman	AP
9	Mr.S.Bharadwaj	AP



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

NEWSLETTER

EDITORIAL TEAM

Dr. KR. Santha, Vice Principal & HOD

Dr. Sudhakar K Bharatan, AHOD

Dr. R. Karthikeyan, Associate Professor

Ms. S. Sinthamani, Asstistant Professor

Ms. K. S Pavithra, Asstistant Professor

Mr. S. Sabari & Ms. N. Harini, III year