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SPECTRUM

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DEPARTMENT NEWS LETTER OF

ELECTRONICS & COMMUNICATION ENGINEERING

AY 2024-25

IGNITING IDEAS, EMPOWERING FUTURES.

Driving innovation in Electronics & Communication Engineering for a smarter, connected tomorrow.



TECHNOLOGY
Emerging Technologies

COMMUNICATION
Wireless & Networks

INNOVATION
Research & Projects

ACHIEVEMENT
Student Success

INSIDE HIGHLIGHTS

- ACADEMIC EXCELLENCE
- RESEARCH & PUBLICATIONS
- STUDENT ACTIVITIES
- ACHIEVEMENTS & AWARDS
- PLACEMENTS & INTERNSHIPS



SANTHIRAM ENGINEERING COLLEGE

(AUTONOMOUS)

NANDYAL, ANDHRA PRADESH

AY 2024-25 | OCT – DEC 2024

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SANTHIRAM ENGINEERING COLLEGE

Department of Electronics & Communication Engineering

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INSIDE HIGHLIGHTS

01 About College Vision & Mission
02 About Department Vision & Mission
03 PO's, PEO's & PSO's
04 Principal's Message, HoD's Message
05 Technology Catchment Area
06 ECE Events
07 Department Gallery



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Chief Editor: Dr. Y. Mallikarjuna Rao
Student Coordinator: T. Sruthi Kumar
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TECHNOLOGY Emerging Technologies | **COMMUNICATION** Wireless & Networks | **INNOVATION** Research & Projects | **IOT & EMBEDDED** Smart Systems & Applications | **ACHIEVEMENT** Student Success



SANTHIRAM ENGINEERING COLLEGE, NANDYAL
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SANTHIRAM ENGINEERING COLLEGE

Department of Electronics & Communication Engineering

VISION & MISSION

Vision and Mission of the Institute

VISION

To become a nucleus for pursuing technical education and pool industrial research and developmental activities with social-conscious and global standards.

MISSION

- **M1:** To provide Advanced Educational Programs and prepare students to achieve success and take leading roles in their chosen fields of specialization by arising a self-sustained University.
- **M2:** To establish postgraduate programs in the current and Advanced Technologies.
- **M3:** To establish an R&D Consultancy through developing Industry Institute Interaction, building up exceptional infrastructure.
- **M4:** To propel every individual, realize and act for the technical development of the society.

Vision and Mission of the Department

VISION

To be a leading Center for Education, Research and Industry-driven innovation in Electronics and Communication Engineering with global, social and ethical excellence.

MISSION

- **M1:** Offer quality programs in Electronics & Communication Engineering aimed at fulfilling the needs of society and industry.
- **M2:** Impart skills and develop scientific temper to solve complex technological problems of current times.
- **M3:** Nurture ethics, talent, and entreprenurrship to inculcate professional development of students.



SANTHIRAM ENGINEERING COLLEGE
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Nandyal - 518501, Nandyal Dist., Andhra Pradesh

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

AICTE APPROVED | AFFILIATED TO JNTUA, ANANTAPURAMU

ABOUT THE COLLEGE



Santhiram Engineering College (SREC), Nandyal, sponsored by M/s Sri Shirdi Sai Educational Academy, was established in 2007 under the able guidance of Dr. M. Santhiramudu, Chairman, with the noble motto "Education for Peace and Progress." The institution is autonomous from the academic year 2023–24 and is accredited by NAAC with Grade A (3.2/4.0) and by NBA for its B.Tech. programmes in ECE and CSE. Approved by AICTE, New Delhi, recognised by UGC under Sections 2(f) and 12(B), and permanently affiliated to JNTUA, Ananthapuramu, SREC is also a recognised research centre and spot evaluation centre of JNTUA. Spread across a serene 10.5-acre green campus, the college offers digitally equipped classrooms, state-of-the-art laboratories, quality research, publications, patents, funded projects, excellent placement opportunities, and secure hostel facilities for both boys and girls. With 19 years of academic excellence, University Gold Medals, State Prathibha Awards, and a wide range of undergraduate, postgraduate, MBA, and MCA programmes, SREC continues to nurture competent, innovative, and socially responsible professionals.



VISION

To become a nucleus for pursuing technical education and pool industrial research and developmental activities with social-conscious and global standards.



MISSION

To provide Advanced Educational Programs and prepare students to achieve success and take leading roles in their chosen fields of specialization by arising a self-sustained University.

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ABOUT DEPARTMENT



Anticipating the growing importance of electronics and wireless communication in modern society, the Department of Electronics and Communication Engineering was established in 2007 with a vision to impart quality technical education and nurture innovation among young minds. The department began with an initial intake of 60 students, which was increased to 90 in 2008 and further to 120 in 2009, reflecting the rising demand for skilled electronics and communication engineers. To meet the expanding needs of the industry and academia, the department introduced a Master of Technology (M.Tech) program in VLSI System Design in 2011 with an intake of 18 students, recognizing the immense potential in the area of Very-Large-Scale Integration (VLSI) design. In tune with the advancements in embedded technology and its applications, a new postgraduate program. The department's B.Tech-ECE program has been accredited by the National Board of Accreditation (NBA) for a period of three years, from the academic year 2023–24 to 2025–26, in recognition of its robust academic framework, quality teaching, and outcome-based education.

VISION

Emerge as a centre for quality education in Electronics & Communication Engineering to create competent professionals

MISSION

1. Offer quality programs in Electronics & Communication Engineering aimed at fulfilling the needs of society and industry.
2. Impart skills and develop scientific temper to solve complex technological problems of current times.
3. Nurture ethics, talent, and entrepreneurship to inculcate professional development of students.

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PROGRAMME OUTCOMES (POs) & PSOs

1. **PO1: Engineering Knowledge:** Apply knowledge of mathematics, science, engineering fundamentals, and ECE specialisation to solve complex engineering problems.
2. **PO2: Problem Analysis:** Identify, formulate, review research literature, and analyse complex engineering problems to reach appropriate conclusions.
3. **PO3: Design and Development of Solutions:** Design solutions for complex engineering problems and develop system components or processes that meet specified needs, considering public health, safety, culture, society, and the environment.
4. **PO4: Conduct Investigations:** Use research-based knowledge and methods, including experimentation, analysis, and interpretation of data, to obtain valid conclusions.
5. **PO5: Modern Tool Usage:** Create, select, and apply suitable techniques, resources, and modern engineering and IT tools for modelling, analysis, and solution of complex engineering problems.
6. **PO6: Engineer and Society:** Apply contextual knowledge to assess societal, health, safety, legal, and cultural issues related to professional engineering practice.
7. **PO7: Environment and Sustainability:** Understand the impact of engineering solutions in societal and environmental contexts and demonstrate awareness of sustainable development.
8. **PO8: Ethics:** Apply ethical principles and commit to professional ethics, responsibilities, and norms of engineering practice.
9. **PO9: Individual and Team Work:** Function effectively as an individual and as a member or leader in diverse and multidisciplinary teams.
10. **PO10: Communication:** Communicate effectively with the engineering community and society through reports, documentation, presentations, and clear technical communication.
11. **PO11: Project Management and Finance:** Demonstrate knowledge of engineering and management principles and apply them in individual and team work to manage projects effectively.
12. **PO12: Life-Long Learning:** Recognise the need for and engage in independent and life-long learning to adapt to technological changes.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

- **PSO1:** Apply the principles of electronic devices, circuits, embedded systems, VLSI, and communication engineering to design, analyse, and implement electronic systems.
- **PSO2:** Design and develop solutions in analogue and digital communication, wireless networks, signal processing, and related applications using modern tools.
- **PSO3:** *Develop innovative, sustainable, and industry-oriented solutions through research, teamwork, ethical practice, and continuous learning in emerging areas of Electronics and Communication Engineering.*

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MESSAGES

CHAIRMAN'S MESSAGE



It gives me immense pleasure to present SPECTRUM, the newsletter of the Department of Electronics and Communication Engineering. It reflects the academic achievements, innovative activities, research contributions, and creative spirit of our students and faculty members.

I appreciate the efforts of the Department of ECE in nurturing competent professionals through quality education, innovation, and value-based learning. I extend my best wishes to the editorial team, faculty members, and students for the continued success of SPECTRUM.

Chairman

MANAGING DIRECTOR'S MESSAGE



I am delighted to share my message for SPECTRUM, the newsletter of the Department of Electronics and Communication Engineering. This publication is a proud reflection of the department's commitment to academic excellence, innovation, research, and student development.

I encourage students to make the best use of the opportunities provided by the institution, strengthen their technical knowledge, and develop the skills needed to serve society with responsibility and confidence. I convey my best wishes to the faculty, students, and editorial team.

Managing Director

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MESSAGES

PRINCIPAL'S MESSAGE



It gives me immense pleasure to present SPECTRUM, the newsletter of the Department of Electronics and Communication Engineering. The newsletter reflects the academic achievements, innovative activities, research contributions, and creative spirit of our students and faculty members. I encourage students to pursue knowledge with curiosity, discipline, integrity, and a commitment to excellence. I appreciate the Department of ECE for nurturing competent professionals through quality education, innovation, and value-based learning. My best wishes to the editorial team, faculty members, and students for the continued success of SPECTRUM.

Principal

HoD'S MESSAGE



I am delighted to share my message for SPECTRUM, the newsletter of the Department of Electronics and Communication Engineering. This publication reflects our department's commitment to academic excellence, innovation, research, and student development. We aim to provide a strong learning environment that enables students to build sound technical knowledge, problem-solving ability, professional ethics, and confidence. I encourage every student to participate actively in academic, research, and co-curricular activities. My best wishes to all faculty members, students, and the editorial team.

Head of Department

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DEPARTMENT PROGRAMS AND ACHIEVEMENTS

1 Design and Verification of Digital System Using SystemVerilog

5 Oct 2024.



Resource persons:
Mr. P. Akhil, Smart SOC, Hyderabad,
and Mr. K. Jahur, VLSI Engineer, Bangalore.

2 Advances in RTL Design

10 Oct 2024,
for IV ECE students.



Resource persons:
Mr. P. Akhil, Smart SOC, Hyderabad,
and Mr. K. Jahur, VLSI Engineer, Bangalore.

3 How to Clear NPTEL Certification Course – Tips and Tricks

19 Oct 2024,
for III ECE students.



Resource person:
Mr. S. Mohammad Eliyas, SPOC-NPTEL
and Assistant Professor, Department of ECE,
Santhiram Engineering College, Nandyal.

4 Image Processing and Its Applications

21 Oct 2024,
for III and IV ECE students.



Resource person:
Dr. Umesh Ghanekar, Professor,
Department of ECE, NIT Kurukshetra.

5 Next Step to Global Careers: Education & Work Opportunities Overseas

29 Oct 2024,
for III and IV ECE students.



Resource person:
Mr. Ramesh Kumar, CEO, Cana Kosmos Connect Pvt. Ltd.

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FACULTY CONFERENCE PUBLICATIONS

FACULTY CONFERENCE PUBLICATIONS

- **Dr. M. V. Subramanyam et al.** presented the paper **"Implementation of Adaptive Tunicate Swarm Algorithm for Congestion Control and Link Failure Avoidance in Mobile Ad Hoc Networks"** at the 2024 International Conference on Electrical, Electronics and Computing Technologies (ICEECT), Sharda University, Noida.
- **Dr. M. V. Subramanyam et al.** presented the paper **"An Efficient Residual Energy-Based Routing Strategy for Mobile Nodes in MANETs Using the CDROA-OSPF Protocol"** at the 15th International Conference on Computing, Communication and Networking Technologies (ICCCNT), IIT Mandi, Himachal Pradesh.
- **Dr. G. Sowmya et al.** presented the paper **"Removal of Specular Reflection of an Image Using Dark Channel Prior"** at the International Conference on Emerging Trends in Electronics and Communication Engineering, College of Engineering Perumon, Kollam.
- **Ms. B. Alekya Himabindu et al.** presented the paper **"Effective Ternary Full Adder Cells for Nanoelectronics Using CNTFET Technology"** at the Flagship International Conference, IEEE North Karnataka Subsection, Bagalkot.
- **Dr. Y. Mallikarjuna Rao et al.** presented the paper **"Design and Performance Analysis of CNTFET - Based Ternary Encoders for Next-Generation Communication Systems"** at the International Conference on Emerging Trends in Electronics and Communication Engineering, College of Engineering Perumon, Kollam.
- **Mr. S. Javid Basha et al.** presented the paper **"An Effective Method to Develop Pseudo N-Type GNRFET-Based Digital Circuits in Ternary Logic"** at the 15th International Conference on Computing, on Communication and Networking Technologies (ICC-CNT), IIT Mandi, Himachal Pradesh.

BOOKS & BOOK CHAPTERS

- **Dr. Y. Mallikarjuna Rao et al.** published a book chapter entitled **"AI's Role in 6G Security: Machine Learning Solutions Unveiled"** on the IGI Global platform.
- **Dr. G. Sowmya et al.** authored the book **"Internet of Things"**, published by Charulatha Publications.
- **Ms. B. Alekya Himabindu** published a book chapter entitled **"Classification of Hyperspectral Images Using a Multilevel Spectral-Spatial Transformer Network"** in Technological Trends in Information Science and Engineering, Tek Science Publications, ISBN 978-81-965081-5-9.

MOOCs THROUGH NPTEL

- A total of 127 students successfully completed the NPTEL course **"Introduction to Internet of Things"** during July–December 2024.
- A total of 91 students successfully completed the NPTEL course **"Fundamentals of Artificial Intelligence"** during July–December 2024.
- A total of 70 students successfully completed the NPTEL course **"Introduction to Machine Learning"** during July–December 2024.
- A total of 28 students successfully completed the NPTEL course **"Cyber Security and Privacy"** during July–December 2024.

VIRTUAL INTERNSHIPS

- A total of 573 students completed the AICTE Cohort-9 Internship.

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FACULTY DEVELOPMENT PROGRAMMES

FACULTY DEVELOPMENT PROGRAMMES

- **Mr. K. Vinod Kumar** participated in the Faculty Development Programme on **"Machine Learning and Artificial Intelligence"**, 13–17 Nov 2024, organized by Andhra Pradesh State Skill Development Corporation in association with Excel Edtech Pvt. Ltd.
- **Mr. K. Vinod Kumar** participated in the Faculty Development Programme on **"Project Excellence Guide: Digital Marketing"**, 21–25 Oct 2024, organized by MLR Institute of Technology, Dundigal.
- **Dr. G. Sowmya** participated in the Faculty Development Programme on **"AI and Emerging Technologies for Sustainable Energy and Climate Adaptation"**, 25–30 Nov 2024, organized by AICTE Training and Learning (ATAL) Academy, IIT Kottayam.
- **Dr. G. Sowmya** participated in the Faculty Development Programme on ***"Introduction to IoT and Machine Learning: Essential Skills for Smart Cities and Mobility"***, 16–21 Dec 2024, organized by AICTE Training and Learning, Government Polytechnic Hamirpur.
- **Ms. B. Alekya Hima Bindu** participated in the Faculty Development Programme on ***"Recent Trends in Deep Learning & Large Language Models"***, 02–07 Dec 2024, organized by AICTE Training and Learning, Delhi Technical Campus.

WORKSHOP ATTENDED

- **Ms. G. Neelima** participated in the one-day online ***"National Workshop on Best Research Practices in Global Context"*** on 14 Oct 2024, organized by the Central Library and Research & Development Cell, Haryana.

FACULTY PATENT

- **Dr. Rajkumar Katepogu,** Assistant Professor, and **Dr. Praveen Kumar Nayakanti,** Associate Professor, registered a Canadian patent entitled **"METHOD FOR THE FABRICATION OF NANOSCALE MAGNETIC MEMORY DEVICES USING SPINTRONICS"** on 07 Dec 2024.

FACULTY PUBLICATIONS

- **Dr. M. V. Subramanyam et al., "DCNN-RFF-NFC: A Novel Design of NFC Security Using Deep Convolution Neural Network-Based RF Fingerprinting"**, Neural Computing and Applications. Indexed by Scopus.
- **Dr. M. V. Subramanyam, Dr. Y. Mallikarjuna Rao** and **Mr. S. Javid Basha, "An Efficient, Variation-Tolerant CNTFET Ternary Content Addressable Memory: A PVT Variation-Resilient Design"**, *Transactions on Electrical and* Electronic Materials. Indexed by Scopus and ESCI.
- **Ms. V. Nagamani et al., *"Adaptive Clustering and Trust-Aware Routing (ACTAR) for Wireless Sensor Networks in IoT Environments"*,** *International Journal of Communication Systems.* Indexed by SCIE.
- **Mr. V. Sankarnath et al., *"A Novel Technique to Design GNRFET-Based Ternary Logic Circuits for High-Performance Applications"*,** *Russian Microelectronics, pp. 492–499. Indexed by Scopus.*

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DEPARTMENT GALLERY











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