

BITS & BYTES

ECE DEPARTMENT

VOLUME-1
JANUARY – JUNE 2023

VISION

To emerge as a pioneer in the field of Electronics and Communication Engineering, through excellence in technical education and research.

MISSION

The Department of Electronics and Communication Engineering shall

- Provide a transformative educational experience focusing on disciplinary knowledge, problem solving techniques and innovative projects.
- Excel in research and promote Industry-Academia interaction.
- Inculcate entrepreneurial traits in the student community, by fostering managerial and leadership qualities.

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MESSAGE FROM MANAGEMENT



Sri. R. Rajagopal Naidu
Hon. President

I feel very proud to see the good work being done at the Electronics and Communication Department of KSSEM. At Kammavari Sangham Group of Institutions we strongly believe in providing a holistic education for the all round development of our students and here is the proof for all this. We believe in creating a good learning environment so that the students evolve into highly enviable professionals.

I congratulate the staff and students for their efforts in showcasing the activities they had during the previous term and wish them the very best in all their academic endeavors.

I am very glad to see the excellent presentation of the spectrum of activities that the Department of Electronics and Communication at KSSEM has arranged during the previous academic term. These activities give a good depth of knowledge and practical exposure to make our students better Engineers. The commitment shown by the faculty to arrange these co-curricular and extra-curricular activities is highly commendable. I would like to reiterate the Management's support for all the good work that is being done in the Department.

I take this opportunity to congratulate the staff and students for their wonderful efforts in showcasing their activities and projecting their department in a very nice manner.



Sri. R. Leela Shankar Rao
Hon. Secretary

I am very happy to see this News Letter brought out by the Department of Electronics and Communication at KSSEM. We at KSGI are totally committed to give maximum value addition to our students in terms of learning experiences and we encourage all our departments to arrange a lot of co-curricular activities that add value. I am happy to see the various opportunities that this department has offered to its students.

I congratulate the staff and students of the Department of Electronics and Communication for all their good work in bringing out this News Letter. I wish them the very best in all their future academic endeavors.



Sri. T. Neerajakshulu
Hon. Treasurer

I am delighted that the Department of Electronics and Communication at KSSEM is bringing out the First Volume of its NEWS LETTER and the Editorial Team is deeply engrossed in portraying all the activities held during the last academic year. Along with the regular teaching learning activity the department is engaged in creating a lot of other learning opportunities that will expose the students to various new fields and encourages the students acquire new skill sets. I whole heartedly congratulate the entire team of staff and students for all their efforts in keeping the flag of KSSEM high and wish them the very best in all their academic endeavors.



Dr.K V A Balaji
CEO,KSGI



DR. K. Rama Narasimha
Principal / Director

I am happy to note that the Department of Electronics & Communication Engineering of KSSEM is bringing out the first volume of its newsletter BITS & BYTES. I have gone through the content of the news letter. I am thrilled to see few of the coverage like 'Hot Topic' and 'Alumni Corner'. The newsletter is also highlighting the different activities of the Department. The efforts of the editorial team are really commendable. I congratulate the entire editorial team and the Department for their efforts. I wish Good Luck to the newsletter.

It gives me great pleasure to present this volume of the ECE Department newsletter, "Bits & Bytes". This newsletter serves as a valuable platform for us to come together, share achievements, highlight the activities, and celebrate the collective successes of our department. I would like to congratulate all the achievers in various activities, as well as the newsletter Editorial team, for having brought this newsletter to life. Wish you all the very best!



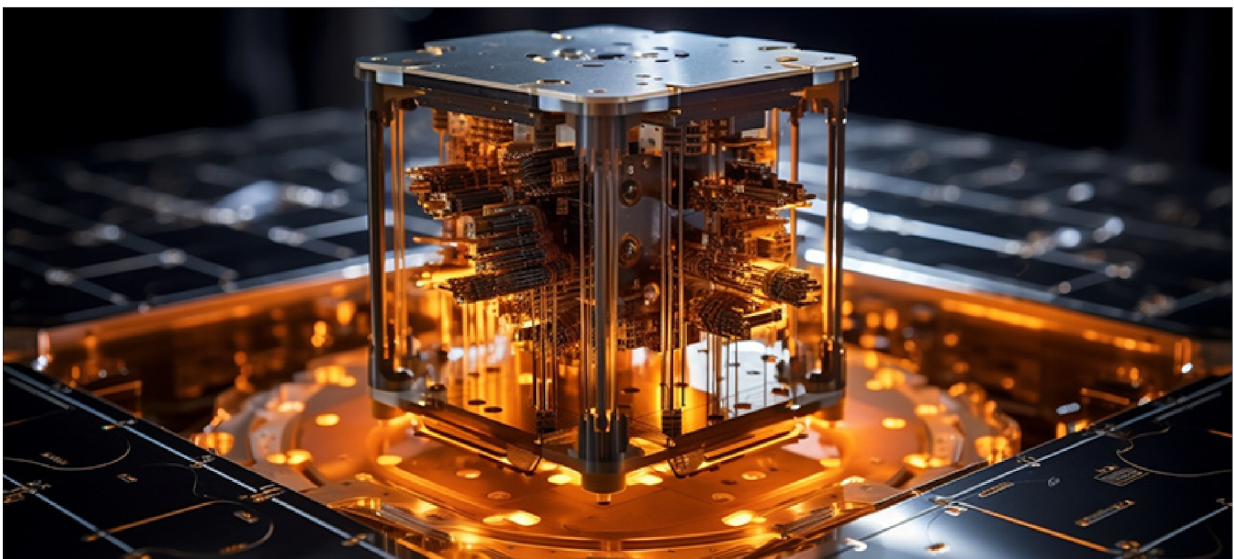
Dr. K Senthil Babu
Professor & Head

HOT TOPIC!

QUANTUM COMPUTING

Quantum computing is a revolutionary approach to computation that leverages the principles of quantum mechanics to perform calculations at speeds exponentially faster than classical computers. Unlike classical bits, which represent either a 0 or a 1, quantum bits, or qubits, can exist in multiple states simultaneously, thanks to a phenomenon called superposition. This allows quantum computers to explore numerous possibilities in parallel, dramatically increasing their processing power for certain types of problems. Additionally, entanglement, another quantum property, enables qubits to be correlated in a way that the state of one qubit is dependent on the state of another, even when separated by large distances.

Quantum computing holds immense potential for solving complex problems in fields such as cryptography, optimization, and drug discovery that are currently intractable for classical computers. However, building and maintaining stable quantum systems remain significant challenges, and researchers continue to explore ways to harness the full power of quantum mechanics for practical applications.



ALUMNI CORNER



MR. RAVITEJA ANANTHA (GRADUATING CLASS OF 2014)

Principal ML Scientist and Tech Lead,
AI/ML at Apple
Formerly Deep Learning R&D Engineer,
Bloomberg
MS in AI (New York University);
Executive MBA in General Management
& Innovation (sponsored by Apple),
Harvard University.

What made you choose ECE?

Torn between the sleek beauty of software and the tangible magic of electronics, I couldn't decide my professional calling. The Electronics and Communications program offered a compelling balance, promising an introduction to both low-level coding (microcontrollers) and high-level languages (C/C++).

However, it was the enthralling elective on Artificial Neural Networks, that truly ignited a spark. This course unlocked the mysteries of deep learning – this fascinating realm where machines could learn to recognize patterns, make predictions, and even create. That pivotal choice now sits at the heart of my career as a Principal ML Scientist at Apple.

It not only equipped me with good foundational skills but also opened doors to exciting opportunities, solidifying my passion for using technology to build features (FaceID, Siri, Apple Health) and products (VisionPro) used by billions of users across the world.

How do you feel your time at KSSEM shaped you?

My time at KSSEM was not just about classes and exams; it was about forming lasting friendships and discovering my true calling. ANNs elective opened the door to the world of AI and ML, igniting a passion that continues to guide me today.

What extracurricular activities did you involve yourself in, during your time at KSSEM?

Few ECE branch related forums (Exceltron), KSSEM Fest (Aarohana), conference organized by ISTE in KSSEM, Sports (Cricket).

What, in your view, are the fundamental topics that students ought to focus on?

General problem-solving skills; Algorithms; Data structures; Strong object-oriented coding skills; familiarity in 2 or more programming languages (Python, C++, Java).

For those interested in core jobs, what are the hot domains and job opportunities?

Please note by no means the domains list below is exhaustive.

- **AI:** Integration with electronics and communications opens up numerous possibilities. Think smart cities, autonomous vehicles, intelligent communication systems, and more.
- **Internet of Things (IoT):** With ever-increasing connectivity, the demand for engineers adept at designing, developing, and managing connected devices in diverse fields like healthcare, agriculture, and industrial automation is booming.

- **Cybersecurity:** As our reliance on technology grows, so do security threats. Skilled professionals who can design secure communication systems, detect vulnerabilities, and counter cyberattacks are highly sought-after.
- **5G and Beyond:** The next generation of cellular networks promises faster speeds, lower latency, and wider connectivity. Expertise in wireless communication systems, RF engineering, and network deployment is in high demand.
- **Robotics and Automation:** The increasing demand for automation in various industries creates opportunities for engineers who can design, build, and program robots and automated systems.

Any interview tips and tricks that you would like to share?

- Know the company and the role you are getting interviewed for.
- Brush up on your fundamentals.
- Practice problem solving as much as you can, participate in mock interviews with your friends. Be strong with your algorithms and data structures. Make sure you test your code.
- Communicate clearly.
- Be confident and enthusiastic, but don't be arrogant.
- Ask thoughtful questions to conclude your interview.

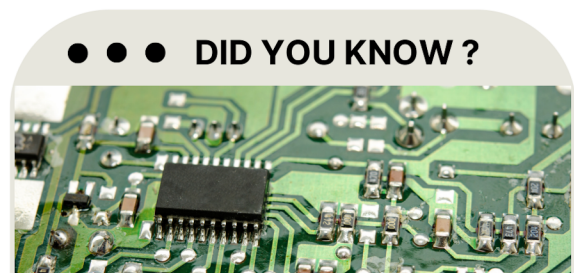
What advice would you give to students, for success in their chosen fields?

Remember that a large part of your life is going to be your professional life. Explore different areas and identify what excites you the most. The world is full of problems and technology is changing at an incredible pace, so never stop learning!

Any other words of wisdom for your juniors?

Below are few high-level things that helped me in my career:

- **Gain practical experience:** Participate in internships, projects, or hackathons to gain hands-on experience and build your portfolio.
- **Build your network:** Connect with professionals in your field through conferences, online communities, or mentorships.
- **Stay up-to-date:** Keep yourself informed about the latest trends and advancements in your chosen domain.



WHY ARE CIRCUIT BOARDS GREEN?

Printed circuit boards first began being developed in the early 1900s. The earliest versions were constructed by just simple wires that connected components together by a series of pegs or "posts". This was very unreliable as these connections would often crack and degrade over time. As techniques improved manufacturers needed a non-conductive yet durable substrate with which to lay the copper conductive traces upon. One of the cheapest solutions was fiberglass that was bonded with a glass reinforced epoxy-resin, and since this glass natural color is green, the boards would appear green as well. Coincidentally this is the same reason early bottles of cola were green it was simply the cheapest way to make them. This circuit board construction material came to be known as FR-4. The FR stands for "Flame-Retardant" and is the most widely used PCB material.

DEPARTMENT EVENTS

➤➤➤ ARTICLE WRITING CONTEST

The IEEE KSSEM Student branch, in association with the ECE department of KSSEM, had organized an inter-collegiate "ARTICLE WRITING" contest on 27th February, 2023 through online mode.



➤➤➤ FIELD VISIT TO ART OF LIVING INTERNATIONAL CENTER, BENGALURU

The Department of Electronics and Communication Engineering organized a Field Visit to the Art of Living International Centre, for the 3rd Semester ECE students on 28th February 2023.



➤➤➤ SEMINAR ON "CAMPUS TO CORPORATE JOURNEY"

The IEEE Student branch in association with the ECE department, had organized a seminar on, "Campus to Corporate Journey" on 8th March, 2023. The talk was delivered by Ms. M K Priya, Senior Software Engineer at Ericsson R&D.

➤➤➤ INTERNATIONAL WOMEN'S DAY CELEBRATION

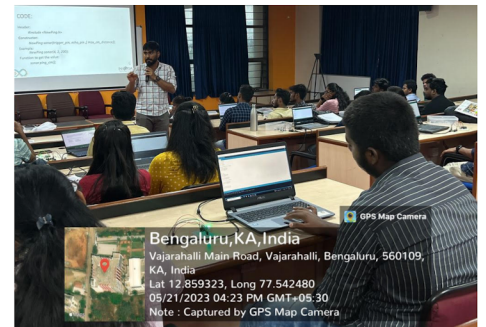
A grand celebration was organised to celebrate International Women's Day on 8th of March 2023 in Civil Auditorium KSSEM, Bangalore by the IEEE KSSEM Student Branch.

➤➤➤ TECHNICAL SEMINAR ON "WIRELESS COMMUNICATION EVOLUTION TILL 5G"

The Department of Electronics and Communication Engineering, had organized a technical seminar on "Wireless Communication Evolution till 5G" on 21st April, 2023. The Technical Seminar was delivered by Mr. Sasindran M Prabhu.

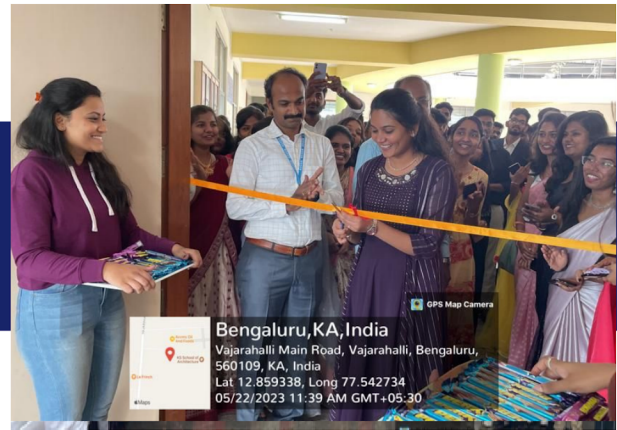
➤➤➤ HANDS ON TRAINING ON "INTERFACING OF SENSORS"

The IEEE Student branch in association with the ECE department, had organized a Hands on training on, "Interfacing of Sensors" on 21st May, 2023. The training was given by Mr Rahul Kumar A and Mr Bharath Gowda P S, Founder and Engineer, Inversa Technosoft.



➤➤➤ FAREWELL CELEBRATION FOR THE GRADUATING BATCH OF 2023

The Department of Electronics and Communication Engineering had organized a Farewell event for the students of the final year 2022-2023 batch students on 22nd May 2023.



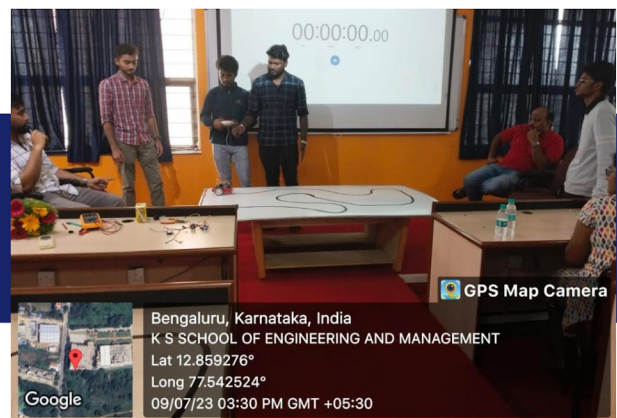
➤➤➤ INDUSTRIAL VISIT

Department of Electronics and Communication Engineering had organized an industrial Visit to Government Tool Room and Training Centre (GTTC), Dandeli for the 6th semester students on 2nd June 2022.



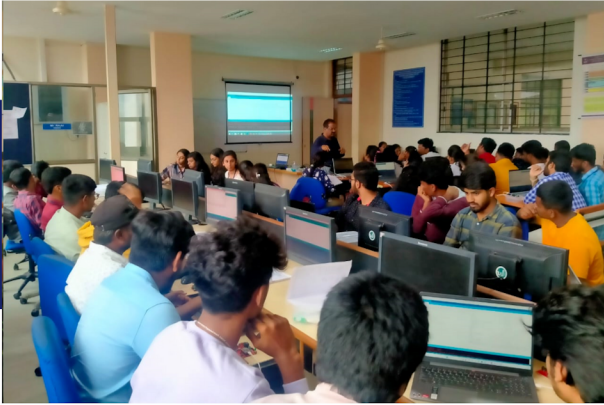
➤➤➤ HANDS-ON TRAINING ON "INTRODUCTION TO EMBEDDED SYSTEMS"

The IEEE Student branch, in association with the ECE department, had organized a Hands-on training on "Introduction to Embedded Systems" for students of 4th Semester on 8th and 9th July, 2023. The training was given by Mr. Rahul Kumar A and Mr. Bharath Gowda P S, Founder and Engineer, Inversa Technosoft.



➤➤➤ HANDS-ON TRAINING ON "APPLICATION OF IOT USING BLYNK AND GOOGLE FIREBASE CLOUD"

The IEEE Student branch, in association with the ECE department, had organized a Hands-on training on "Application of IoT Using Blynk and Google Firebase Cloud" for students of 4th Semester on 8th and 9th July, 2023. The training was given by Mr. Srinivas Shetty, Founder SST Technologies.



DID YOU KNOW?

Digital electronics are electric circuits that work on only two fixed values: "1" and "0". They use a series of 1's and 0's to store and communicate information. They can also perform math using just 1's and 0's. This is called Boolean math or Boolean logic.

How do they get just 1's and 0's?

In most digital electronic circuits when the voltage of the circuit is positive and near the supply voltage it represents a 1. This is also called HIGH. When the voltage is close to the ground level (or zero), it represents a 0, which is also sometimes called LOW. With these two signals most anything can be stored and communicated including the picture on the screen you're looking at right now. But it takes a lot of these signals running VERY fast!

FACULTY ACTIVITIES AND ACHIEVEMENTS

PUBLICATIONS

- **Manjula B G**, Dr. Raghavendra Gopal, **“A Review on Phasor Measurement Unit for Secured Operation of Power System Network”**, International Journal of All Research Education and Scientific Methods (IJARESM), ISSN: 2455-6211 Volume 11, Issue 2, February-2023
- **K. Senthil Babu, M. Kishore, J. Dileep**, **“Embedded Based Vehicle Theft Detection”**, International Journal of Current Engineering And Scientific Research, ISSN (PRINT): 2393-8374, (Online): 2394-0697, Volume-10, Issue-8, 2023
- Vijaya kumar A N, **P Karthik**, Prathibha Shanbog P S, **“Optimizing the Utilization of Renewable Energy Resources in smart Grids Using Deep Learning”**, Journal of Data Acquisition and Processing, 2023, 38 (1): 4269-4281.
- Channegowda R.H, **Karthik P**, Srinivasaiah R. and Shivaraj M, **“Customized mask region based convolutional neural networks for un-uniformed shape text detection and text recognition”**, International Journal of Electrical and Computer Engineering, 2023, 13(1), p.413.
- Vijayakumar A N, **Karthik P**, Pradeep K R, **“Autonomous Decision Making System for the Utilization of Renewable Energy Resources in Smart Grids Using Deep Learning”**, Journal of Data Acquisition and Processing, 2023, 38 (3): 456-467.

PROMINENT EVENTS ATTENDED BY FACULTY

- **Dr. Arun Kumar M** attended an AICTE-sponsored Workshop on **“Inculcating Universal Human Values Technical education”** from 2nd to 6th January 2023.
- **Mrs. Jayashree G R, Mrs. Bhargavi V S, Mrs. Swati Sarkar** attended a FDP on **“Teaching Pedagogy and Outcome Based Education System in NEP”** organized by Govt. Degree college of Harda (MP) from 20th to 25th February 2023.
- **Dr. Karthik P.** and **Mr. Ravikiran B A** attended the **“UGC Sponsored Refresher course on Biomedical”** organized by North Eastern Hill University, Shillong from 1st to 15th March 2023.
- **Dr. Manu D K** attended a FDP on **“Research Grants, Publications & Consultancy skills for Academicians”** conducted by BIT, Bangalore from 6th to 8th March 2023.
- **Mr. Gopalakrishna Murthy C R** attended a 3-day FDP on **“Research Grants, Publications & Consultancy skills for Academicians”** at BIT, Bangalore from 6th to 8th March 2023.
- **Mr. Dileep J** attended a FDP on **“Deep learning & its Applications”** at KIT, Tiptur from 6th to 10th March 2023.

- **Mrs. Jayashree G R, Mrs. Bhargavi V S, Mrs. Swati Sarkar** attended a FDP on **“Advancement in RF Microwave Antenna and 5G Application”** organized by Dr. AIT, Bangalore from 27th to 31st March 2023.
- **Mr. Gopalakrishna Murthy C R** attended a 3-day FDP on **“Mentoring Skills & Cognitive strategies”** at BIT, Bangalore from 29th to 31st March 2023.
- **Mr. Gopalakrishna Murthy C R** attended a 6-day FDP on **“Machine learning & Data analytics using MATLAB”** at KIT, Titptur, from 24th to 29th April 2023.
- **Mrs. Jayashree G R and Mrs. Bhargavi V S** attended a workshop on **“Research Methodology & Publication Ethics”** held at BMSCE, Bangalore, on 18th April 2023
- **Mr. Syed Waseem Tabraiz , Mrs. Jayashree G R, Bhargavi V S, Mrs. Swati Sarkar** attended a 6-Day FDP on **“Artificial Intelligence and Machine learning for Image Analysis – MATLAB & Python Perspective”** at CMRIT, Bangalore from 8th to 13th May 2023
- **Mrs. Jayashree G R, Mrs. Bhargavi V S, Mrs. Swati Sarkar** attended a FDP on **“Recent Industry trends and Technology in Cloud”** organized by MUJ-TEC Manipal University Jaipur, from 15th to 19th May 2023.
- **Mr. Ravikiran B A, Mrs. Jayashree G R and Mrs. Bhargavi V S** attended a workshop on **“Scientific Communication for Researchers”** held at BMSCE, Bangalore, from 29th May to 2nd June 2023.
- **Mrs. Jayashree G R, Mrs. Bhargavi V S, Mrs. Swati Sarkar** attended a FDP on **“Contemporary Literary Themes and Techniques”** organized by VIT, Chennai from 19th to 23rd June 2023.

FACULTY AS RESOURCE PERSON

- **Mr. Sanjay B Nayak** conducted a Hands-on Workshop on **“Software Skills”** as part of the 5-Day Faculty Development program on “Personality Development” at KSSEM on 20th April 2023.

SPORTS ACHIEVEMENTS

- **Dr. K. Senthil Babu , Mr. Dileep J and Dr. Manu D K** participated in the Intercollegiate Cricket Tournament held at PES University from 21st to 24th January 2023.
- **Dr. K Senthil Babu** won the 1st Prize in the Singles category of the KSGI Badminton Tournament , held at KSSEM on 5th May 2023.
- **Dr. Manu D K** won the 1st Prize in the Mixed Doubles category of the KSGI Badminton Tournament , held at KSSEM on 5th May 2023.
- **Mr. Dileep J** won the 2nd Prize in the KSGI Mini Basketball Tournament held at KSSEM on 9th June 2023.

MASSIVELY OPEN ONLINE COURSES (MOOCs)

- **Dr. Manu D K** completed the NPTEL Online Certification Course in **“Digital Electronics Circuits”** during Jan–April 2023.
- **Mr. Gopalakrishna Murthy C R** completed the NPTEL Online Certification Course in **“Digital Electronics Circuits”** during Jan–April 2023.
- **Dr. Arun Kumar M** completed the NPTEL Online Certification Course in **“Towards an Ethical Digital Society”** during Jan–February 2023.

STUDENT ACHIEVERS

Funded Projects

- The Final year project titled **“An IoT based Smart Wearable System for Monitoring Asthma Patients”**, by Ms. Sneha B, Mr. Jetti Bheemesh, Mr. Manam Teja and Ms. Monika V G, guided by Mrs. Renuka V Tali and Dr. K Senthil Babu, was approved by KSCST funding of Rs. 5,000.
- The Final year project titled **“Eye Tracking System for Appliance Control by Paralyzed Patients”**, by Mr. Lingutla Tarun Kumar, Mr. Devapathni Pavan Kumar, Mr. Malapati Dileep and Mr. Modupalli Pavan Kumar, guided by Mr. Ravikiran B. A., was approved by KSCST for funding of Rs. 4,000.
- The Final year project titled **“Smart Electronic Aid for Visually Impaired”**, by Ms. R Sasikala, Ms. Saicharitha Y, Ms. Shubha M and Ms. Suma B L, guided by Dr. K Senthil Babu and Mrs. Bhargavi V S, was approved by KSCST for funding of Rs. 5,000.
- The Final year project titled **“Design and Development of Power Generation Model by Semi Perpetual Motion Machine”**, by Mr. Prathik P Shirali, Mr. Dhanush Srinivas, Mr. S Praveen Kumar, guided by Mrs. Manjula B G, was approved by KSCST for funding of Rs. 5,000.
- The Final year project titled **“Design and Fabrication of a prototype for Knee Rehabilitation”**, by Ms. Niriksha V Murthy, Mr. Nithin L, Mr. Prajwal S K and Mr. Pratyush Kumar, guided by Dr. K Senthil Babu, was approved by VTU for funding of Rs. 5,000.
- The Final year project titled **“Implementation of a Prototype for Automatic Compression Mechanism in BVM”**, by Mr. Chirag S, Mr. Dhanush K, Mr. Samarth Srinivas and Mr. Dheva C, guided by Mr. Gopalakrishna Murthy C R, was approved by VTU for funding of Rs. 5,000.

AFTER ENGINEERING – HIGHER STUDIES

The prospects for higher studies for an Electronics and Communication Engineering (ECE) undergraduate in India and abroad are quite promising. Pursuing advanced degrees can open up opportunities for specialized knowledge, research, and career advancement. Here is an overview of the prospects for higher studies in both contexts:

Higher Studies in India

Master of Technology (M.Tech): Many ECE graduates opt for a Master's in Technology (M.Tech) to gain in-depth knowledge in a specific area of electronics and communication.

Master of Science (M.Sc): Some universities offer Master of Science (M.Sc) programs with a focus on electronics, communication, or related disciplines.

Research Programs (Ph.D.): Aspiring researchers can pursue a Ph.D. to contribute to academic and industrial research in ECE.

Postgraduate Diploma Programs: Shorter-term diploma programs may also be available for those seeking specialized skills without a full Master's commitment.

Higher Studies Abroad

Master's Programs (M.Sc, M.Eng, M.S.): Many universities abroad offer Master's programs in Electrical Engineering, Communications Engineering, or related fields.

Master of Science in Information Technology (MSIT): Some countries offer MSIT programs with a focus on information technology and communication systems.

Master of Science in Engineering (MSE): Some universities use the term MSE for engineering master's programs.

Master of Business Administration (MBA) with Technology Management: ECE graduates interested in the business side can pursue MBA programs with a focus on technology management.

Ph.D. Programs: Doctoral programs abroad offer opportunities for advanced research and academic contributions.

Prospects and Considerations

Research Opportunities: Higher studies provide opportunities for research, innovation, and contributing to advancements in the field.

Global Exposure: Studying abroad can offer exposure to diverse cultures, perspectives, and cutting-edge technologies.

Networking: Higher studies, especially abroad, provide opportunities to build a global network that can be valuable in a career.

Career Advancement: A master's or Ph.D. can enhance career prospects, qualify graduates for leadership roles, and open doors to specialized positions.

Industry Collaboration: Collaborative research projects and internships with industries often accompany higher studies, enhancing practical skills.

Financial Considerations: Consider the cost of education, potential scholarships, and the return on investment when deciding on higher studies.

Skill Enhancement: Higher studies allow individuals to specialize in emerging areas, enhancing their skill set for specific career paths.

Industry Demand: Some sectors, such as research and development, academia, and certain specialized roles, may prefer candidates with advanced degrees.

It is essential for individuals to carefully research programs, consider their career goals, and weigh the costs and benefits before deciding on higher studies. Additionally, staying informed about admission requirements, application processes, and deadlines is crucial for a successful application to both Indian and international universities.

“ No theory of evolution can be formed to account for the similarity of molecules, for evolution necessarily implies continuous change ”

-Jagadish Chandra Bos

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