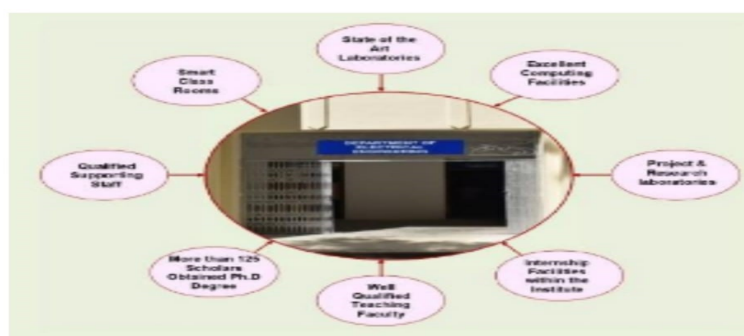


Newsletter 2019 - 2020

Electrical Engineering



Annamalai University

VISION

- ✦ To develop the Department into a Centre of Excellence with a perspective to provide quality education and skill-based training with state of the art technologies to the students, thereby enabling them to become achievers and contributors to the Industry, Society and Nation together with a sense of commitment to the profession.

MISSION

- ✦ To impart quality education in tune with emerging technological developments in the field of Electrical and Electronics Engineering.
- ✦ To provide practical hands-on-training with a view to understand the theoretical concepts and latest technological developments.
- ✦ To produce employable and self-employable graduates.
- ✦ To nurture the personality traits among the students in different dimensions emphasizing the ethical values and to address the diversified societal needs of the Nation.
- ✦ To create futuristic ambience with the state-of-the-art facilities for pursuing research.



Volume - 01, Issue - 01

EDITORIAL MEMBERS

Prof. P. Aravindhababu, EEE

Prof. S. Ganapathy, EEE

Prof. L. Lakshminarasimman, EEE

Dr. V. Padmathilagam, Associate Professor / EEE



AU69 FEAT GOLDEN JUBILEE HALL / SMART CLASS ROOM



The alumni of 1969 batch contributed a sum of Rs.10 lakhs for creation of “**AU69 FEAT Golden Jubilee Hall / Smart Class Room**” in the Department of Electrical Engineering. The inauguration was held in the august presence of Prof. V. Murugesan, Vice Chancellor, Prof. N. Krishna Mohan, Registrar and Prof. K. Raghukandhan, Dean, FEAT and the Alumni of 1969 batch. HDEE, Faculties, Staff members, Research scholars, UG & PG students participated in the event. The Hall is presently used for conducting events like seminar, expert lectures, Paper presentations, Viva-Voce examinations & staff meetings.

CAMPUS PLACEMENT

Campus Placement



The Faculty of Engineering and Technology conducted on-campus placement drive for Final Year students of Electrical Engineering and five students have been provisionally selected for the “**Thriveni Earth Movers Private Limited**” as apprenticeship trainees with good package during the academic Year 2019-2020.

#	Enroll No.	Name of the Candidate	Branch/ Stream	Gender	Posting Location
1	1632010055	Arun Kumar R	BE (Mechanical Engg)	M	Pakri Barwadih Coal Project
2	1732090005	Harenthiranath R	BE (Mechanical Engg)	M	Pakri Barwadih Coal Project
3	1633010013	Venkateswaran R	BE (Manufacturing Engg)	M	Pakri Barwadih Coal Project
4	1734140008	Krishnakumar B	BE (Electrical Engg)	M	Pakri Barwadih Coal Project
5	1734140004	Girubagar B	BE (Electrical Engg)	M	Pakri Barwadih Coal Project
6	1634010063	Swatha S	BE (Electrical Engg)	F	Tatanagar (Jamshedpur)
7	1634010015	Santhiya R	BE (Electrical Engg)	F	Tatanagar (Jamshedpur)
8	1634010011	Swathi B	BE (Electrical Engg)	F	Tatanagar (Jamshedpur)

EXPERT LECTURE



Expert Lecture titled “**Smart Grid Systems**” was delivered by Dr. S. Ganesan, Associate Professor, GCE, Salem on 17-02-2020. Prof. K. Raghukandhan, Dean, FEAT, presided over the function. The pre-final and final year UG and PG students attended the expert lecture and gave positive feedback about the lecture.



EEA OFFICE BEARERS' MEETING

Office bearers' meeting was held in the Department of Electrical Engineering at 12.15 pm on 18-02-2020 . HDEE discussed and advised various points regarding the academics and disciplinary activities, besides welcoming the office bearers.



SUBSTATION VISIT



Final Year EEE Students visited the Annamalainagar 33 / 11 kV Substation on 09-03-2020. Dr. B. Baskaran, Professor / EEE delivered a special lecture on **“Solar Panel”**. The lecture delivered has relevance with Power System Operation and Control. Both the visit and lecture helped the students in clearly understanding various computer control schemes adapted in substation automation and control.

INDUSTRIAL VISIT



Third Year Students of EEE attended a one day workshop on **“Enhancing the Efficiency of solar PV module system: Avenues & Methodologies”** conducted by Institution of Engineers (India), Neyveli Local Centre at Neyveli on 07-03-2020.

HANDS-ON TRAINING



The pre-final and final UG and PG students were given **“Hands on Training on MALAB”** by Prof. P. Aravindhababu, on 16-03-2020. The Chief Guest, Dr. M. V. Sriramachandrasekharan, Professor & Director in Centre for Research & Development, presided over this event. This event helped the students in learning the basics of MATLAB and its applications in solving various electrical engineering and design problems.

COVID-19 QUIZ COMPETITION

Annamalai University
Department of Electrical Engineering

EEE -WEB-QUIZ

CORONA DISCHARGE

STUDENTS OF ELECTRICAL
ENGINEERING & POWER
SYSTEMS CAN
PARTICIPATE

Event Initiator
Prof.Raghukandan.K
DEAN, FEAT

Organizers
Prof.P.Aravindhababu
Dr.V.Padmathilagam

No of Prizes : 3

Date 1.5.2020
11.00 am

STAY SAFE,
STAY HEALTHY.



An “**Online Quiz Competition**” was conducted for all the EEE students with a view of creating awareness about COVID-19 among the students, besides acknowledging and supporting Prime Minister’s “PAN India Light Switch Off Event” on 01-05-2020. More than 100 students participated the online quiz event.

Prize Winners

Students	Position
M. Balaji II Yr M.E. (PS)	1
KB. Swaminathan VI Sem B.E (EEE)	2

COVID-19 ESSAY COMPETITION

Annamalai University
Electrical Engineering
invites

from EEE and M.E (PS) Students.

Web-Essay Competition
Electricity Paramount during the lock down

EVENT DATE *6/5/2020
SUBMIT YOUR TWO PAGE ESSAY

Organizers
Prof.L.Lakshminarasimman
Dr.V.Padmathilagam.

An online Essay competition “**Electricity Paramount during the lockdown**” was conducted for the students of Electrical Engineering on 06-05-2020. Many students actively participated in this event. Based on the presentation, originality, English language and writing skills, the prize winner was selected.

Prize Winners

Name of the Students	Position
I. Anas Ahamed III Year BE (EEE)	First

ELECTRO SPORTS



The sports extravaganza “**Electro Sports**” was conducted for the students of Electrical Engineering during 20-22 Feb. 2020. The students participated various sports events like Athletics, Basket Ball, Badminton, Cricket and Kabadi. Yoga activity for EEE students was performed under the guidance of Mr. S. Girishkumar, Assistant Professor (on Deputation).

YOGA ACTIVITY



ACADEMIC ACHIEVEMENTS BY FACULTY

Number of B.E Projects Guided	: 18
Number of M.E Theses Guided	: 14
Number of PhDs Awarded	: 16

நண்பன்

என் கல்லூரி வாழ்க்கையில்
என்னை எழுதிய பேனா நீ தானடா.....!

திசை தெரியாமல் நின்ற என்னை
கை பிடித்து கூட்டிசென்றாயடா..!

பூக்களையும் இரசிக்க செய்தாய்..
வாழ்க்கையும் யோசிக்க செய்தாய்..!

பல கற்க வழி நின்றாய்....
சோகங்களில் என்றுமே துணை நின்றாய்..!

வாழ்க்கையை ஜெயிக்க வைப்பதற்கான
ஒரு உந்துகோள்யாக நின்றாய்...!

என் திறமையை கணித்து உலகிற்கு வெளிக்கொணர
முயற்சிக்கும் ஒரு ஜுவன் ஆகவும் நின்றாய்.....!

இதுவரை நான் பார்த்ததில்லை....
உன்னை விட ஓர் அழகான உலகத்தை...!
என்றும் மறையாத உறவாய்....
காவிய கல்வெட்டாய் என் இதயத்தில் நின்றாய்...!

இப்படிக்கு
உங்கள் நண்பன்....
மா.கௌதமன்
மூன்றாம் ஆண்டு
மின் மற்றும் மின்னணுவியல் துறை

ELECTRIC VEHICLES -A TROVE OF OPPORTUNITIES FOR ELECTRICAL ENGINEERS

Seethalakshmi B.
IV Sem. M.E (Power Systems)

Over the years, the exploitation and pollution of natural resources have created the need for renewable and environment-friendly products. One of such products is Electric Vehicles. Electric vehicles have seen unprecedented growth over the previous decade around the world.

Ramesh Rayudu, senior lecturer in Victoria University of Wellington, New Zealand, predicts that around 25% of transportation involving cars, motor bikes, scooters, cars trucks and autos in India will be electric by 2030. He adds that designing effective solutions for Electrical Vehicles is a future career builder for electrical engineers. In the next few years, employment growth is expected in most occupations in the EV industry, according to a study by the Centre for Entrepreneurship and Technology at the University of California, Berkeley.

Electric Vehicle Industry is a multi-disciplinary field and requires experts from different streams of engineering. Electrical engineers design, develop, test, and supervise the manufacture of electrical components. They are responsible for designing the electrical circuitry that allows a gas engine to charge the battery in a hybrid vehicle and distribute the electricity from the battery to the electric motor. Most of this effort is related to the distribution of power throughout the EV where batteries and motors operate at hundreds of volts. The other tasks which are linked to electrical stream includes working on motors, quality control, testing of battery packs, developing wiring harness for multi-fold functions in the EV charging solutions.

The Indian auto industry faces a talent crunch, as it gears up for the impending electric vehicle revolution, there just aren't enough engineers with expertise in the field, say executives and recruitment companies. Current demand is pegged at more than 5,000 engineers mostly in the electric and electronic disciplines which is likely quadruple over the next couple of years, according to a staffing company.

There are multiple resources available today, that one can use to up-skill or re-skill themselves and build a promising profile for a career in the EV domain. If the Electrical engineering students could develop the skills required in this field then this EV field is a trove of career opportunities for them.

BLOOMING RESEARCH AREAS IN ELECTRICAL ENGINEERING - UPDATES

*Naveenkumar Kaliyan
Research Scholar (EEE) (FT)*

In every second the world is changing, and Engineers are the ones behind the successful development and emerging technologies. Engineers must be critical yet creative, curious yet capable, as well as ready to handle the constantly changing world, engineers should develop the solution to the world's biggest technical issues. Today most engineering work involves the use of computers and it is common place to use computer-aided design programs when designing electrical systems. The some of the imminent research areas are discussed as following:

Energy : Energy research in the Electrical Engineering department spans the entire spectrum from microscopic to macroscopic aspects of energy and power generation, distribution, and management. Research is active in the creation of new devices for harvesting energy, in on-device energy management, in system wide algorithmics for energy management, and in large scale policy issues.

Control, Intelligent Systems, and Robotics: Control and Robotics at Electrical Engineering is concerned with the general problem of modelling systems and machines, and then making them respond appropriately to inputs. Optimization and mathematical techniques play a key role, especially as systems of interest grow in scale. Robotics is interpreted broadly to include mobile autonomous systems from millimeter-sized mobile robots to 3-meter rotor span helicopters, fixed autonomous systems for assembly, as well as human augmentation capabilities such as telepresence, and virtual reality. Providing robots with image understanding capabilities is one of the key research areas, as well as using computer vision to assist humans.

Information, Data, Network, and Communication Sciences: Research covers theory, simulation, and implementation. We study the fundamental problems in information and coding theory, communication, data science, network science, optimization, statistics, machine learning, distributed systems, economics, statistical signal processing, and stochastic control. The motivations are guided by societally important applications such as data centers, distributed storage and content delivery, peer-to-peer computing, social networks, control over wireless networks, cognitive radio, spectrum sharing, scheduling, privacy and security, incentive and mechanism design with resource constraints, sensor networks, transportation systems, hybrid systems, systems biology, many scholars do research in building fundamental blocks of large-scale communication and computing infrastructures.

Also, I suggest a few top research fields in Electrical Engineering are Electric Vehicles, Autonomous Driving, Connected Vehicles, Power system Integration of Microgrid, Vehicle to Grid Charging and Renewable Energy systems. I personally prefer a topic that would somehow make a positive impact on society when you complete the research work.

NATURE AND ITS SIGNIFICANCE ON ENGINEERING

Dr. P. Aravindhababu, Professor of EEE

The engineers have been taught to see the world as variety of objects that are collected, transformed, manufactured, transported, sold, used and finally thrown away, but the nature sees the entire universe and its galaxies, that include stars, earth, species, living organisms, plants, trees, etc. as a living expression of life, beauty and harmony. The entire universe and our world are considered to be alive and living because of their constant motion. The nature experiences, learns and evolves intelligence for enhancing its appearances, the evolutions of living organisms, intelligence of species etc. over millions of years. Such nature's intelligences are reflected in the regenerative powers of living organisms, healing mechanisms of wounds, the elegant shape of structures, migration of species, searching for food by species, and so on. The shape of pebbles, the structure of rocks and the composition of mountains are also the creation of natures' intelligence. The nature employs proportional relationships in its structures, shapes and colours of natures creations such as flowers, spiral galaxies, nautilus shells, the unfolding spiral of the human hand, shape of various organs of all living beings such as ear, nose, eyes, etc with a view of making them effective, efficient, beautiful and strong. Besides, the living species such as ants, bees, bacteria, birds, dragonflies and other living organisms do employ some kind intelligence in finding their food and protecting themselves from predators.

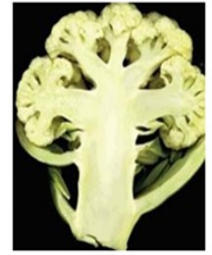


Fig.1 Model of cauliflower

Nature on its own tailors the shape, structure, and the life style of all living organisms and adopts to the continuously changing situation and environment, which can be inferred as a continuous learning phenomenon. For example, the plants have learned how to organize their branches at precise mathematical angles that permit each leaf to absorb maximum amount of sunlight. Similarly, each floret in a cauliflower is a model of the branch and each branch is a model of the entire cauliflower as in Fig.1. Plants and Trees follow the same harmonious pattern-growing activities because it enables them to integrate the part with the whole and to function in an efficient and elegant way. The organism grows and changes in a chambered nautilus representing a form of difference, but the shell unfolds following the same mathematical ratio, denoting a form of sameness. These mathematical relations enable the shell to grow in an optimal and elegant way as observed in Fig. 2.



Fig. 2 Chambered nautilus



Fig. 3 Shape of eggs

The tapered shape of eggs, as in Fig. 3, permits them to fit more securely inside the nest and keep one another warm, besides it is the ideal shape for an egg to be pushed out of a hen. If it were perfectly spherical, they would be more likely to roll out of a nest and break. The finger bones of human beings perfectly obey mathematical angles and ratios that permit the hand to perfectly coordinate themselves in opening and closing in an elegant and effective way as shown in Fig. 4. These kinds of harmony can be seen in the shape and structure of each parts such as limbs, heart, lungs, ear, nose, eyes, and other organs of all living organisms and other parts of the entire universe. It is obvious that nature has been a creator, learner, teacher and spectator of the



Fig. 4 Finger bones of human beings

entire universe. The researchers have started studying the behavior of various living species in developing various kinds nature inspired optimization algorithms such as genetic algorithm, bacterial foraging, ant colony optimization, artificial bee colony, dragonfly optimization, etc and applied in solving variety of real-world optimization problems in recent decades.

These nature inspired optimization algorithms have been found to yield better solutions than those of classical optimization techniques such as linear programming, non-linear programming, dynamic programming, integer programming, etc. and rule the present day researchers and the research. The situation of these days appears as if there is no research without these nature inspired algorithms. It is time for researchers to realize that reproduction is not only the function of nature's evolutionary pattern but it is a genius of creating, shaping, learning and educating each and every part of non-living and living organisms of the cosmos. Similar to behaviour of living organisms, it is time to study the shape and structure of living forms and nature, which indicate how nature's intelligence harmonizes the sameness and difference through mathematical proportion. The researchers must explore and study the nature's creations in all aspects and develop mathematical models of optimal structures and shapes of nature with a view of designing the shape and structure of electrical systems, equipments and other gadgets to possess efficient, resilient, strong and elegant features of nature.