K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ECE

ECE CHRONICLES

VOLUME 5 – ISSUE 2

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.

Yoga – A Historical Perspective

There is a broad variety of yoga schools, practices, and goals in Hinduism, Buddhism, and Jainism. The term "Yoga" in the Western world often denotes a modern form of hatha yoga and yoga as exercise, consisting largely of the postures or asanas.

The practice of yoga has been thought to date back to pre-vedic Indian traditions; possibly in the Indus valley civilization around 3000 BCE. Yoga is mentioned in the Rigveda, and also referenced in the Upanishads. Although, yoga most likely developed as a systematic study around the 5th and 6th centuries BCE, in ancient India's ascetic and śramaṇa movements. The chronology of earliest texts describing yoga-practices is unclear, varyingly credited to the Upanishads. The Yoga Sutras of Patanjali date from the 2nd century BCE, and gained prominence in the west in the 20th century after being first introduced by Swami Vivekananda. Hatha yoga texts began to emerge sometime between the 9th and 11th century with origins in tantra.

Yoga gurus from India later introduced yoga to the West, following the success of Swami Vivekananda in the late 19th and early 20th century with his adaptation of yoga tradition, excluding asanas. Outside India, it has developed into a posture-based physical fitness, stress-relief and relaxation technique. Yoga in Indian traditions, however, is more than physical exercise; it has a meditative and spiritual core. One of the six major orthodox schools of Hinduism is also called Yoga, which has its own epistemology, ontology and metaphysics, and is closely related to Hindu Samkhya philosophy.

The ultimate goal of Yoga is Moksha (liberation), although the exact form this takes depends on the philosophical or theological system with which it is conjugated.

In the classical Astanga yoga system, the ultimate goal of yoga practice is to achieve the state of Samadhi and abide in that state as pure awareness.

According to Jacobsen, Yoga has five principal traditional meanings:

1. A disciplined method for attaining a goal.
2. Techniques of controlling the body and the mind.
3. A name of a school or system of philosophy (darśana).
4. With prefixes such as "hatha-, mantra-, and laya-, traditions specialising in particular techniques of yoga.
5. The goal of Yoga practice.

According to David Gordon White, from the 5th century CE onward, the core principles of "yoga" were more or less in place, and variations of these principles developed in various forms over time

1. A meditative means of discovering dysfunctional perception and cognition, as well as overcoming it to release any suffering, find inner peace and salvation. Illustration of this principle is found in Hindu texts such as the Bhagavad Gita and Yogasutras, in a number of Buddhist Mahāyāna works, as well as Jain texts.
2. The raising and expansion of consciousness from oneself to being coextensive with everyone and everything. These are discussed in sources such as in Hinduism Vedic literature and its Epic Mahābhārata, Jainism Praśamaratiprakarana, and Buddhist Nikaya texts.
3. A path to omniscience and enlightened consciousness enabling one to comprehend the impermanent (illusive, delusive) and permanent (true, transcendent) reality. Examples of this are found in Hinduism Nyaya and Vaisesika school texts as well as Buddhism Mādhyamaka texts, but in different ways.
4. A technique for entering into other bodies, generating multiple bodies, and the attainment of other supernatural accomplishments. These are, states White, described in Tantric literature of Hinduism and Buddhism, as well as the Buddhist Sāmaññaphalasutta. James Mallinson, however, disagrees and suggests that such fringe practices are far removed from the mainstream Yoga's goal as meditation-driven means to liberation in Indian religions.

- Gowtham . M / IV year

INTERVIEW TIPS

1. Start by researching the company and your interviewers. Understanding key information about the company you're interviewing with can help you go into your interview with confidence. Using the company's website, social media posts and recent press releases will provide a solid understanding of the company's goals and how your background makes you a great fit. Review our Complete Guide to Researching a Company.

2. Practice your answers to common interview questions. Prepare your answer to the common question: "Tell me about yourself, and why are you interested in this role with our company?" The idea is to quickly communicate who you are and what value you will bring to the company and the role—it's your personal elevator pitch. Review our guide to answering Top Interview Questions.

Tip: You should come prepared to discuss your salary expectations. If you're unsure what salary is appropriate to ask for, visit Indeed's Salary Calculator for a free, personalized pay range based on your location, industry and experience.

3. Reread the job description. You may want to print it out and begin underlining specific skills the employer is looking for. Think about examples from your past and current work that align with these requirements.

4. Use the STAR method in answering questions. Prepare to be asked about times in the past when you used a specific skill and use the STAR method to tell stories with a clear Situation, Task, Action and Result.

5. Recruit a friend to practice answering questions. Actually practicing your answers out loud is an incredibly effective way to prepare. Say them to yourself or ask a friend to help run through questions and answers. You'll find you gain confidence as you get used to saying the words.

6. Prepare a list of references. Your interviewers might require you to submit a list of references before or after your interview. Having a reference list prepared ahead of time can help you quickly complete this step to move forward in the hiring process.

7. Be prepared with examples of your work. During the interview, you will likely be asked about specific work you've completed in relation to the position. After reviewing the job

description, think of work you've done in past jobs, clubs or volunteer positions that show you have experience and success doing the work they require.

8. Prepare smart questions for your interviewers. Interviews are a two-way street. Employers expect you to ask questions: they want to know that you're thinking seriously about what it would be like to work there. Here are some questions you may want to consider asking your interviewers:

- S.Priyadharshni / IV Year

ENERGY OPTIMIZATION OF WIRELESS SENSOR NETWORKS

Wireless sensor is a consolidated technology with high potential in the Internet of Things. However, some open issues must be tackled in order to leverage the whole potential of this technology. One of the challenges is the energy consumption. Many algorithms have been proposed for saving energy. However these approaches use a mono-objective evaluation and the contradiction between optimization parameters values is not considered. Besides these approaches don't offer a unique solution. This paper describes MOR4WSN an algorithm based in NSGA-II for selecting the best sensor distribution as well as a mechanism for optimization of results. Experimental evaluation shows promising results in terms of lifetime maximization.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.

-Santhiya. T /III year

IOT IN HOME AUTOMATION

Today in the headway of Automation innovation, life is getting simpler and less demanding in all spheres. Home automation is a modern technology that modifies your home to perform different sets of task automatically. Today Automatic frameworks are being favored over manual frameworks. No wonders, home automation in India is already the buzz word, especially as the wave of second generation home owners grows, they want more than shelter, water, and electricity. The first and most obvious advantage of Smart Homes is comfort and convenience, as more gadgets can deal with more operations (lighting, temperature, and so on) which in turn frees up the resident to perform other tasks. Smart homes filled with connected products are loaded with possibilities to make our lives easier, more convenient, and more comfortable. There is no shortage of possibilities for smart home IoT devices as home automation seems to be the wave of the future. The requirement for Office and Home automation arises due to the advent of IoT, in a big way in homes and office space. The smart home/office gadgets interact, seamlessly and securely; control, monitor and improve accessibility, from anywhere across the globe. These smart automation devices happen to have an interface with IoT. IT automation will be the key to bridging the gap between human limitations and technology's capabilities. With automation, data can be instantly collected and seamlessly passed between devices as it's simultaneously analyzed. Home automation is an appealing context for the Internet of Things (IoT), by connecting the IP gateway directly to the Internet or through a home/residential gateway; this system can be managed remotely using a PC, Smart phone, Tablet or other devices

The IoT based Home Automation will enable the user to use a Home Automation System based on Internet of Things (IoT). The modern homes are automated through the internet and the home appliances are controlled. The user commands over the internet will be obtained by the Wi-Fi modems. The Microcontroller has an interface with this modem. The system status is displayed through the LCD display, along with the system data. This is a typical IoT based Home Automation system, for controlling all your home appliances. The smart home market is taking off as IoT device prices come down and the general public comes to understand the benefits of these products. And from smart homes, the next logical step is smart cities, which would take the IoT to the next level. And yet, smart homes are just one small part of our daily lives that the Internet of Things will transform in the coming years.

We have already witnessed some early commercial success in the IoT industry where today, everyone is talking about Internet of Things which is the "next big" thing in the world of technology. The prospect of 30 billion objects connected to the Internet by the year 2020 is staggering, as the opportunities for new lines of service and new business models grow out of this realm. IoT is based on the inclusion of devices in the world of connected environments. The devices are embedded and connected, based on a unique identity. The IoT devices in Home Automation have the maximum applications in energy. The home heating devices are able to control the temperature with the devices like laptops, tablets or smart phones and all of these appliances, systems, and devices contain sensors that connect them to a network. This is where IoT comes into place, and makes it such an integral part of the home automation. With the help of IoT technology, you can control devices as and when you want.

The beauty of the Home Automation system lies in the fact that the settings are manageable from your smart phones and other remote-control devices. Smart home IoT devices can help reduce costs and conserve energy. The Home Automation segment includes smart lighting, smart TVs and other appliances. Wearable's (Smart Watch, fitness brands, smart headphones, smart clothing) are also expected to witness the growth in the future. IoT is really the secret that makes this whole system work. Today in India, nearly 22.5 per cent of the consumers surveyed were familiar with the concept of IoT, with maximum awareness seen in the 36-55 age group which clearly indicates that there is immense opportunity for increased adoption of such technologies. The future of the Home automation market will happen with few key upgradations in the Automation technology. For example, Wireless Automation solutions as well as lowering of price points as the market begins to accept Home automation usage in larger volumes. With an increased internet penetration and data usage, the connected devices segment is expected to witness a huge growth by 2020. Home Automation in India is creating big opportunities, not only for Indian automation companies, but also for foreign companies. The rapid development of home-based automations, along with M2M (machine-to-machine) communications will continue to create billions of new connected objects over the next 5 years and beyond.

.

-Sharumathi.S / III year

NEMS Sensor Working and Its Applications

Nanoelectromechanical systems (NEMS) are a class of devices integrating electrical and mechanical functionality on the nanoscale. NEMS form the next logical miniaturization step from so-called microelectromechanical systems, or MEMS devices. NEMS typically integrate transistor-like nanoelectronics with mechanical actuators, pumps, or motors, and may thereby form physical, biological, and chemical sensors. The name derives from typical device dimensions in the nanometer range, leading to low mass, high mechanical resonance frequencies, potentially large quantum mechanical effects such as zero point motion, and a high surface-to-volume ratio useful for surface-based sensing mechanisms. Applications include accelerometers and sensors to detect chemical substances in the air.MEMS Sensor

Fig 1 : NEMS IC

The NEMS 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.

NEMS Sensor Working Principle

Whenever the tilt is applied to the NEMS 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.

-SRINIVASAN. A / III Year

MARS ORBITER MISSION

Marking India's first venture into the interplanetary space, MOM will explore and observe Mars surface features, morphology, mineralogy and the Martian atmosphere. Further, a specific search for methane in the Martian atmosphere will provide information about the possibility or the past existence of life on the planet.

The enormous distances involved in interplanetary missions present a demanding challenge; developing and mastering the technologies essential for these missions will open endless possibilities for space exploration. After leaving Earth, the Orbiter will have to endure the Interplanetary space for 300 days before Mars capture. Apart from deep space communications and navigation-guidance-control capabilities, the mission will require autonomy at the spacecraft end to handle contingencies.

Once India decided to go to Mars, ISRO had no time to lose as the nearest launch window was only a few months away and it could not afford to lose the chance, given the next launch would present itself after over 780 days, in 2016. Thus, mission planning, manufacturing the spacecraft and the launch vehicle and readying the support systems took place swiftly.

- DHAANU.S / II 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.**

Principal		Dr.M.Venkatesan
HOD/ECE		Dr.R.Nandakumar
Association Head		Mr. M.V.Mahesh, AP/ECE
Editor		Mr.Divakaran., AP/ECE
Associate Editors	***Final Year***	Mr.Ananth
		Ms.Illakiya
		Mr.R.Vignesh
		Mr.Syed salman
	Pre-Final Year	Ms.Sivaranjani
		Ms.Alka
		Mr.RubanPrasad
		Mr.Naveen
	Second Year	Mr.Krishnan
		Mr.Thulasiraman
		Ms.Joyprincy

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.