K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ECE

ECE CHRONICLES

VOLUME 5 – ISSUE 1

State the Vision and Mission of the Department and Institute

Vision and Mission of the Institute

VISION

- To become a globally recognized Institution in Engineering Education, Research and Entrepreneurship.

MISSION

- Accomplish quality education through improved teaching learning process.
- Enrich technical skills with state of the art laboratories and facilities.
- Enhance research and entrepreneurship activities to meet the industrial and societal needs.

Vision and Mission statements of the Department

VISION

- To produce globally competitive Electronics and Communication Engineers and Entrepreneurs with ethical values.

MISSION

- Impart quality education through student centric teaching and learning process.
- Equip students with Industry driven skills by providing excellent Infrastructure and continuous interaction with academia and Industry.
- Empower students towards research, entrepreneurship and lifelong learning to meet societal needs.

State the Program Educational Objectives (PEOs)

PEOs of ECE Department

PEO	Keywords	Description
PEO 1	**Core Competency**	Graduates will have strong foundation in Engineering, Science and Technology for a successful career in Electronics and Communication Engineering.
PEO 2	**Professionalism**	Graduates will have effective communication skills, interpersonal skills and ethical values to exhibit professionalism in multidisciplinary environment.
PEO 3	**Higher studies and Entrepreneurship**	Graduates will pursue professional development through higher studies and have entrepreneurial attitude to address technological changes and societal needs.

ABOUT THE DEPARTMENT

The Department of Electronics and Communication with its cohesive team of faculty members, offers a sound programme at the UG level. Through curriculum, projects, forum and various clubs we meet the growing demands and the changing trends of the software industry and research laboratories.

The department of ECE is equipped with the best of resources to enrich the bloodline of the department ensuring high quality education to the students. The department has spacious laboratories, class rooms, staff rooms, and well stacked department library. The department has more than **120 computers** with the state of the art facilities. All the computers are installed with latest software supporting the recent advancements in the real time applications. The list of software includes MATLAB, Xilinx, Microwind, NetSim, NS2, OPNET, ModelSim, Multisim etc. The laboratories are fully equipped with latest equipment.

All the faculty and students are encouraged and sponsored to attend Winter / Summer programmes to upgrade & update the current trends in technological advancements.

HIGHER EDUCATION IN INDIA

Development of any nation solely depends on the quality of human resources and good human resource is produced through quality education. Education provides people with an opportunity to reflect on the social, cultural, moral, economic, and spiritual issues and contributes towards the development through propagation of specialized knowledge and skills.

India, even after 70 years of its independence, is far away from the goal of universal literacy. The fact that India's higher education system is churning out millions of graduates who are employable speaks of the need to improve the quality of education in the country. However, on a positive note, India is engaged in the use of higher education as a powerful tool to build a knowledge-based information society of the 21st Century. Indian professionals are considered among the best in the world and are in great demand. This signifies the inherent strength of the Indian educational system.

Going Back to the Roots

Education in India dates back to its early civilization time where teaching and learning process revolved around the 'Gurukul System'. It was a residential concept wherein the students were educated under the guidance of a "Guru" in different areas of religion, philosophy and science. Historians speculate that these centers had a remarkable resemblance to the European medieval universities that came up much later.

The initial education system in India gradually got obscured due to subsequent invasions and disorder in the country. In the early modern age, the Islamic influences enriched the traditional learning centers and brought in the disciplines of Geography, Administration, Law, and Arabic Mathematics to India.

A major change in the design of higher education was brought by the European rulers. The British established the formal system of higher education focused on languages, literature, history, and philosophy. These learning centers were focused on generating English-speaking working-class people for the British administrative services, army and trade. The British model of University system, inspired by the University of London, continued to expand across India, leading to a rising number of higher learning centers by 1947.

The higher education system in India grew rapidly after independence. By 1980, there were 132 universities and 4738 colleges, enrolling around five per cent of the eligible age group in higher education. The number of institutions in India is four times more than the number of institutions both in the United States and the entire Europe.

Present-day Scenario

India is dashing headlong towards economic success and modernization. It is counting on high-tech industries, such as IT and Biotechnology, to propel the nation to prosperity. Currently, Indian higher education system has many favorable factors to its advantage. India has a large higher education sector, the third largest in the world. It uses English as a principal language of higher education and research and has an extensive academic tradition. Academic liberty is appreciated and there are a small number of high-quality institutions that can form the foundation of quality education. The fact that State Government, rather than Central Government, maneuvers vital responsibility for higher education, creates a rather cumbersome structure, but the system allows for a diversity of policies and approaches.

Yet the weakness clearly outweighs the strengths. India educates approximately 10 per cent of its youths in higher education. Even though, none of its universities occupy a solid position at the top. A few of the best universities have some excellent departments and centers, and there are a small number of outstanding undergraduate colleges.

UGC recently released a report describing the current scenario of the Indian Higher Education System. It shows that despite the growing numbers of colleges and enrollments, it is not adequate enough to cater to the educational needs of the increasing young population.

Measures to Improve the Quality of Higher Education

One of the most efficient ways of tackling the problem of poor educational quality is by sharing the resources between private and public schools. It is vital to remember that the quality of education is directly linked to the resources available and it is important for the government to improve the resource allocation to bring about qualitative changes in the field of education. To enable the higher education sector to take on the emerging competition from the Asian countries, there is a need to loosen the hold of the government over the higher educational institutions.

The Government should undertake the following measures to improve the quality of higher education:

Encouraging Individuality

Albert Einstein once said, "*Everyone's a genius. But if you judge a fish on its ability to climb a tree, it will live its whole life believing that it is stupid*." With the difference in ability, aptitude and interest of a student and the societal demands of expertise and specialization, the standardized testing and curriculum does not give much scope for the students to relate to the world of work and wages. Creativity that has nurtured our influences in almost all of life's passions and interests drops dead at standardized tests. The current educational system expects conformity and rewards predictable behaviors, both intellectually and emotionally.

Tech-Savvy Methods of Teaching

The new technologies offer vast opportunities for progress in all walks of life. The focus should not be on installing hardware but creating new, high-quality content such as intelligent teaching systems and tools that will help students to hone basic skills like reading and mathematics, and developing content in multiple Indian languages. Free high-speed internet connections can be provided to all schools through a simple scheme by which the government could reimburse internet service providers directly.

Making the Curriculum Dynamic

Currently, the curriculum in higher education is outdated in most cases. It is stale, dogmatic and teaches things that the world has moved on with. To infuse dynamism, the curriculum needs to be progressive in nature. Students need to be given the option of doing multiple courses. The spirit of curriculum should be projects-driven and not exams-driven.

High-Tech Libraries

The university libraries have a very good collection of books, but they are all in mess. A library must be online and helpful for serious study. Indian universities should concentrate more on providing quality education which is equivalent to that of the global standards. Instituting this notion in the education system will be of great help as anyone will be able to

access the books and required study materials from anywhere with amazing effortlessness. Moreover, the E-libraries can be updated swiftly with new material and books.

The Power of Alumni

One of the most unappreciated potentials in Indian education system is the power of the Alumni. Excluding the IIT's and a few other top institutes, the concept of Alumni networking is non-existent. Once you launch a sincere network which is transparent, it would give the avenue as well as the confidence for the alumni to contribute in terms of money or academic expertise.

Keeping in perspective the rapid changes taking place in the society, higher education should possess various qualities like inculcation of confidence and ability to take responsibility and prepare students to be effective within the circumstances of their lives and work, and promote the pursuit of excellence in development and application of knowledge and skills.
Government should take certain appropriate policy measures to improve the education system. India, today, is one of the fastest developing countries of the world. And hence, needs an educational system that is modern, liberal and can adapt to the changing needs of a changing society, a changing economy and a changing world.

- Vignesh . R / IV year

HR INTERVIEW TIPS

Study these essential tips for correct gestures and ethics during a job interview:

1. **Once you meet your interviewer, greet with a FIRM handshake.** This shows confidence and gives off a sign of top-quality professionalism. However, do not give *too* strong of a handshake that hurts your interviewer.
2. **When sitting, cross your ankles and keep your hands on your lap.** Do not cross your legs, lean over on the table, or cross your arms. Sit up straight, and have presence!
3. **Maintain eye contact and nod your head often.** This shows that you're paying full attention and giving your all.

   Although managers will also have their own creative questions that you may not find here, the better you prepare for common ones, the more confident you will be to answer any other question coming at you.

   First, follow these rules:

   Interview Rule #1: Do NOT answer a question with "I'm hard-working and dedicated."

   Of course, we are *all* "hard-working and dedicated." But employers need *elaboration*. What makes you work hard? What motivates you? How are you different?

   Interview Rule #2: Avoid saying too much "um", "like", "uh", and "you know".

   Think of how you would communicate with a salesperson... Wouldn't you want them to sound confident and absolutely sure of what they're selling to you. So just like in a job interview, sell yourself and be positive, while also not sounding overly confident. you want to sound confident and sell yourself.

4. **When you are asked if you have any questions, definitely ask!** Show genuine interest and that you want to learn more. Prepare your own questions to ask here.

You always want to show interest by asking your own questions at the end of a job interview. Here are some top interview questions to ask the employer:

- What are the challenges in this position?

- How many employees work for this company and department?
- How is performance evaluated on the job?
- How would you describe a typical day on the job?
- How does the orientation or training process go on the first day?

- S.Priyadharshni / IV Year

DISASTER MANAGEMENT NETWORK SYSTEM

Wireless network is effective method because it is quickly reconstruct network than wired network. Low-frequency radio communication is suitable for long distance communications and lower influence of obstacles such as trees. But it is not suitable for the transfer of multimedia content and large volume of contents. IEEE802.11b/g has spread to many houses, and these devices could be interfere to Emergent Communication System like Disaster Information Network. In the actual disaster case, there is certain possibility that electric power line is damaged and power energy cannot be supplied to those communication network devices. Disaster Information System needs a robust Never Die Network (NDN) which will be unaffected by any changes in environment after severe disaster. We introduce the Combination of Cognitive Wireless Network (CWN) and Satellite System for Disaster Information System. CWN is consisted of combining with multiple LANs with different transmission characteristics such as IEEE802.11b,g,j,n, IEEE802.16, and cellular network. Satellite System provides the function of checking wireless nodes' alive and their locations, reconstructing the topology, alternating data transmission if there is no possible activate nodes, and so on.

User policy and network parameters are observed at the observation stage. At this stage, we set various policies for video, VoIP, text, disaster applications, and so on. Network parameters like throughput, latency, jitter, packet error rate, bit error rate, and electric field strength are continuously measured and also used for the calculation of AHP. In the decision stage, the results of AHP for each communication link are compared and the proper link is selected. when the results are changed. In the acting stage, the selected link or route is applied for proposed network and then simulation is carried out for proposed methods.

Parameters like observed network conditions or AHP results are transferred by Satellite System as communication link. The message of prefer link or route is sent through link, and a reconfiguration procedure is acted at both sender and receiver nodes. Location of every node is also collected by link 0. Secondly, wireless nodes are checked whether nodes are destroyed or not after disaster through Satellite System. Also, the system makes alternative data transmission if there is no route after disaster. Finally, alternative wireless network topology is committed for reconstruction of network.

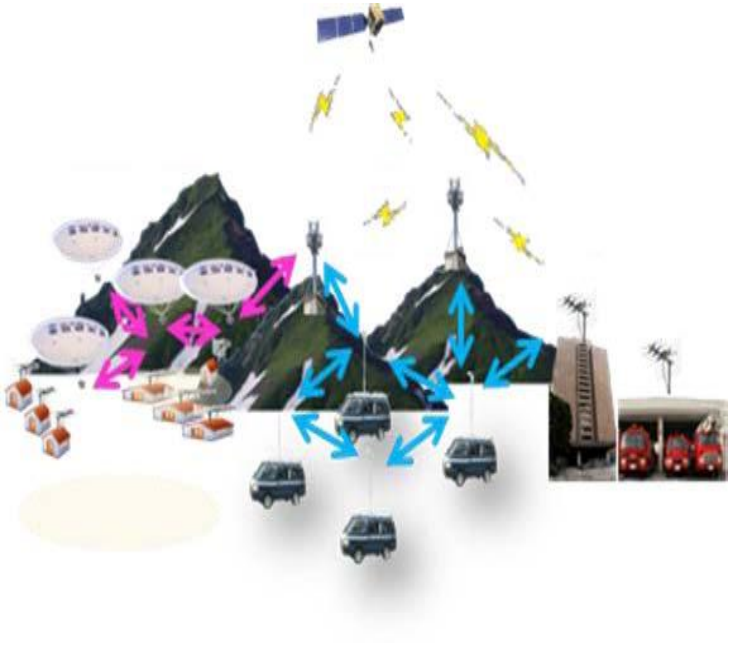

Fig 1 : Disaster Information Network

-Sharumathi . S /III year

Facial Recognition System

Face Recognition System for verification process and enhancing the security in the banking region. The rise of technology into India has brought into force many type of equipment that aim at more customer satisfaction.ATM is one such machine which made money transaction easy for customers to the bank. But it has both advantages and disadvantages. Current ATMs make use of naught more than an access card and PIN for uniqueness confirmation. This has ATM Using Face Recognition System demonstrate the way to a lot of fake attempt and mistreatment through card theft, PIN theft, stealing and hacking of customers account details and other parts of security. This process would effectively become details and other part of security. This process would effectively become an exercise in pattern matching, which would not require a great deal of time.

-Yasodha.P/III year

MEMS Sensor Working and Its Applications

The term MEMS stands for micro-electro-mechanical systems. These are a set of devices, and the characterization of these devices can be done by their tiny size & the designing mode. The designing of these sensors can be done with the 1- 100-micrometer components. These devices can differ from small structures to very difficult electromechanical systems with numerous moving elements beneath the control of incorporated micro-electronics. Usually, these sensors include mechanical micro-actuators, micro-structures, micro-electronics, and micro-sensors in one package. This article discusses what is a MEMS sensor, working principle, advantages and it's applications

MEMS Sensor

MEMS are low-cost, and high accuracy inertial sensors and these are used to serve an extensive range of industrial applications. This sensor uses a chip-based technology namely micro-electro-mechanical-system. These sensors are used to detect as well as measure the external stimulus like pressure, after that it responds to the pressure which is measured pressure with the help of some mechanical actions. The best examples of this mainly include revolving of a motor for compensating the pressure change

The MEMS IC fabrication can be done with silicon, whereby slight material layers are placed otherwise fixed onto a Si substrate. After that selectively fixed away to leave microscopic 3D structures like diaphragms, beams, levers, springs, and gears.

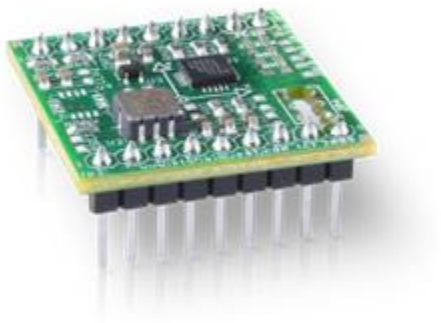

Fig 1 : MEMS IC

The MEMS fabrication needs many techniques which are used to construct other semiconductor circuits like oxidation process, diffusion process, ion implantation process,

low-pressure chemical vapor deposition process, sputtering, etc. Additionally, these sensors use a particular process like micromachining.

MEMS Sensor Working Principle

Whenever the tilt is applied to the MEMS sensor, then a balanced mass makes a difference within the electric potential. This can be measured like a change within capacitance. Then that signal can be changed to create a stable output signal in digital, 4-20mA or VDC.

These sensors are fine solutions to some applications which do not demand the maximum accuracy like industrial automation, position control, roll, and pitch measurement, and platform leveling.

Types of MEMS

The common types of MEMS sensors are obtainable within the market are

- MEMS accelerometers
- MEMS gyroscopes
- MEMS pressure sensors
- MEMS magnetic field sensors

MEMS Advantages

The advantages of MEMS sensor include the following.

- The manufacturing of MEMS is semiconductor IC manufacturing like low-cost mass invention, consistency is also essential to MEMS devices.
- The size of sensor sub-components will be within 1 to 100 micrometers range as well as the MEMS device size will determine 20 micro-meter to a millimeter range.
- Power consumption is very low.
- Simple to incorporate into systems or change
- The thermal constant is small
- These can be highly opposed to shock, radiation, and vibration.
- Better thermal development tolerance
- Parallelism

Applications of MEMS

MEMS sensors are used in different domains which include automotive, consumer, industrial, military, biotechnology, space exploration, and commercial purposes which include inkjet printers, accelerometers within modern cars, consumer electronics, in personal computers, etc. The best examples of MEMS devices mainly include adaptive optics, optical cross-connects, airbag accelerometers, mirror arrays for TVs & displays, steerable micromirrors, RF MEMS devices, not reusable medical devices, etc.

Thus, this is all about the MEMS sensor. The main disadvantage of these sensors is, even though the making cost for each part is extremely low. But there is a huge investment associated while designing, manufacturing, and succeeding MEMS-based product.

-Yogesh.S / IV Year

IMPORTANT WEBSITES

http://www.engineering.com/

http://www.efunda.com/home.cfm

http://www.engineeringtoolbox.com/

http://www.howstuffworks.com/

http://www.eng-tips.com/

http://www.discoverengineering.org/

http://www.fun-engineering.net/

http://www.manufacturingiscool.com/

http://pbskids.org/designsquad/

http://www.futuresinengineering.com/

http://www.engineeryourlife.org/

https://www.indiabix.com/

www.knowafest.com

http://www.ece.org/

http://www.mathworks.in/products/matlab/

http://www.opencircuitdesign.com

http://www.nptel.iitm.ac.in

http://www.engineering.carrers360

COMPANIES FOR EC ENGINEERS

- ISRO -Indian Space Research Organization
- BEL -Bharat Electronics Limited
- ECIL -Electronics Corporation India Limited
- DRDO -Defense Research and Development Organization
- BSNL JTO -Bharat Sanchar Nigam Limited Junior Telecom Officers
- SAIL -Steel Authority of India Limited
- GAIL -Gas Authority of India Limited
- HAL -Hindustan Aeronautics Limited
- NTPC -National Thermal Power Corporation
- ONGC -Oil and Natural gas Commission Limited
- Bharat Sanchar Nigam Ltd (BSNL)
- CMC Ltd
- Amara Raja Batteries Ltd
- Bartronics India Ltd
- Cranes Software International Ltd
- Datamatics Global Services
- Dell India Private Ltd
- Delta Energy Systems (India) Pvt Ltd
- Educomp Solutions Ltd
- EMC India
- Eveready
- Bharthi Airtel Ltd
- Industries India Ltd
- Exide Industries Ltd
- Bharthi Teletech

Editorial Board

It is with great pride and privilege that we place before you the lovely edition of **ECE CHRONICLE – Innovation illustrated**. A small beginning made few years ago, has now blossomed into a superfine structure. It has given vent to the creative talent of the students and faculty members alike. We have made an earnest attempt to project the best possible as to make this issue an informative and interesting one. We look forward to your chronicle support and guidance in future also to bring out **ECE CHRONICLE – Innovation illustrated in an excellent way.**

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Program Outcome for Electronics and Communication Engineering

PO 1: Engineering Knowledge: Apply knowledge of mathematics, science and engineering principles to solve problems in the domain of Electronics and Communication Engineering.

PO 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.

PO 3: Design/Development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 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.

PO 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.

PO 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.

PO 7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge and need for sustainable development.

PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 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.

PO 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 leader in a team, to manage projects and in multidisciplinary environments.

PO 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 (PSO)

PSO1: Embedded system design: Graduates will be able to analyze, design, construct and test electronic and embedded systems for desired specification.

PSO2 : Simulation Tools: Graduates will be able to solve emerging real world problems using suitable hardware and software tools.