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## Editors Message

There is a saying “Gratitude is not only the greatest of virtues but the parent of all others.”

I take this opportunity to express my heartfelt gratitude to the management for their continuous support and for taking several progressive steps to enhance our working environment. The provision of well-equipped lab facilities has not only improved the quality of our practical work but also enhanced the learning experience for all.

I also extend our sincere thanks for the modern auditorium, which has become a wonderful space for hosting events, seminars, enriching both academic and creative pursuits. Additionally, the installation of a bottled water plant reflects the management’s genuine concern for our health and well-being.

Above all, the recent increase in salaries along with well-deserved promotions has greatly motivated the entire team. This gesture not only acknowledges our efforts but also inspires us to strive for greater excellence in the future. With such strong support and vision from the management, we are confident that we will continue to grow and achieve new milestones together.

With this I also appreciate our dedicated faculty members, whose tireless efforts continue to shape the future of our students. Their passion for teaching and mentoring has been instrumental in guiding students toward success.

Focus on FOCUS and be a part of it.

| **Dr. Vidyalakshmi K**, Chief Editor

## Publications and Conferences

• **Dr. Vivek Veeraiah**, Prof, Dept. of CSE has presented a paper entitled “Block chain Based Internet of Things: Machine Learning Suspicious Object Traceability System” in Springer on 27<sup>th</sup> February 2025.

• **Dr. Vivek Veeraiah**, Prof, Dept. of CSE has published a book chapter entitled “Creating a Data Lakehouse for a South African Government –Sector Learning Control Enforcing Quality Control for Incremental Extract –Load-Transform pipe”, “Virtual and augmented reality applications for healthcare and goodness”, “Overcoming the Digital Frontier:An Examination of Indonesia’s NHS E-Health Plan and Medical Revolu-

tion”, “The central Bank of India as an example of the Green Revolution in the Banking Sector” and “Investigation Into the Use of IoT Technology and Machine Learning for the Identification of Crop Diseases”, in IGI Global on 27<sup>th</sup> February 2025.

• **Dr. M.C Supriya**, Prof., and Head Dept. of CSE(DS) presented the paper “Smart cities 2047 : AI driven Digital Infrastructure for Public service, mobility and sustainability” and was awarded as the best paper at National Level Seminar “Vision Viksit Bharat@2047: Digital Public Infrastructure for Smart cities” held at Sri Balaji University, Pune on 15<sup>th</sup> Feb 2025.

• **Dr. Savita D Torvi**, Prof., and Head Dept. of ETE published a paper on “Harmonic reduction techniques in renewable energy distribution systems using cascaded multilevel inverters a comparative analysis” in International Journal of Power Electronics and Drive System, Scopus Indexed in February 2024.

• **Mr. Praveen M**, Asst. Prof., Dept. of ECE presented paper titled “Image Forgery Detection based on Convolutional Neural Network using Hyperparameter Tuning” at the IEEE 3<sup>rd</sup> International Conference on Integrated Circuits and Communication Systems (ICICACS-2025) in association with IEEE Bangalore Section during 21<sup>st</sup> and 22<sup>nd</sup> February 2025 at H.K.E. Society’s Sir M VCE, Raichur, Karnataka, India and has got “Best Paper Award”

• **Mr. Praveen Kumar C**, Asst. Prof., Dept. of E&EE has presented a paper titled “Artificial Neural Networks in Distribution Management systems: Improving FLISR Efficiency” in the 4th International Conference on Mobile Networks and Wireless Communications ICMNWC - organized by Sri Siddhartha Institute of Technology, Tumakuru and published in IEEE Xplore on 20<sup>th</sup> February 2025.

• **Dr. Ashwini K**, Asst. Prof., Dept. of BME presented a paper in a 14th International conference on Control system and Power electronics CSPE-2025, titled “On platform based reconfiguration of wireless FPGA” which was held on 27<sup>th</sup> and 28<sup>th</sup> February 2025. Organized by IDEAS and association of computer electrical and electronics and communication engineers (ACEECOM) Mumbai, India.

• **Mrs. Supriya C B**, Asst. Prof., & **Dr. B H Manjunath**, Prof., and Head, Dept. of Civil Engineering presented the research paper entitled “Fly ash and recycled aggregate based geopolymer concrete for the precast elements development” in the 2025 International Conference on Civil Engineering Trends and Challenges for Sustainability (CTCS 2025) held at NMAM Institute of Technology, Nitte, during 6<sup>th</sup> and 7<sup>th</sup> February 2025

## Student Publication

• **Kusuma S and Nithu G Paliwal** students of 1st Semester MCA, successfully presented a paper entitled “Financial impact of digital banking and credit card transaction – A theoretic Analysis” at one day International seminar “The Cyber Path to Viksit Bharat @ 2047: Building a Safe Digital Future”, Sponsored by ICSSR held on 17<sup>th</sup> February 2025, organised by Department of Computer Science, CHRIST (Deemed to

• **Mrs. Prathibha S B**, Asst. Prof., Dept. of CSE has presented a paper entitled “An Economic analysis of fraudulent App Banking, Loan Scams, Betting Frauds, Recovery Agents & fake loan offers-A Review of Economic Insights” with coauthor **Mrs. Bharathi N**, Asst. Prof., Dept. of CSE at One day International Seminar “The Cyber path to Viksit Bharat@2047” held on 17<sup>th</sup> February 2025

• **Dr. Chetana C**, Asst. Prof., Dept. of Mathematics presented a research paper on “On soft set relations and functions” in the “International conference on statistics and discrete mathematics and engineering”, held on 24<sup>th</sup> and 25<sup>th</sup> February 2025, organized by the Department of Mathematics, CIT, Gubbi

• **Mr. Mohan Kumar T P**, Asst. Prof., Dept. of MCA presented a paper on “A Multi Stage Energy Efficient and Secure Node Localization Policy for Wireless Sensor Networks” in the 4th International Conference on Current Research in Engineering and Technology IC-CRET-2025 held on 21<sup>st</sup> and 22<sup>nd</sup> February 2025, organized by the BrainWare University, West Bengal.

• **Dr. Kavyashree N**, Asst. Prof., Dept. of MCA, successfully presented a paper entitled “Financial impact of digital banking and credit card transaction – A theoretic Analysis” at one day International seminar “The Cyber Path to Viksit Bharat @ 2047: Building a Safe Digital Future”, Sponsored by ICSSR held on 17<sup>th</sup> February 2025, organised by Department of Computer Science, CHRIST, Bangalore, India.

• **Dr. M. Nagaraja**, Prof., Dept. of Physics, presented a paper entitled “Effect of fluorescein dye on morphological, optical, dielectric, thermal and mechanical properties of KDP, ADP and ZTS single crystals” at the National Conference on Frontier Research in Sciences (FRONTSCI 2025), organized by Dept. of Mathematics, Bioinformatics and Computer Applications, Maulana Azad National Institute of Technology, Bhopal on 27<sup>th</sup> and 28<sup>th</sup> February 2025.

## Faculty Achievements

• **Dr. Ravikiran B S**, Prof., Dept. of Mechanical Engineering was invited as speaker at Sambram Academy of Management studies, Bangalore on topic “Enrichment of Academic Curriculum” on 29<sup>th</sup> Jan 2025

• **Dr. M. Nagaraja**, Prof., Dept. of Physics reviewed research papers for two reputed international journals ECS Journal of Solid State Science and Technology and Optical and Quantum Electronics.

• **Mrs. Nayana G**, Asst. Prof., Dept. of EEE has successfully completed the requirement for certification in Professional Ethics at Workplace, evaluated by AICTE under the NEAT 2.0, a program of the ministry of education, Govt. of India on 25<sup>th</sup> January 2025

• **Dr Jeevith S H and Yogeesh M** .Asst.Prof. Dept. of ETE were invited as resource person to conduct 3 days workshop on ‘Step towards innovation’ at Aryan High school, ATAL Tinkering LAB from 13<sup>th</sup> to 17<sup>th</sup> February 2025 under CAS Society, SSIT.

• **Dr. Shilpa G N**, Asst. Professor has been recognized as a reviewer for 3rd international conference on Integrated circuits and communications systems (ICICACS-2025) organized by the department of Electronics and Communication Engineering, H.K.E. SOCIETY’S Sir M Visvesvaraya College of Engineering, Raichur during 21<sup>st</sup> & 22<sup>nd</sup> February 2025.

• **Dr Komala K** Asso. Prof., Dept. of ECE and **Dr Ghouse Ahamed Z** Asst. Prof., Dept. of ECE has submitted a project proposal (RES-SAC-2024-008) under RESPOND BASKET 2024 to the Space Applications Centre (SAC), ISRO. The project focuses on developing an algorithm to align LiDAR intensity images with Digital Elevation Models (DEM) and optical images for enhanced remote sensing applications. The proposed method integrates image fusion, edge enhancement, and AI-based feature extraction to improve accuracy in terrain mapping, disaster monitoring, and urban planning. The project aims to deliver a working algorithm, research insights, and validated performance reports for ISRO.

• **Dr Srinidhi G A** as a coordinator of IACL, SSAHE Bosch I.A.C, Centre conducted ‘Free Job Fair’ in collaboration with Bosch India Foundation and SSAHE on 11<sup>th</sup> February 2025 at Sri Siddhartha Institute of Technology.



**Dr. Shivaraju G D and Dr. Akshay J**, Asst. Profs., Department of Civil Engineering, received the Convocation Certificate of Ph.D Degree from Vice Chancellor of Visvesvaraya Technological University, Belagavi in 24<sup>th</sup> Annual Convocation (Part II) held on 8<sup>th</sup> February 2025 at VTU, Belagavi.



**Dr. Usha S**, Asst., Prof., Dept. of Civil Engineering, along with her student, participated in the Anveshana Science & Engineering Fair 2024-25 at Shiksha Sadana, Bengaluru. Their project, “Exploring the Sustainable Integration of CETP Sludge as a Sand Substitute I Concrete” secured the Appreciation Prize (7<sup>th</sup> place) among 500 projects, making it to the top 50 finalists from South India.



**Dr. Yogananda B S**, Asst. Prof., Dept. of EEE has delivered a talk on “Industrial Automation Control” on 22<sup>nd</sup> February 2025 at Sri Siddhartha School of Engineering, Tumakuru.

## Faculty Participation



**Dr. Yogananda B S**, Asst. Prof., Dept. of E&EE has delivered a talk on “Emerging Trends and Placement Opportunities in Engineering” through Radio Sidhartha 90.8 FM on 11th February 2025.



**Mr. Praveen Kumar C**, Asst. Professor, Dept. of E&EE has delivered a talk on “Campus to Corporate Training Program” on 24th February 2025 for 3rd Year B.Com students at Ananya Institute of Commerce & Management, Tumakuru.

- **Dr. Vivek Veeraiah**, Prof, Dept. of CSE has Participated in the 3rd NIELIT’s International Conference on communication, Electronics and Digital Technologies NICEDT-2025 held on 14<sup>th</sup>-15<sup>th</sup> February 2025 paper entitled “Digital Transformation and Leadership: Managing Transition to Tech –Driven Business with Big Data.

- **Mr Sri Ramu D S**, Asst. Prof., Dept. of ECE, has participated & completed Attended IEEE A&P/MTTS Bangalore section Annual General Meeting (AGM) on 1<sup>st</sup> Feb, 2025 and also Participated & completed AICTE Training & Learning(ATAL) Academy Faculty development program on “AI-Enhanced 6G: Pioneering the Next Generation of Wireless Innovation” at Bannari Amman Institute of Technology from 10<sup>th</sup> to 15<sup>th</sup> February 2025.

- **Mrs Hamsalekha N P**, Asst. Prof., Dept. of ECE, has participated & completed one week AICTE Training & Learning (ATAL) Academy Faculty development program on “Next-Gen Computing: Exploring Super Computing AI & Quantum Technologies at National Institute of Technology Sikkim, from 10<sup>th</sup> to 15<sup>th</sup> February 2025.

- **Mrs Divya Prabha**, Asso. Prof., Dept. of ECE, has participated & completed ten days Faculty development programme on “Artificial Intelligence for Computer Vision and Medical Image Processing” organized by department of electronics & Communication engineering in association with Electronics & ICT Academy, NIT Warangal sponsored by Ministry of Electronics & Information Technology (MeitY), GOI from 25<sup>th</sup> January to 5<sup>th</sup> February 2025.

- **Dr Pradeep A R**, Asst. Prof., Dept. of Civil has attended One-week online ATAL FDP on “Artificial Intelligence In Disaster Mitigation And Resilient Structure Design” - Organised by SRM college of Engg-Ramapuram campus Andhra Pradesh, from 3<sup>rd</sup> to 8<sup>th</sup> February 2025.

- **Ms. Priyanka N M** Asst. Prof., Dept. of EEE participated in online STTP programme on ‘Smart Healthcare: Trends in Telemedicine, Wearables and Healthcare IOT, at Study World College of Engineering, Coimbatore from 3<sup>rd</sup> to 17<sup>th</sup> February 2025.

- **Dr Akshay J**, Asst. Prof., Dept. of Civil has participated in the seminar on “Digital Innovations in civil engineering: advancing water infrastructure and Geospatial intelligence” organized by the Department of civil engineering, Sri Venkateswara College of Engineering on 12<sup>th</sup> February 2025.(Online mode).

## Student Achievements



**Syed Raiyan** (22ME016) student of 6th semester, Dept of Mechanical Engineering participated and won 2nd place in Tumkur Regular Den Badminton Tournament organised in Tumakuru Badminton Club, Tumakuru on 8th February 2025.

• **Dr. Usha.S**, Asst. Prof., Dept. of Civil has successfully participated in the 5 days faculty development program on “Artificial Intelligence in Civil Engineering Applications: A Research Perspective”, held from 17<sup>th</sup> to 21<sup>st</sup> February 2025.

• **Dr.G T Sreenivasa**, Asst. Prof., Dept. of Mathematics participated in 5 days FDP on “Emerging Topics in Applied Science” from 4<sup>th</sup> to 8<sup>th</sup> February 2025, organized by the Department of Basic Science, Srinivas Institute of Technology, Mangaluru.

• **Dr. Rajani C B**, Asst. Prof., Dept. of Mathematics attended “International conference on statistics and discrete mathematics and engineering”, held on 24<sup>th</sup> and 25<sup>th</sup> February 2025, organized by the Department of Mathematics, CIT, Gubbi.

• **Mrs.Prathibha S B**, Asst. Prof., Dept. of CSE has participated in the One Week National Level FDP on “AI tools” Organized by Dr.Ambedker Institute of Technology in collaboration with AICTE on 17<sup>th</sup> to 21<sup>st</sup> February 2025.

• **Dr. Usha, and Dr. Shivaraju G. D.**, Asst. Profs., Dept. of Civil have participated in a five-day Faculty Development Program on “Materials, Methodologies, and Technologies in Civil Engineering” held from 24<sup>th</sup> February 2025 to 1<sup>st</sup> March 2025 at Anand International College of Engineering, Jaipur.

• **The HOD and Faculties** of Department of Mechanical Engineering participated in webinar on RoboAnalyzer Software – 3D Model-Based Simulation Tool for Teaching and Learning Industrial Robotics Concepts organised by IIT Delhi on 7<sup>th</sup> Feb 2025.

• **Dr Batluri Tilak Chandra**, Asst. Prof., Dept. of Mechanical Engg. participated in Six Day International Online FDP on “Advanced Materials for defence and Aerospace Applications” organised by Department of Mechanical Engineering, Ballari institute of Technology and Management, Ballari, Karnataka from 27<sup>th</sup> January to 01 February, 2025.

• **Dr. Suma R**, Prof., Dept. of ISE successfully participated & completed AICTE Training and Learning (ATAL) Academy Faculty Development Program on “AI in Precision Agriculture and Smart Healthcare for Society 5.0” at Maulana Abul Kalam Azad University Of Technology West Bengal from 3<sup>rd</sup> to 8<sup>th</sup> February 2025.

• **Mrs. Ranjini H**, Asst. Prof., Dept. of ISE successfully participated & completed AICTE Training and Learning (ATAL) Academy Faculty Development Program on Deep Learning for Social Impact: Atomic Object Detection in Real-World Applications at Nar-simhareddy Engineering CollegE from 3<sup>rd</sup> to 8<sup>th</sup> February 2025.

## Student Participation

• **M. Vedamurthy, Sanjana, Jeevan S R and Gagana, Bhagyashree Talikote & Sahana S** students of Dept. of ETE participated in “Vijnatham Utsav” Project exhibition at Adichunchanagiri University on 19<sup>th</sup> & 20<sup>th</sup> February 2025 under the guidance of Dr. Jeevith S H and Mr. Yogeesh M. Asst. Prof., Dept. of ETE.

• **Mr Mohmmed Younus** 3rd Sem student of Dept. Of CSE(Cyber Security) has been selected for an internship brought by the EDUNET Foundation IBM skills build cyber security 6 weeks virtual programme in February 2025.

• **Mr Prem Ranjith Verma K** 3rd Sem student of Dept. Of CSE(Cyber Security) has participated in cyber Kusthi organized by cop connect and various others platform and been selected for the final round to participate in CTF challenge

• **Chitra Shri** student of 5th Semester, Dept. of AI&ML, have attended 2 days offline workshop on “Artificial Intelligence and Machine Learning” at IISc Bangalore, from 1<sup>st</sup> to 2<sup>nd</sup> February 2025.

## Department Activities



**30 Days’ Student Training Programme on “Electric Vehicle Technology”** was conducted for Final Year students during 24<sup>th</sup> February – 25<sup>th</sup> March 2025. The resource persons are from GTT Foundation, Bangalore, and they are funded through CSR funds from Accenture, Bengaluru.



- **Mr. Mohan Kumar C R** Asst.Prof., Dept. of ECE played a key role in establishing an Memorandum of Understanding (MoU) between SSIT and BlendVidya Edu Tech Solutions to foster collaboration in education and research. This partnership aims to provide students with industry exposure, hands-on training, and skill development opportunities in emerging technologies. Through this MoU, both parties will work together on knowledge sharing, workshops, and innovative projects to enhance learning outcomes.

**Dr. Ghouse Ahamed Z**, Asst.Prof., Dept. of ECE, played a key role in establishing an MoU between SSIT and Innowitech Solutions. This collaboration focuses on industry-oriented training in Embedded Systems, VLSI, AI, and Full Stack Development, enhancing student employability and faculty expertise. The partnership also includes faculty development programs and placement assistance, bridging the gap between academia and industry.



Dept. of MBA had organised a special lecture on “Practicality of AI in Management perspective” by DTMHaris A W, HR Advisor Excel soft Mysore with Mr. Prathap and Mr. Paneesh from EDIN Bridge Foundation for the students of 1<sup>st</sup> year MBA on 7<sup>th</sup> February 2025.



**Mr. Rakesh M**, Asst. Prof., Dept. of Civil Engg., as a Survey camp officer lead the Mini Project (Extensive survey camp) along with staff and students was held at Melukote, for VI semester civil engineering students, from 19<sup>th</sup> to 25<sup>th</sup> February 2025.

## College Events



On behalf of Dr. G Parameshwara, Honorable Chancellor, SSAHE and the entire SSAHE community extends heartfelt gratitude to Dr. M.Z Kurian, Registrar, SSAHE on his retirement for his invaluable contributions and welcomes Dr. Ashok Meetha, Professor, Dept. of Mechanical Engineering and Placement Officer, SSIT-Tumakuru as Registrar, SSAHE with effect from 1<sup>st</sup> of February 2025.



**AutoEase STARTUP** has been successfully pitched at SSAHE Innovation and Incubation Council by Dr.Ghouse Ahamed Z, Dr. Komala K, Students of 6th semester Harshath B S & Abhiram L N from ECE Dept, SSIT.



“**TECHNOCARTSINFO**” has been successfully pitched at SSAHE Innovation and Incubation Council, and Mr. Bhargav N S, Alumni Dept. of Information Science and Engineering is the CEO and Ms.Vidyashree, Alumni of Dept. of Computer science and engineering is the Director. Mr.Pradeep M Asst. Prof., DEPT. of ISE is the mentor for the same.



Dr. M C Chandrashekhar, Professor, Dept. of ECE was handed over the charge of Head of the Dept. of ECE w.e.f 1<sup>st</sup> of February 2025.



**WETEAMRK7 STARTUP** has been successfully pitched for incubation at SSAHE University by Rohith Krishna G.R Founder and CEO of WETEAMRK7. from the ECE department, SSIT. The pitch took place today in the esteemed presence of the Honble Vice Chancellor SSAHE, Registrar SSAHE, COE SSAHE, Incubation SSAHE, Principal SSIT, Dean SSIT, and Dean of Examinations SSIT. This milestone was achieved under the mentorship of Dr. Srinidhi G. A., faculty of Cyber Security Department. With the guidance of Dr Manu S sir , STEP DIRECTOR , and our technical supporter for startup Sri Shivanna Sir of BME department.



**Sri Siddhartha EmbedX STARTUP** has been successfully pitched at SSAHE Innovation and Incubation Council by Maanasa M R , Asst. professors, ECE (Managing Director) in co-ordination with Dr.Jeevith S H (Assistant Professor & Founder/CEO),Yogeesh M,(Assistant Professor & Founder), Kevin (Assistant Professor & Software Engineer),Manoj (PCB designer), and M Vedamurthy(Student,Trainee), ETE Department.

## Placement News

A total of 328 students secured opportunities through campus placement drives and internship programs in February 2025, with 199 students placed in various companies and 129 securing internships. Academor recruited the highest number of students (56), followed by Launched (40), Movidu Tech (37), and Teachnook (23). Other companies that participated in the placements included Skill Intern Pvt. Ltd (18), KPMG (12), Kalpataru Projects International Ltd. (3), IntimeTec (2), Datacare India Pvt Ltd (4), and Saske Technologies Ltd. (4). In the internship domain, Palle Technologies provided the highest number of opportunities (46), followed by Q-Spider (26), Global Quest Technologies (26), Pentagon Space Pvt Ltd (15), Technologic Global Pvt Ltd (9), Vstand4U Solutions (4), and Codegnan Destination (3). The recruitment process for Palle Technologies has been successfully completed, with 46 students securing internships. Additionally, the registration process is ongoing for several reputed organizations, including KodNest, i-Exceed Technology, Thought Focus, PRDC, Coditas Solutions LLP (Pune), IBM, Corizo, Revature, Movinotech, Sanria, and TCS. These placement and internship drives continue to create valuable opportunities for students, helping them gain industry experience and enhance their career prospects.

## Sports



Men and women Team of Sri Siddhartha Institute Technology participated in SSAHE Inter Collegiate Badminton Tournament organised by Sri Siddhartha Medical College on 7<sup>th</sup> February 2025. In men's section five teams from various constituent colleges participated and SSIT men's team were the winners of the Tournament in Mens section doubles and runners in Men's section singles.

## NCC



Our 6/4Coy, SSIT had participated in Aero Show-2025 which helped them to expose themselves in innovations and advance technology in aerospace industry.

## Person of the month

# Maulana Abul Kalam Azad (1888 – 1958)

**M**aulana Abul Kalam Azad- A Visionary Leader and Freedom Fighter, was one of India's most respected freedom fighters, scholars, and educationists. Born on March 22, 1888, in Mecca (then part of the Ottoman Empire), his family moved to Calcutta (now Kolkata) when he was a child. From a young age, Azad displayed extraordinary intelligence and a deep interest in literature, philosophy, and political affairs.

Azad played a key role in India's struggle for independence. He believed that freedom was meaningless without unity, and constantly advocated for Hindu-Muslim harmony. In 1912, he started publishing a journal called 'Al-Hilal', through which he openly criticized British policies and encouraged people to join the national movement.

He was deeply inspired by Mahatma Gandhi and became a prominent member of the Indian National Congress. Azad participated in major movements like the Non-Cooperation Movement and the Quit India Movement, for which he was imprisoned multiple times. Despite facing hardship, he never gave up on his dream of a free, united India.

After India's independence in 1947, Maulana Azad was appointed the first

Education Minister of the country. He believed that education was the foundation for a strong and progressive nation. Under his leadership, the government established the University Grants Commission (UGC) and the Indian Institutes of Technology (IITs). Azad also promoted scientific and technical education and encouraged girls' education, which was revolutionary at that time.



Azad strongly opposed the partition of India and repeatedly appealed to both Hindus and Muslims to stay united. His dream was to see a secular, united, and progressive India, where all religions could coexist peacefully.

Maulana Azad passed away in 1958, but his legacy lives on. His birth anniversary, November 11, is celebrated every year as National Education Day in India. His contributions as a freedom fighter, thinker, and educationist continue to inspire generations. Abul Kalam Azad was not only a fighter for political freedom but also a champion of intellectual freedom. His vision, courage, and wisdom made him one of the greatest leaders India has ever produced.

## Quote of the month



**“ To bring about change, you must not be afraid to take the first step. We will fail when we fail to try ”**

**| Rosa Parks**



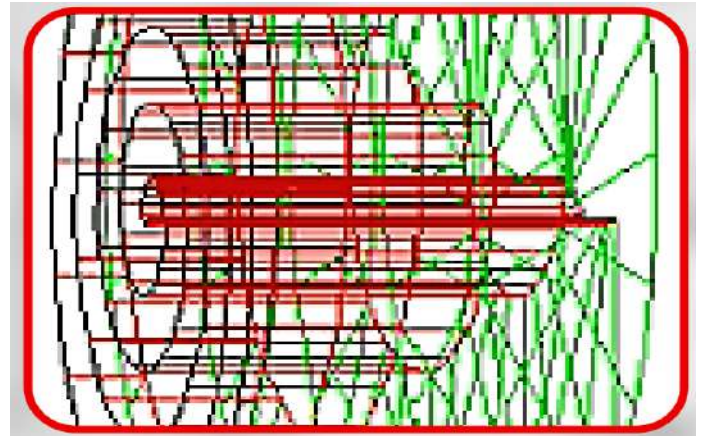
## Technical Article

# SPECIAL CURVES IN MATHEMATICS

In Mathematics, a spiral is a curve that evolves from a point and moves further away revolving around the point. According to the American Heritage Dictionary, the spiral can be defined in two different ways:-

1. A curve on a plane that winds around a fixed Centre point at a continuously increasing or decreasing distance from the point.
2. A three-dimensional curve that turns around an axis at a constant or continuously varying distance while moving parallel to the axis also called the helix. Now here is the first definition describes “planner curve” that extends in perpendicular directions with the plane. And the second definition describes two types of 3-dimensional spiral curves:-

1. A conical or volute spring and the vortex that is created when water is draining in a sink are often described as a spiral, or as a conical helix.
2. Cylindrical coil spring and a strand of DNA. Both of these above curves are quite “helical”, so the term “helix” is more useful than “spiral “. Generally the spiral term is applied if successive loop of a curve has the same diameter.



In the picture (showed in the left) the black curve at the bottom is an Archimedean spiral, while the green curve is a helix and the curve shown in red is a conic helix

TWO DIMENTIONAL:-

A two-dimensional spiral is described mostly using polar coordinates, where the radius  $r$  is a monotonic continuous function of angle  $\phi$ .

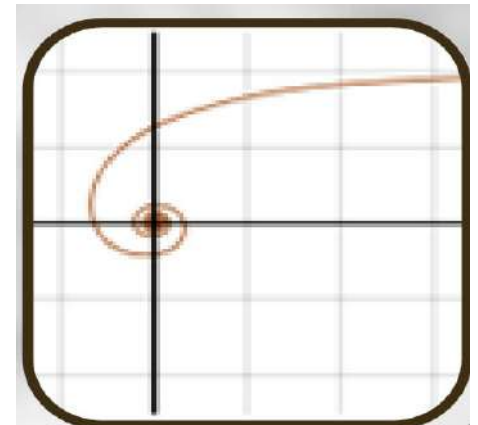
Some of the most important sorts of two-dimensional spirals include:-



Logarithmic Spiral:  $r = ae^{k\phi}$



Fermat's Spiral  $r = a\phi^{1/2}$



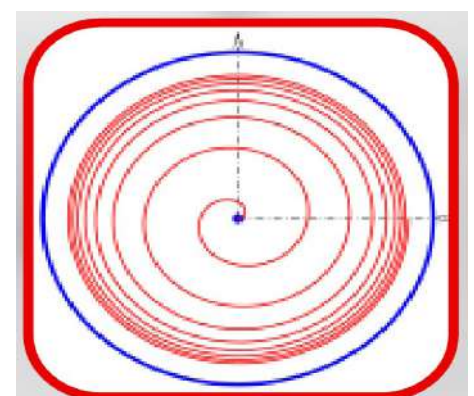
Hyperbolic spiral  $r = a/\phi$

BOUNDED SPIRAL:-

For standard spirals  $r(\phi)$  is a power function or exponential function. Now, if we choose  $r(\phi)$  as a bounded function then the spiral will be bounded.

$$r = a(\arctan(k\phi))$$

Example:  $r = a(\arctan(k\phi))$  and the choice  $k=0.1, a=4, \phi \geq 0$  give a spiral, that starts at the origin and approaches the circle with radius  $r = a\pi/2$ .



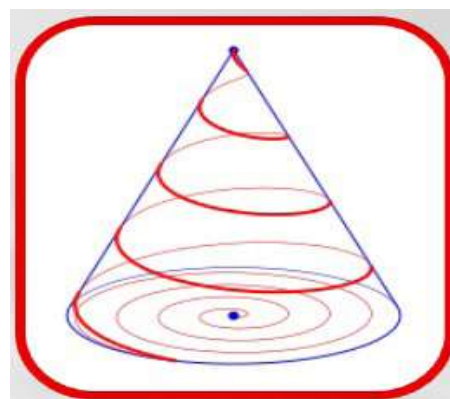
**THREE DIMENTIONAL:-  
 CONICAL SPIRAL:-**

Let, there be a spiral in the x-y plane with parametric representation  $x=r(\varphi)\cos(\varphi)$ ,  $y=r(\varphi)\sin(\varphi)$  and with that if a z coordinate  $z(\varphi)$  is added such that now the space curve lies on the cone with the equation  $m(x^2+y^2)=(z-z_0)^2$  ;  $m>0$ :

$x=r(\varphi)\cos(\varphi), y=r(\varphi)\sin(\varphi), z=z_0+mr(\varphi)$ .

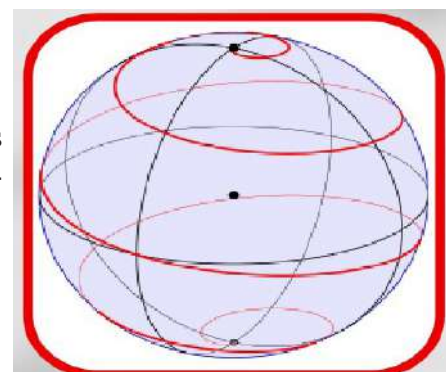
Spirals based on these are called conical spirals.

Example: Starting with the Archimedean spiral  $r(\varphi)=a\varphi$ , conical spiral like picture beside is obtained:  $x=a\varphi \cos(\varphi)$ ,  $y=a\varphi \sin(\varphi)$ ,  $z=z_0+ma(\varphi)$ .



**CONIC SPIRAL WITH ARCHIMEDEAN SPIRAL AS FLOOR PLAN  
 SPHERICAL SPIRAL :-**

If a sphere of r is represented by  $x=r.\sin\theta.\cos\theta, x=r.\sin\theta.\sin\varphi$  and  $z=r.\cos\theta$  and linear dependency  $\varphi=c\theta$ ,  $c>2$  is set then for the angle coordinates a spherical curve is obtained which is called spherical spiral with the parametric representation  $x=r.\sin\theta.\cos c\theta, y=r.\sin\theta.\sin c\theta$  where c is twice the number turns and  $0 \leq \theta \leq \pi$



THE SPIRAL WITH C=8

**THE SPIRALS IN NATURE :-**

The study of spirals in nature is very exciting. The book “on growth and form” written by D’Arcy Wentworth Thompson, described the mathematics of univalve shells (earlier described by Henry Nottidge Moseley) and the common mathematical characteristics of shells from Helix to Spirula (first observed by Jan Swammerdam). D’Arcy Wentworth Thompson describes that shells are formed by rotating a closed curve around a fixed axis. In Nautilus and ammonites, the shells are Spirals in plants and animals are frequently described as whorls.

So here in a small article we come to know about some basic concepts of spirals, its equations and the extensive presence of spiral in the nature. But there are still so many about spirals like “golden ratio”, “geometric properties of spirals” and so many.

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**March Notification**

- i) Commencement of Even Sem Classes
- ii) Results of ODD semesters
- iii) Womens Day Celebration
- iv) NBA visit to Dept. of CSE, ISE, ECE and ME



It was a great event and celebration on 23<sup>rd</sup> February 2025 the opening ceremony of PARAM packaged drinking water plant, "Nature's Gift Perfectly Bottled" by Dr.G Parameshwara, Honorable Home Minister, GoK, Chancellor, SSAHE Tumakuru. The inauguration of "Dr.G.P.Nexus" a newly set up auditorium along with new laboratories of Dept.of CSE and Dept.of AI&ML also made the day even more glorious and responsible.... We all heartily thank the management for this great event made happened. All SSITians also thank the Management for making a worth deserved promotions with salary.