INNOVATE • CONNECT • INSPIRE

VOLUME NO. 09

ISSUE NO. 01

AY 2024-25

SPECTRUM

DEPARTMENT NEWS LETTER OF

ELECTRONICS & COMMUNICATION ENGINEERING

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 | JULY – SEP 2024

SPECTRUM
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2024 - 25

SREC NANDYAL
EDUCATION FOR PEACE & PROGRESS
ESTD : 2007

SANTHIRAM ENGINEERING COLLEGE

Department of Electronics & Communication Engineering

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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



IGNITING IDEAS, EMPOWERING FUTURES

TECHNOLOGY Emerging Technologies

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IOT & EMBEDDED Smart Systems & Applications

ACHIEVEMENT Student Success



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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 entrepreneurrship to inculcate professional development of students.



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SANTHIRAM ENGINEERING COLLEGE

Department of Electronics & Communication Engineering

PROGRAM SPECIFIC OUTCOMES

1. B.Tech in Electronics and Communication Engineering

Graduates of the program will be able to:

PSO 01 Ability to analyze, design, and implement application-specific electronic systems for complex engineering problems in analog and digital communication, signal processing, and embedded domains, using knowledge of basic sciences, engineering mathematics, and engineering fundamentals.

PSO 02 Ability to design and develop real-time embedded systems by integrating hardware and software components, ensuring energy efficiency, security, and reliability for applications in IoT, automotive, and industrial automation.

PSO 03 Ability to analyze, design, and optimize VLSI circuits and systems, focusing on low-power design, high-performance architectures, and efficient fabrication techniques to meet modern industry demands.

2. M.Tech in VLSI System Design

Program Educational Objectives (PEOs)

PEO 01 Identify and apply appropriate Electronic Design Automation software and electronic equipment to analyze, synthesize and evaluate real-world problems in the VLSI domain.

PEO 02 Pursue research studies in the core or allied areas of VLSI circuits and systems.

PEO 03 Inculcate positive attitude, professional ethics, effective communication and interpersonal skills to succeed in research and development as a team member and leader.

Program Specific Outcomes (PSOs)

PSO 01 Ability to design and integrate analog, digital and mixed signal circuits and systems.

PSO 02 Design and develop solutions for real-world problems in IC fabrication, testing, verification and prototype development.

PSO 03 Understand, analyze, design and simulate communication systems and data processing techniques and validate their performance for practical applications.

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SANTHIRAM ENGINEERING COLLEGE
Department of Electronics & Communication Engineering

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CHAIRMAN MESSAGE



SPECTRUM is a reflection of our department's spirit, creativity, and commitment to excellence. It showcases the technical insights, innovative ideas, and literary talent of our students and faculty. I extend my heartfelt appreciation to the entire team for their dedication and hard work in bringing this newsletter to life.

May SPECTRUM continue to be a platform that inspires curiosity, strengthens knowledge, and encourages every student to express, explore, and excel.

Let the spectrum of ideas create a world of innovation!

Dr. M. Santhiramudu
Chairman/Founder

MD'S MESSAGE



I am pleased to see SPECTRUM, the technical newsletter of our department, taking shape as a platform for sharing knowledge and innovation. It highlights the remarkable efforts and creativity of our students and the unwavering effort of the editorial team. I encourage everyone to contribute, collaborate, and make SPECTRUM a source of inspiration and learning for all readers.

Wishing the team great success in all their future endeavors!

Mr. M. SivaRam
Managing Director

"SPECTRUM is not just a newsletter, it is the voice of ideas, the rhythm of innovation, and the reflection of our vibrant ECE community."

SANTHIRAM ENGINEERING COLLEGE, NANDYAL

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SANTHIRAM ENGINEERING COLLEGE
Department of Electronics & Communication Engineering

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PRINCIPAL'S MESSAGE



It gives me immense pleasure to present Volume 9, Issue 01 of SPECTRUM NEWSLETTER. This edition is a testament to the relentless pursuit of knowledge, innovation, and excellence by the students and faculty of the Electronics and Communication Engineering Department. The rapid advancements in technology demand continuous learning and adaptability, and I am proud to see our department embracing these challenges with enthusiasm and dedication.

I congratulate the entire team behind this issue for their commendable efforts and the valuable contributions that make SPECTRUM a beacon of technical insight and creativity. I encourage our students to keep exploring, innovating, and striving for excellence in all their endeavors.

Let us continue to work together to build a brighter, more innovative future.

Dr. M.V.Subramanyam
Principal

HOD'S MESSAGE



I am delighted to present Volume 9, Issue 01 of SPECTRUM NEWSLETTER. This issue reflects the vibrant academic spirit and innovative mindset of our department community. The contributions in this edition highlight the diverse interests and technical proficiencies of our students and faculty, covering emerging technologies, research insights, and practical applications.

I extend my heartfelt appreciation to the editorial team, faculty members, and student contributors for their dedication and hard work in bringing out this issue. I also encourage all students to participate actively, share their ideas, and continue to push the boundaries of creativity and innovation.

Together, let us strive to uphold the legacy of excellence and make our department a center of learning, discovery, and growth.

Dr.Y.Mallikarjuna Rao
HOD-ECE

SPECTRUM is the reflection of our ideas,
the platform of innovation, and the voice of excellence.
Together, let's **create, collaborate, and inspire.**

LEARN EVERYDAY
Stay curious and keep growing.

COLLABORATE TO GROW
Teamwork drives greater success.

INNOVATE BOLDLY
Think beyond today, shape tomorrow.

EXCEL TOGETHER
Excellence is our shared journey.

INNOVATE THE FUTURE | EDUCATE EMPOWER | EXCEL TOGETHER

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SPECTRUM
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TECHNOLOGY CATCHMENT

DEPARTMENT ACTIVITIES & ACHIEVEMENTS

PROGRAMS ORGANISED

1



DRONE REMOTE SENSING AND APPLICATIONS

26 – 31 July, 2024

Resource Person
Mr. Vamsi Krishna Kurakula, Director, India, Drone Academy, Hyderabad

2



TWO DAY HANDS-ON WORKSHOP ON EXPLORE ROUTING AND SWITCHING CONCEPTS IN DATA COMMUNICATION AND NETWORKING USING CISCO PACKET TRACER

18 – 19 July, 2024

Resource Persons
Dr. C. Kumar, Chair Communication Society IEEE, Hyderabad Section
Mr. V. Tamilkumaran, Manager, Tata Communications Pvt. Ltd.

3



ALUMNI TALK ON INNOVATION IDEAS AND TECHNOLOGIES

14 Aug, 2024

Resource Person
Mr. P. Teja Kumar, Senior Software Engineer, Dell Technologies, Bangalore

4



AWARENESS PROGRAM ON GATE-2025

19 Sept, 2024

Resource Persons
Mr. K. Satish Kumar,
Mr. Balaram Shaw,
Iisc GATE, Ambassadors

DEPARTMENT ACHIEVEMENTS

IEEE

Workshop fund has been received ₹20,000 under the IEEE Communication Society Hyderabad Section.

IEEE Signal Processing Society

Startup fund has been received ₹150 under the IEEE Signal Processing Society Hyderabad Section.

FACULTY ACHIEVEMENTS

1 BEST FACULTY AWARD

Ms. B. Alekhya Hima Bindu, Assistant Professor, received **"BEST FACULTY AWARD"** by National Foundation For Innovative Scientific Research And Technology on 02 July, 2024.

2 BEST RESEARCHER AWARD

Ms. B. Alekhya Hima Bindu received **"BEST RESEARCHER AWARD"** by Tech Forum Research Foundation on 02 July, 2024.

3 PH.D. AWARDED

Mr. K. Raj Kumar has been awarded a Ph.D. degree from Sri Venkateswara University, Tirupati.

4 DISCIPLINE STAR

NPTEL-SWAYAM has recognized Mr. S. Munawwar as a Discipline Star in Computer Science & Engineering.

FACULTY DEVELOPMENT PROGRAMS

1 One Day FDP on "Innovative AI Tools for Academic Research and Writing"
03 Aug, 2024
Organized by
Santhiram Engineering College, Nandyal

2 One Week FDP on "Semiconductor Devices, Modelling & Circuit Technology"
19 – 24 Aug, 2024
Organized by
Lendi Institute of Engineering Technology, Andhra Pradesh
- Mr. S. Rambabu
- Ms. B. Alekhya Himabindu
- Mr. M. Mahesh Kumar
- Mr. S. Javid Basha

3 FDP on "Research Trends and Applications of Nanoscale Devices and Circuits"
20 – 31 July, 2024
Organized by
NIT, Warangal
Dr. N. Praveen Kumar

4 One Week FDP on "AI And Gen AI with Industry Application"
16 – 22 July, 2024
Organized by
MIT Academy of Engineering (MIT AOE) Autonomous, Maharashtra
Mr. K. Vinod Kumar

5 3 Days FDP on "Foundational Sciences: The Cornerstones of Engineering"
08 – 10 Aug, 2024
Organized by
Spoorthy Engineering College, Hyderabad
Mr. P. Sunrendra Babu

6 FDP on "Gen-AI and Prompt Engineering Using Microsoft Co-Pilot"
16 – 20 Sept, 2024
Organized by
BNM Institute of Technology Bangalore (BNMIT), Karnataka
- Mr. K. Vinod Kumar
- Mr. V. Sankarnath

7 FDP on "Inculcating Universal Human Values in Technical Education"
09 – 13 Sept, 2024
Organized by
AICTE, Nelson Mandela Marg, Vasant Kunj, New Delhi
Ms. G. Neelima

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TECHNOLOGY CATCHMENT

RESEARCH, INNOVATION & ACADEMIC EXCELLENCE

1 FDPS THROUGH NPTEL
FACULTY ACHIEVEMENTS - JULY TO OCT, 2024

Fundamentals of Artificial Intelligence	6 FACULTY
Introduction to Internet of Things	1 FACULTY
Deep Learning	1 FACULTY
Python for Data Science	1 FACULTY
Computer Vision	1 FACULTY
Optical Engineering	1 FACULTY

Faculty Certified

WORKSHOP ATTENDED
Dr.Y. Mallikarjuna Rao
Workshop on Embedded for Beginners
11 Aug, 2024 | Organized by NIELIT

2 FACULTY PATENTS
INNOVATIONS PUBLISHED IN 2024

1. A SMART ASSET TRACKING SYSTEM WITH IOT FOR WOMEN AND CHILD SAFETY APPLICATIONS — Mr. V. Sankarnath, Asst. Professor — 03 July 2024
2. IOT BASED FAULT DETECTION OF UNDERGROUND CABLES THROUGH NODE MCU MODULE — Mr. P. Surendra Babu, Asst. Professor — 03 July 2024
3. SMART HELMET FOR ROAD ACCIDENT DETECTION BASED ON IOT — Mr. S. Girish Babu, Asst. Professor — 03 July 2024
4. DESIGN OF A PORTABLE VENTILATOR — Ms. P. Marry Swetha, Asst. Professor — 03 July 2024
5. AI BASED CROP HEALTH MONITORING DEVICE (Design Patent Registered) — Ms. B. Alekhya Hima Bindu, Asst. Professor — 25 Aug 2024

3 FACULTY PUBLICATIONS
SCOPUS | SCIE | ESCI INDEXED

1. Hybrid Sand Cat Swarm Optimization Algorithm-based reliable coverage optimization in WSNs — International Journal of Information Technology | Sept 2024 | Scopus
2. DCNN-RFF-NFC: a novel design of NFC security using deep CNN-based RF fingeprinting — Neural Computing and Applications | Scopus
3. An Efficient, Variation Tolerant CNTFET Ternary Content Addressable Memory a PVT Variation Resilient Design — Transactions on Electrical and Electronic Materials | Scopus & ESCI
4. A novel NASNet model with LIME explainability for lung disease classification — Biomedical Signal Processing and Control, Vol.94 | July 2024 | SCIE
5. Design analysis of a low-power, high-speed 8 T SRAM cell using dual threshold CNTFETs — International Journal of Physica Scripta, Vol.99, No.8 | 19 July, 2024 | SCIE
6. Adaptive Clustering and Trust Aware Routing (ACTAR) for WSNs in IoT Environments — International Journal of Communication Systems | SCIE
7. A Novel Technique to Design GNRFET Based Ternary Logic Circuits for High-Performance Applications — Russian Microelectronics, pp.492-499 | Scopus

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4. **DISCIPLINE STAR** — NPTEL-SWAYAM has recognized Mr. S. Munawwar as a Discipline Star in Computer Science & Engineering.

4 FACULTY CONFERENCE PUBLICATIONS

1. Implementation of Adaptive Tunicate Swarm Algorithm for Congestion Control and Link Failure Avoidance in MANETs — ICEECT 2024, Sharda University, Noida
2. An Efficient Residual Energy Based Routing Strategy for Mobile Nodes in MANETs using the CDROA-OSPF Protocol — ICCCNT 2024, IIT-Mandi, Himachal Pradesh
3. Removal of Specular Reflection of an Image Using Dark Channel Prior — ICETECE 2024, College of Engineering Perumon, Kollam, Kerala
4. Effective Ternary Full Adder Cells for Nano-electronics Using CNTFET Technology — IEEE North Karnataka Subsection Conference, Bagalkot
5. Design and performance analysis of CNTFET based ternary encoders for next generation communication systems — ICETECE 2024, College of Engineering Perumon, Kollam, Kerala
3. An Effective Method to Develop Pseudo N-type Circuits in Ternary Logic — ICCCNT 2024, IIT-Mandi, Himachal Pradesh

5 BOOKS & BOOK CHAPTERS

1. AI's Role in 6G Security — Machine Learning Solutions Unveiled (Book Chapter) — Published in IGI Global Platform
2. Internet of Things (Book) — Published by Charulatha Publication
3. Classification of hyperspectral images using a multilevel spectral-spatial transformer network (Book Chapter) — Technological Trends in Information Science and Engineering | Tek science Publications — ISBN: 978-81965081-5-9

STUDENT ACHIEVEMENTS

1. B. Sunandha Reddy (23X51A0406) — Participated in "National Inter-College Crossword Expedition '24" — 16 July, 2024 | IIT Madras
2. B. Sunandha Reddy (23X51A0473) — Participated in "A.P State Senior Badminton Championships-2024" — 17 – 19 July, 2024 | Guntur
3. B. Sunandha Reddy (23X51A0473) — Secured 2nd Prize in Shot Put (Women) on National Sports Day — 29 Aug, 2024 | SREC Campus
4. B. Sunandha Reddy (23X51A0473) — Participated in South Zone Inter-University Badminton (Women) Tournament — 03-07 Sept, 2024 KIIT University, Bhubaneswar

7 MOOCS & INTERNSHIP DASHBOARD

NPTEL MOOC COMPLETIONS
(Students Completed)

Introduction to IoT	127 Students
Fundamentals of AI	91 Students
Machine Learning	70 Students
Cyber Security and Privacy	28 Students

VIRTUAL INTERNSHIPS COMPLETED
AICTE COHORT - 9
573 STUDENTS

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