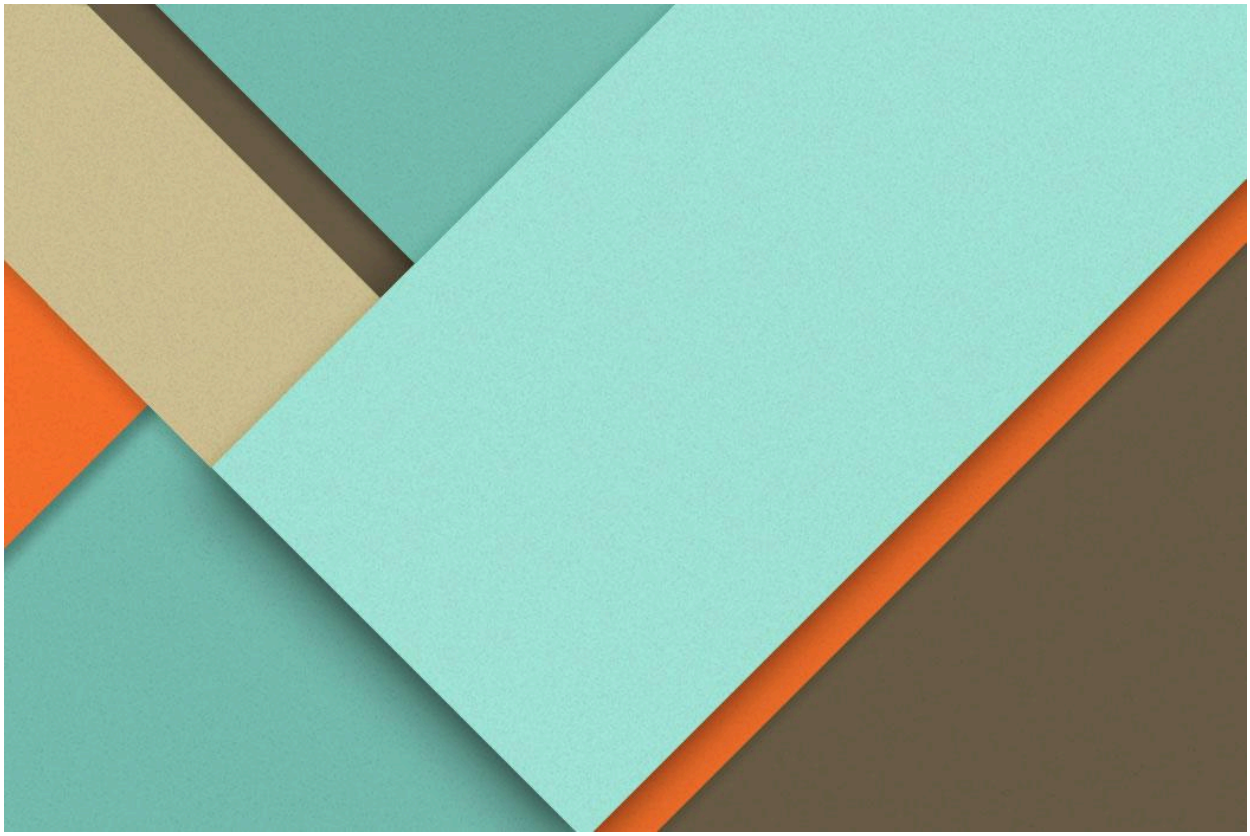


GECG-GEN Newsletter

July - December 2025

General Department
Government Engineering College
Sector-28, Gandhinagar

We are delighted to present the latest issue of the **GECG-GEN Newsletter**, featuring the recent accomplishments and initiatives of the faculty members of the General Department at Government Engineering College, Gandhinagar.

This issue of the newsletter covers the period from **July to December 2025** and highlights a wide range of faculty activities, academic contributions, professional achievements, and departmental initiatives undertaken during this time. It showcases faculty participation in conferences, workshops, research publications, training programs, outreach activities, and other significant academic and co-curricular engagements.

Through this compilation, the newsletter aims to recognize and celebrate the dedication of the faculty members towards teaching excellence, research advancement, and the holistic development of the institution. We hope this issue serves as an informative record of achievements and as a source of inspiration for continued academic growth and collaboration.

Message from the Head of Department

It gives me immense pleasure to present this edition of the **GECG-GEN Newsletter**, covering the duration from **July to December 2025**, and highlighting the accomplishments and vibrant activities of the General Department at Government Engineering College, Gandhinagar. The newsletter is a reflection of our department's unwavering commitment to academic excellence, research innovation, and holistic student development.

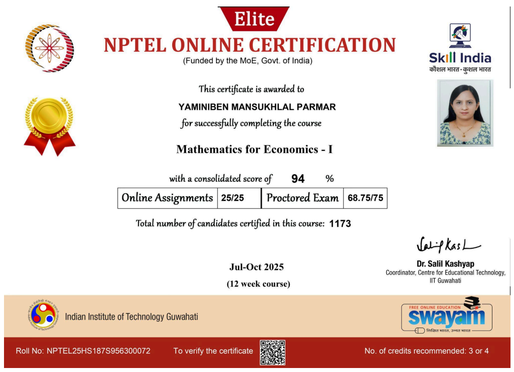
Our faculty members continue to bring laurels to the department through commendable achievements in NPTEL certifications, impactful research publications, and meaningful editorial contributions. The successful organization of expert lectures and interactive student events such as the Drawing Competition has further enriched the academic environment of our department.

I congratulate all faculty members and students for their active involvement and extend my heartfelt appreciation to the editorial team for compiling and presenting these highlights with such clarity and professionalism. Let us continue to work collaboratively toward fostering an environment of learning, growth, and innovation.

Warm regards,
Prof. A. R. Patel
Head, General Department
Government Engineering College, Gandhinagar

Faculty Activities

- Dr Yamini M Parmar participated in NPTEL Online course ‘Mathematics for Economics - I’ during July-October 2025 and secured 94% score (Elite- Gold Certificate).
- Dr. Yamini M. Parmar reviewed a research article published in the Asian Research Journal of Mathematics.



- Dr. Niravkumar D. Patel successfully completed an FDP on ‘Exploring AI Tools in Education: Practical FDP for Empowering Educators” on the NPTEL platform during 01-05, Sep 2025.
- Dr. Niravkumar D. Patel successfully completed an FDP on ‘Mathematics for Economics - I” on the NPTEL platform during July-Oct 2025.

Research Publications

- Dr. Yamini M Parmar's paper 'Total Neighborhood Antimagic Labeling for Complete Graphs' was published in 'The Bulletin of the Calcutta Mathematical Society' in 2025.
- Dr. Hemangini S Shukla's research paper 'Invariant Analysis of Heat Generation and Thermal Radiation Effects on MHD Non-Newtonian Power-Law Nanofluid over Linearly Stretching Surface with Convective Boundary Conditions' was published in 'The Journal of the Indian Academy of Mathematics' in 2025.
- Dr. Pratik M Gadhavi's research paper 'Thickness dependent studies of colloidally grown p-type Na-doped ZnS nano-crystalline films for ambipolar and optronic applications' was published in 'Physica B: Condensed Matter' (2025).
- Dr. Pratik M Gadhavi's research paper 'Enhancing thermoelectric performance of p-type Mg_2Si through doping: A first-principles study' was published in 'Micro and Nanostructures' (2025). This work by Dr. Pratik M Gadhavi and team uses first-principles simulations to explore doping strategies for improving the thermoelectric efficiency of p-type Mg_2Si, highlighting its potential in sustainable energy devices.
- Dr. Pratik M Gadhavi's research paper 'Investigation on structural, electronic, transport and thermoelectric properties of Boron/Nitrogen doped Graphene' was published in 'Computational Condensed Matter' (2025).
- Dr. Vashishtha Patel's research paper entitled 'Ethical and Pedagogical Implications of Using AI in English Language Teaching' published in "ELT Voices: International Peer-Reviewed Journal for the Teachers of English" Issue: 15.1 Volume: 15 ISSN : 2230-9136.

Editorial Contributions

- A book chapter titled "Internationalization of Education in Technical Institutions with Reference to NEP 2020," authored by Dr. Vashishtha Patel, has been published in the book English Language Teaching: Practice and Critique (ISBN: 978-81-987735-8-6), by ACTA Classic Publication, Coimbatore.
- Dr. Vashishtha Patel has edited a book titled 'Exploring the Indian Knowledge System-IV' as chief editor. The book is published by ACT Academy, Kerala (ISBN No: 978-81-994316-9-0).

Student-Centered Activities

Expert Session on 'Artificial Intelligence versus Natural Intelligence'

On July 10, 2025, the department had invited Dr. K S Purohit, MS General Surgery, Subharda Gastro Hospital, Paldi, Ahmedabad for student interaction. He is one of the renowned Gastro Surgeons in Ahmedabad.

Dr. Purohit delivered a session on 'Artificial Intelligence versus Natural Intelligence' highlighting the importance of strengthening inner self for achieving success in life.

He shared examples from the Indian mythological sources to motivate the students. The lecture examined the contrasts between machine intelligence and human cognition, highlighting how artificial intelligence excels in speed, precision, and data analysis, while natural intelligence embodies creativity, emotional depth, and ethical judgment. Dr. Purohit emphasized that AI, though powerful, cannot replicate human intuition, moral responsibility, or the capacity for self-reflection.

To enrich his arguments, Dr. Purohit drew upon timeless wisdom from the *Bhagavad Gita* and other Indian philosophical traditions. He illustrated how ancient teachings emphasize discernment, values, and consciousness—qualities that remain uniquely human and cannot be programmed into machines. These examples provided a cultural and spiritual dimension to the discussion, reminding participants that technology must be guided by ethical and humanistic principles.

The session also explored AI's growing role in education, healthcare, and industry, stressing the need to balance technological progress with human values. Dr. Purohit encouraged the audience to view AI as a supportive tool rather than a substitute for human intellect. The interactive dialogue inspired reflections on the future of human-machine collaboration. Overall, the session offered profound insights into responsibly harnessing AI while preserving the uniqueness of natural intelligence.

Expert Session on 'Career Opportunities in Merchant Navy'

Dr. Vashistha Patel, Dr. Tarun Patel and Dr. Pratik M Gadhavi organized an expert session on Career Opportunities in the Merchant Navy on July 18, 2025. It was planned in collaboration with the Training & Placement Cell of the institute. The session witnessed enthusiastic participation from more than 150 students. Prof. Rahul Kale and Prof. Chintan Kishor from Tolani Maritime Institute, Pune served as the resource persons.

They provided valuable insights into career pathways in the Merchant Navy, eligibility criteria, training requirements, and global opportunities in the maritime sector.

The speakers also guided students on skill development, discipline, and career planning essential for success at sea. The interactive session helped students gain clarity about maritime careers.

Life-Saving Skills in Action: CPR Training at Government Engineering College, Gandhinagar

The General Department of Government Engineering College, Gandhinagar organized a CPR (Cardiopulmonary Resuscitation) training programme for students on July 25, 2025, with the objective of creating awareness about emergency life-saving techniques and enhancing students' practical skills in medical emergencies.

The training session was conducted by Dr. Vivek Bakshi, MD (Medicine) from Shelby Hospital, Naroda who served as the resource person for the programme. Dr. Bakshi provided a detailed explanation of the importance of CPR in saving lives during cardiac arrest, drowning, or sudden medical emergencies. He explained the basic principles of CPR, including chest compressions, rescue breathing, and the correct sequence of actions to be followed during an emergency situation.

A live demonstration of the CPR procedure was conducted, during which Dr. Bakshi illustrated the correct hand positioning, compression depth, and rhythm required for effective CPR. Students were also informed about common mistakes to avoid and the importance of remaining calm and alert while providing first aid. The interactive nature of

the session encouraged active participation, and students were given the opportunity to clarify their doubts.

The programme was highly informative and beneficial, equipping students with essential life-saving knowledge and fostering a sense of social responsibility. The General Department's initiative was appreciated by both students and faculty members for its relevance and practical value.

As part of the program, a free health checkup camp was organized at the college, where faculty members and students had their blood pressure and blood sugar levels tested by the Shelby Hospital team.

Expert Session on 'Indian Knowledge System and Role of Youth in Nation Building'

The department organized an expert session on "Indian Knowledge System and Role of Youth in Nation Building" on July 30, 2025 with the objective of fostering the overall personal and professional development of engineering students. The session was delivered by Dr. Gaurang Gandhi, Urologist, Gandhi Urocare, Paldi, Ahmedabad, who shared valuable insights on the significance of life skills in shaping a successful, balanced, and meaningful life, especially for aspiring engineers.

Dr. Gandhi specifically addressed the importance of life skills in the life of an engineer, stating that technical knowledge alone is no longer sufficient in today's competitive and fast-paced world. Engineers are expected to work in multidisciplinary teams, communicate ideas clearly, manage deadlines, handle pressure, and adapt to rapidly changing technologies. Life skills such as problem-solving, critical thinking, resilience, and interpersonal communication play a crucial role in enhancing workplace efficiency, professional relationships, and leadership potential. He also stressed the importance of maintaining physical and mental well-being, ethical conduct, and work-life balance to ensure long-term career success.

Dr. Gandhi encouraged students to consciously practice life skills in their daily lives to become not only successful professionals but also responsible and empathetic individuals.

During his visit to the institute, Dr. Gandhi was invited to plan trees on the campus.

Sessions on Cyber Crime and Cyber Security

On August 5 and September 9, 2025, the department organized sessions on the topic of Cyber Crime and Cyber Security. The main objective of the event was to create awareness among students about the increasing cyber threats in the digital age and to guide them on safe online behavior.

More than 150 students participated enthusiastically in each session. The sessions were conducted by Mr. Chirag Agrawal, Cyber Security Expert; Mr. Harshad Sarvaiya, Police

Sub-Inspector, Cyber Cell, Gandhinagar; and Mr. Mahavirsingh, Local Crime Branch, Gandhinagar, who provided valuable guidance to the students.

The experts shared detailed information on modern forms of cyber crimes such as hacking, phishing, online fraud, and the preventive measures required for digital security. They also explained real-life case examples to help students understand how to remain vigilant and what legal steps can be taken in case of cyber incidents.

At the end of the lecture, a question-and-answer session was organized, during which students raised their queries and received practical advice from the experts.

The sessions were jointly coordinated by Dr. Tarun Patel, Dr. Vashistha Patel and Dr. Pratik M Gadhavi under the guidance of Dr. A R Patel, Head, General Department.

Expert Session on 'AI & Automation: The Future of Engineering Careers and the Entrepreneurial Mindset'

On August 21, 2025, Dr. Tarun Patel, Dr. Vashistha Patel and Dr. Pratik M Gadhavi organized an expert session on 'AI & Automation: The Future of Engineering Careers and the Entrepreneurial Mindset' by Shri Kandarp Bhatt, Founder and CEO, Zealousweb Pvt. Ltd., Ahmedabad.

The session *"AI & Automation: The Future of Engineering Careers and the Entrepreneurial Mindset"* was intended to provide students with insights into emerging technological trends and career opportunities. The session was delivered by Shri Kandarp Bhatt, Founder and CEO of Zealousweb Pvt. Ltd., Ahmedabad.

During the session, Shri Bhatt discussed the growing impact of artificial intelligence and automation across engineering domains and emphasized the skills required to remain relevant in a rapidly evolving industry. He highlighted the importance of innovation, adaptability, and continuous learning, along with the need to cultivate an entrepreneurial mindset among engineering students. The session also focused on real-world applications, industry expectations, and how young engineers can transform ideas into viable solutions and startups.

The interactive session witnessed active participation from students, who benefited from practical examples and career-oriented guidance. Overall, the expert talk proved to be informative and motivating, encouraging students to align their technical knowledge with future-ready skills and entrepreneurial thinking.

Academic Field Visit to Mathematics Laboratory Development

The Mathematics Section of the General Department, in collaboration with IITE, Gandhinagar, jointly organized an academic field visit to the campus for the students of IITE, Gandhinagar on Friday, September 19, 2025. The visit was focused on discussions and knowledge sharing related to the development of the Mathematics Laboratory at IITE, Gandhinagar, providing students with practical insights into laboratory planning, resources, and pedagogical applications.

The programme was smoothly coordinated by Dr. Yamini M. Parmar and Dr. Nirav D. Patel, whose efforts ensured the successful execution of the visit and meaningful academic interaction between the institutions.

CERTIFICATE
OF APPRECIATION

We heartily appreciate and recognize the educational services of

Dr. Yamini Parmar

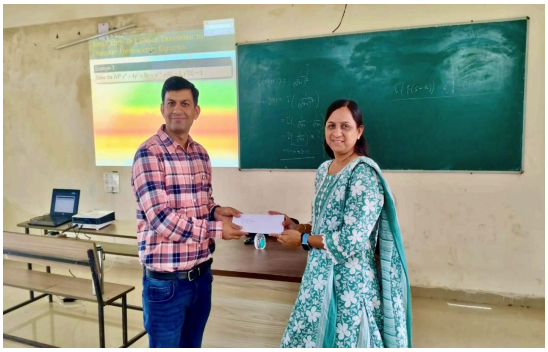
Acted as liasoning officer for training of our Students at your college under the training programme "Mathematics Laboratory Devlopment" organized by Indian Institute of Teacher Education -Gandhinagar on 19/09/2025

DR. PARAS D. UCHAT
Coordinator, IITE - Gandhinagar

Expert Talks Organized

Expert Talk on Applications of Laplace Transform – August 26, 2025

The General Department (Mathematics Section), in collaboration with RUSA, successfully organized an expert talk on “Applications of Laplace Transforms” on August 26, 2025. The session was delivered by Dr. Mahendra A. Patel, Associate Professor, Government Engineering College, Modasa, who provided valuable insights into the theoretical foundations and practical applications of the Laplace transforms in engineering and applied sciences.

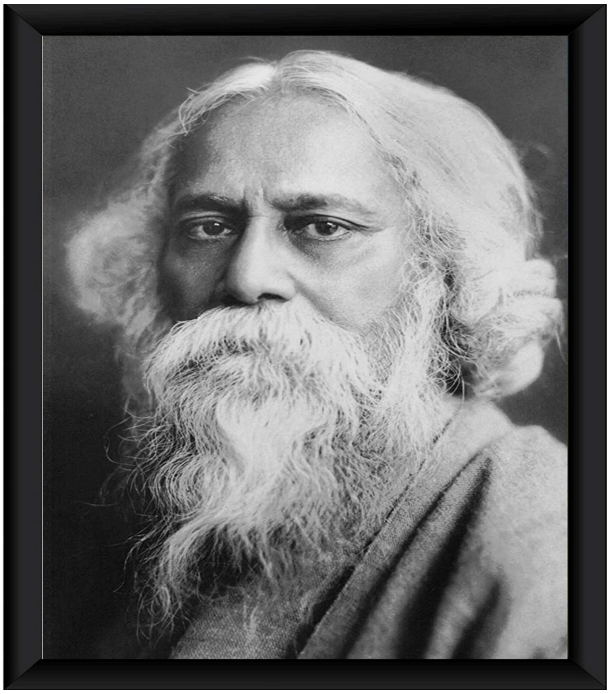


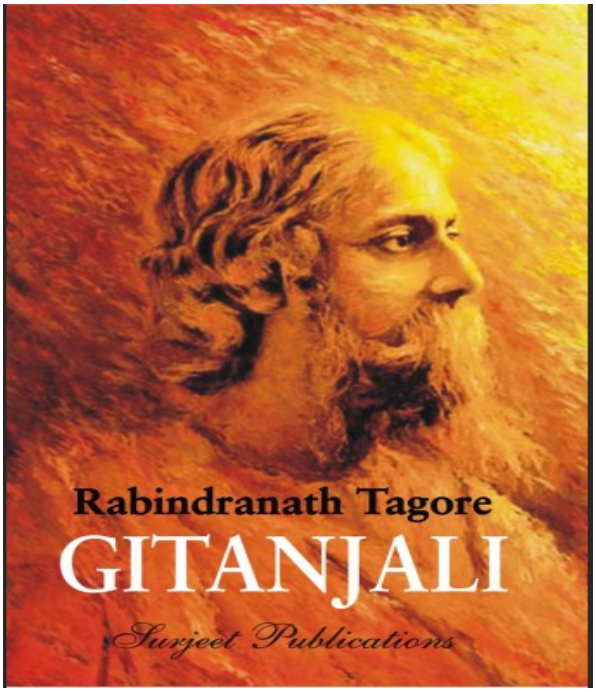
The event was effectively coordinated by Dr. Yamini M. Parmar and Dr. Nirav D. Patel, whose efforts contributed to the smooth organization of the programme. The lecture proved to be academically enriching and beneficial for students and faculty, strengthening conceptual understanding and encouraging deeper engagement with mathematical applications in engineering.

Indian Knowledge Corner

Rabindranath Tagore: A Timeless Voice in World Literature

Rabindranath Tagore (1861–1941) stands as one of the most influential literary figures of the modern world and a towering presence in Indian and global literature. Born in Calcutta (now Kolkata) into a culturally rich Bengali family, Tagore was a poet, philosopher, novelist, playwright, composer, and educationist whose creative genius transcended national and linguistic boundaries. Writing primarily in Bengali, he reshaped Indian literature while engaging deeply with universal human concerns.



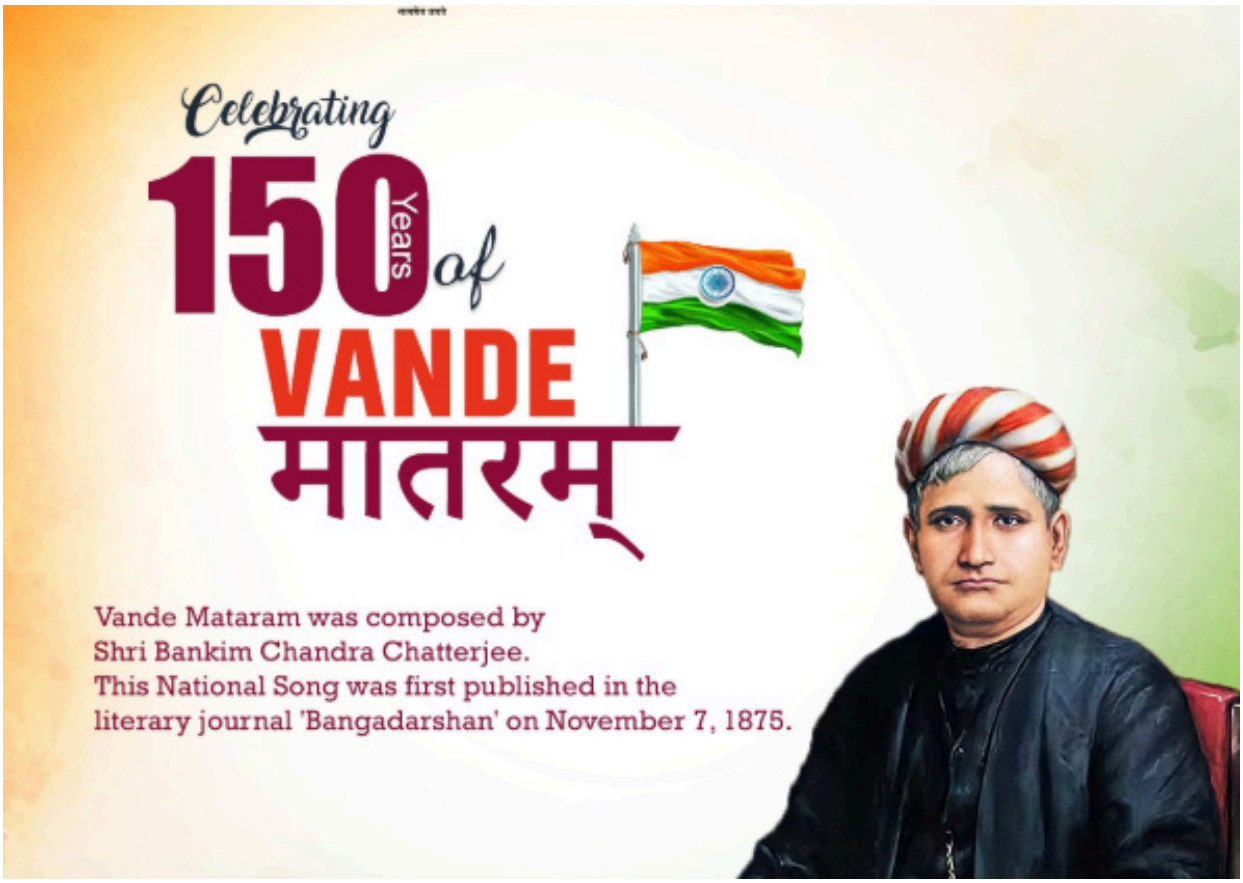


Among Tagore's greatest achievements is winning the Nobel Prize in Literature in 1913 for *Gitanjali*, making him the first non-European to receive this honor. His literary output was vast, including poetry collections, novels such as *Gora* and *The Home and the World*, short stories, essays, and plays. He also composed over 2,000 songs, known as Rabindra Sangeet, which remain integral to Indian cultural life. Notably, he authored the national anthems of India (*Jana Gana Mana*) and Bangladesh (*Amar Sonar Bangla*), a rare and enduring legacy.

Tagore's contribution to literature lies in his ability to blend Indian spiritual traditions with modern humanism. His works explore themes of love, freedom, nature, identity, and social reform, often critiquing rigid nationalism and social inequality. Through simple yet profound language, Tagore gave voice to both individual emotion and collective conscience.

Bankimchandra Chattopadhyay: Literary Pioneer and Composer of Vande Mataram

Bankimchandra Chattopadhyay, often hailed as the father of modern Bengali literature, was one of the first graduates of the University of Calcutta. His literary genius produced landmark novels such as *Anandamath*, *Kapalkundala*, and *Durgeshnandini*, which combined storytelling with social and moral themes.



The most significant of his contributions was the composition of *Vande Mataram* in 1875, later included in his novel *Anandamath*. Written in a blend of Sanskrit and Bengali, the hymn personified the motherland as a divine figure, invoking reverence and patriotic fervor. During the freedom struggle, *Vande Mataram* became a rallying cry, sung at political gatherings and protests, inspiring generations of Indians to unite against colonial rule.

Bankimchandra's vision was not limited to literature; he sought to awaken national consciousness through cultural pride and spiritual strength. His works bridged tradition and modernity, laying the foundation for nationalist thought in India. Today, *Vande Mataram* remains a symbol of devotion to the motherland, enshrining Bankimchandra's legacy as both a literary icon and a nationalist visionary.

Dr. Vikram Sarabhai - Father of Indian Space Program

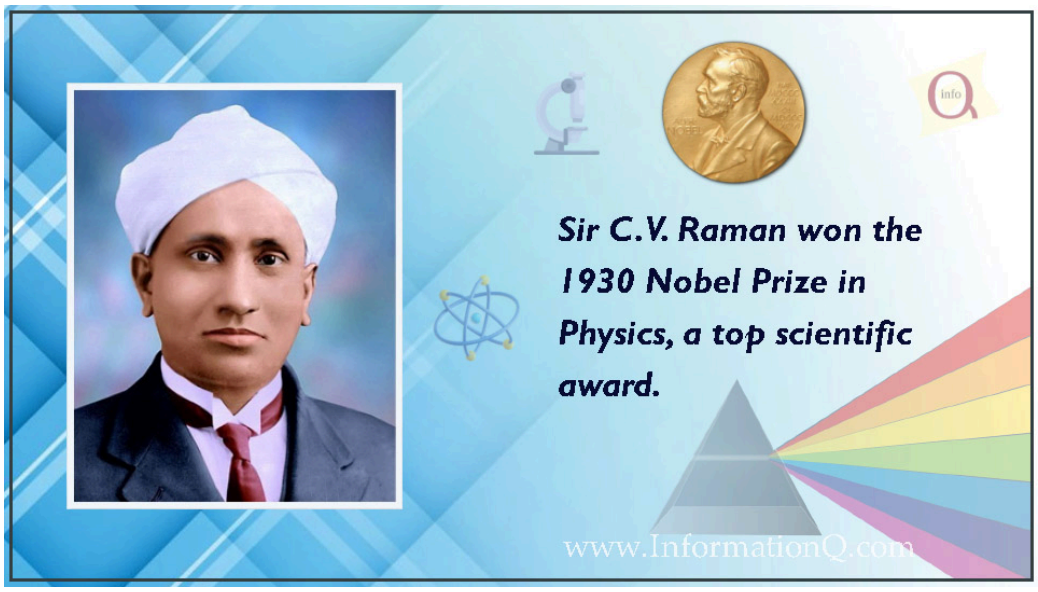
Dr. Vikram Sarabhai, celebrated as the father of India's space program, was a visionary scientist who transformed the nation's scientific landscape. In 1962, he established the Indian National Committee for Space Research (INCOSPAR), which later evolved into the Indian Space Research Organisation (ISRO) in 1969. His foresight was remarkable: he believed that space technology should not be pursued merely for prestige but harnessed to meet India's developmental needs. Sarabhai emphasized that satellites could revolutionize communication, television broadcasting, meteorology, and disaster management, thereby directly improving the lives of millions. This pragmatic approach distinguished him as a leader who combined scientific excellence with social responsibility.

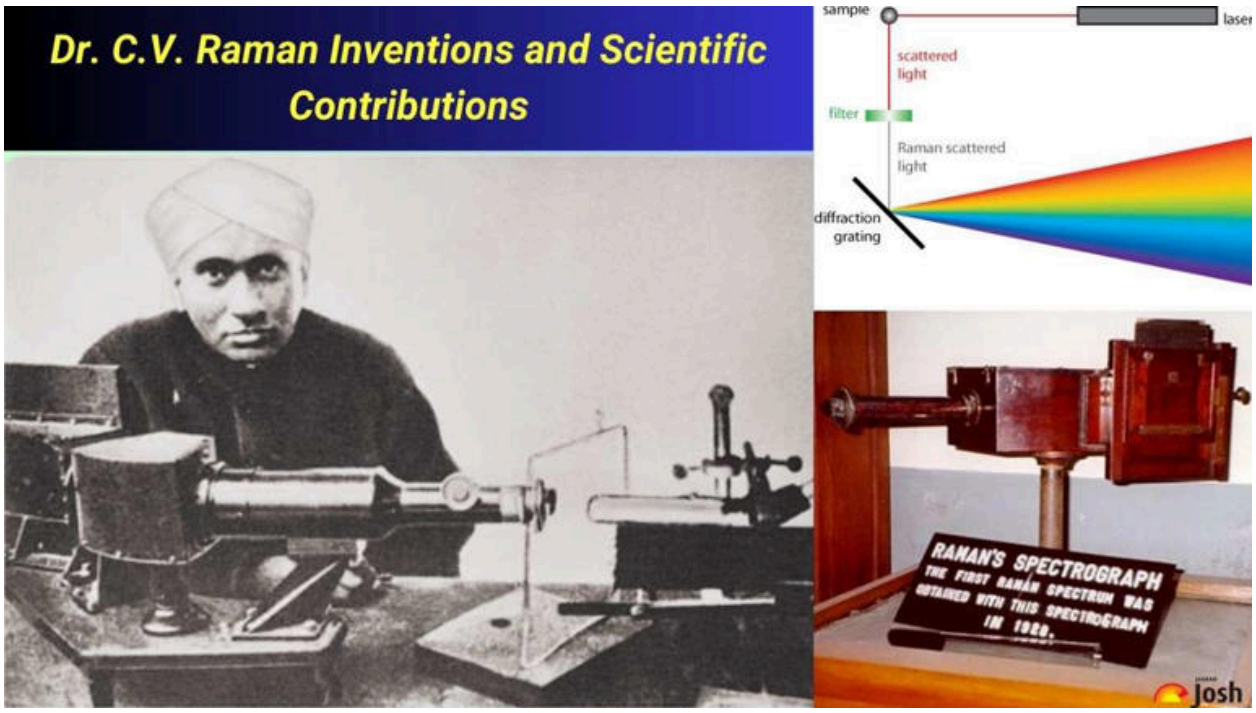
Beyond founding ISRO, Sarabhai laid the groundwork for India's major space programs. He envisioned the INSAT series for telecommunication and meteorology, and the IRS series for remote sensing to aid agriculture, forestry, and water resource management. His leadership also led to the creation of key institutions such as the Space Applications Centre in Ahmedabad and the Vikram Sarabhai Space Centre in Thiruvananthapuram, which became hubs for payload development and launch vehicle technology. Under his guidance, India launched its first satellite, Aryabhata, in 1975 with Soviet assistance, marking the country's entry into space exploration.

Sarabhai's legacy extends far beyond his lifetime. His vision paved the way for later achievements such as the PSLV and GSLV launch vehicles, the Chandrayaan lunar missions, and the Mars Orbiter Mission. More than a scientist, he was a nation-builder who saw space research as a tool for progress and empowerment. His contributions continue to inspire ISRO's missions, ensuring that India's space program remains rooted in both innovation and service to society.

C. V. Raman: Nobel Laureate and Pioneer of Light Science

Chandrasekhara Venkata Raman was born on November 7, 1888, in Tiruchirappalli, Tamil Nadu. Encouraged by his father, a physics lecturer, Raman displayed early brilliance, completing his B.A. and M.A. in Physics from Presidency College, Madras by the age of 18. His first research paper, published during his master's studies, marked the beginning of a distinguished career.





Discovery of the Raman Effect

While working at the Indian Association for the Cultivation of Science (IACS) in Calcutta, Raman studied light scattering. In 1928, with his student K. S. Krishnan, he discovered that when monochromatic light passes through a transparent material, part of the scattered light changes wavelength due to molecular interactions. This phenomenon, named the Raman Effect, became a cornerstone of spectroscopy and molecular analysis. For this discovery, Raman received the Nobel Prize in Physics in 1930, becoming the first Indian scientist to achieve this honor.

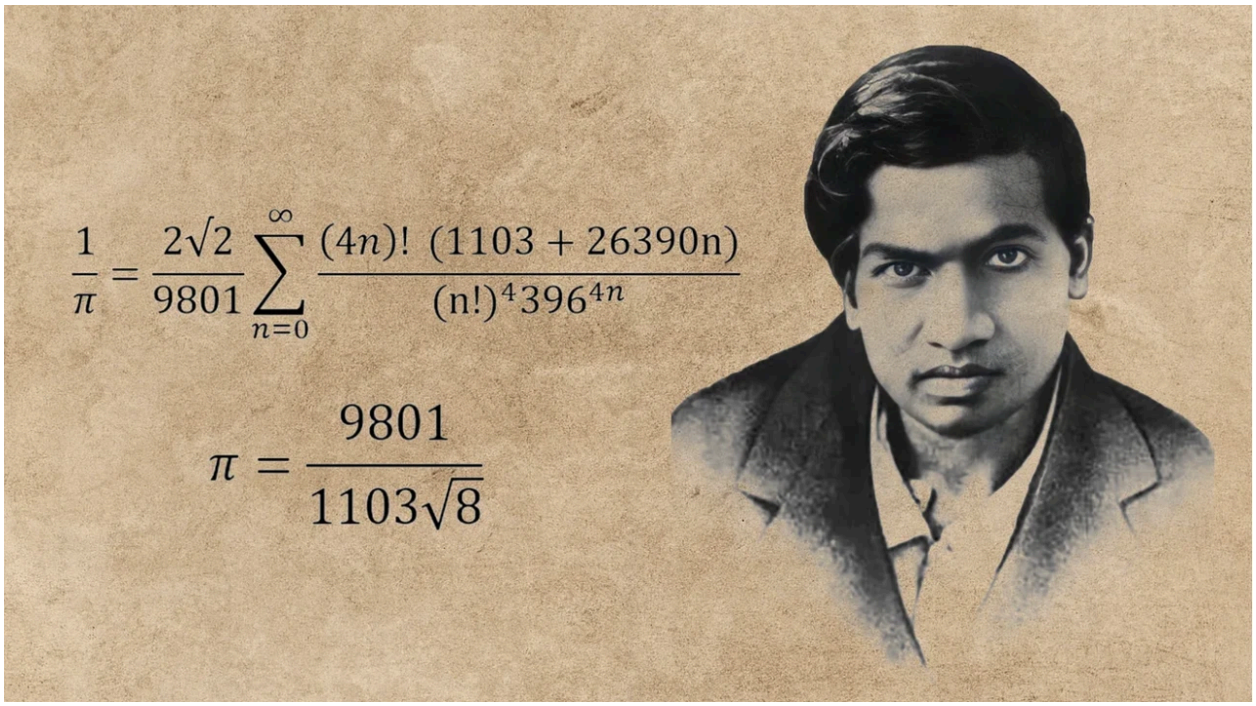
Broader Scientific Contributions

Raman's research extended to acoustics, optics, and crystallography. He analyzed the acoustics of Indian classical instruments like the tabla and veena, explained the blue color of the sea through molecular scattering, and advanced solid-state physics with the Raman-Nath theory of light diffraction.

Legacy and Institutions

Raman was a Fellow of the Royal Society (1924), knighted in 1929, and awarded the Bharat Ratna in 1954. He founded the Indian Academy of Sciences (1934) and the Raman Research Institute (1948), mentoring future luminaries such as Homi J. Bhabha and Vikram Sarabhai. His contributions are commemorated annually on National Science Day (February 28).

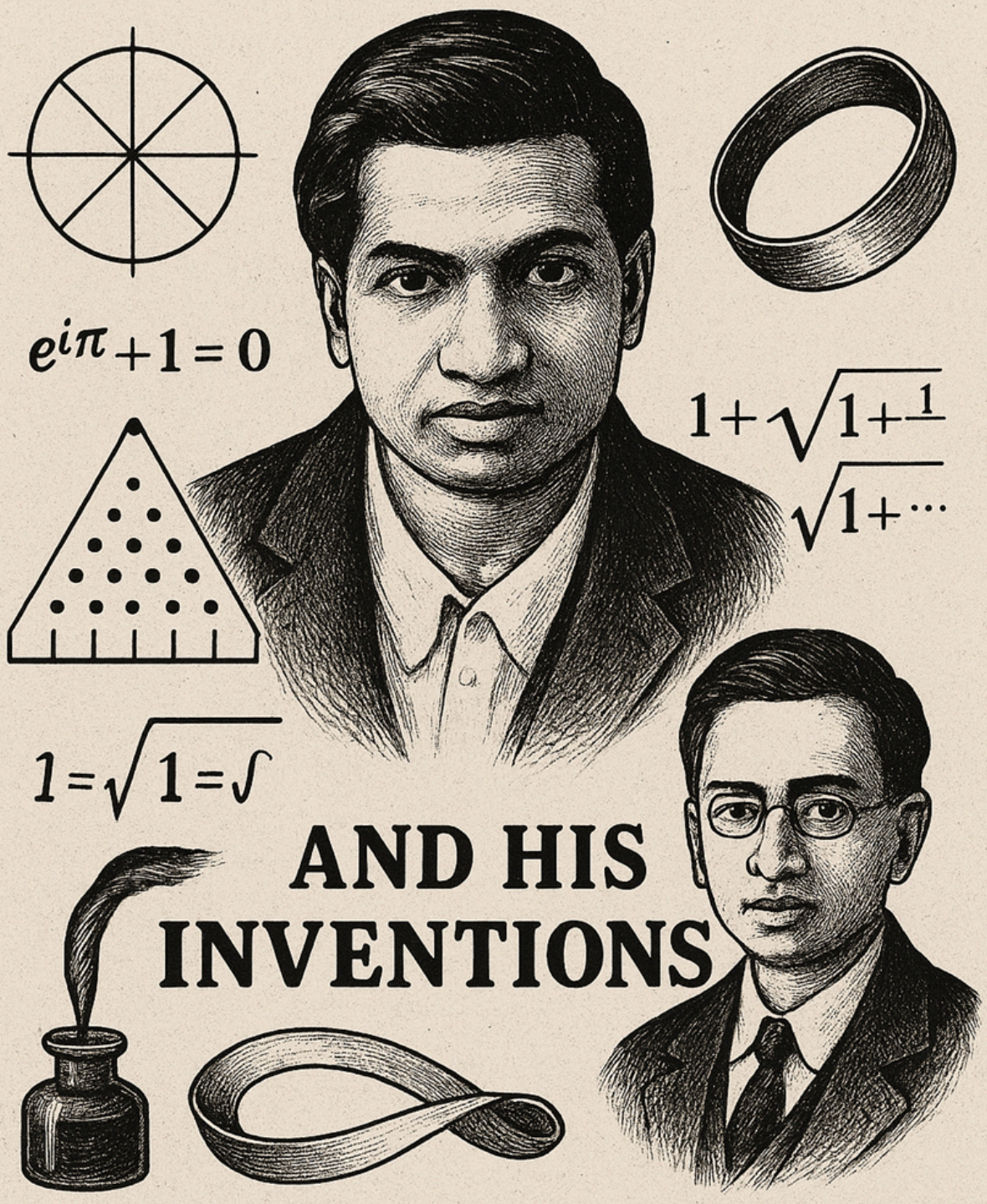
Srinivasa Ramanujan: The Intuitive Genius of Mathematics



Srinivasa Ramanujan (1887–1920) was born in Erode, Tamil Nadu, and grew up in Kumbakonam. From a young age, he displayed an extraordinary aptitude for mathematics, mastering advanced concepts without formal training. At 16, he discovered George Carr's *Synopsis of Elementary Results in Pure and Applied Mathematics*, which became his guidebook and inspired him to develop thousands of original theorems. Despite struggling academically in other subjects, his brilliance in mathematics stood out, and he began producing results that astonished local scholars.

Ramanujan's turning point came in 1913 when he began corresponding with the renowned British mathematician G. H. Hardy. Recognizing his genius, Hardy invited him to Trinity College, Cambridge, where Ramanujan collaborated on groundbreaking work in number theory, modular forms, and infinite series. Together, they produced influential results, including the Hardy–Ramanujan formula for partition functions. His work on continued fractions and prime numbers revealed insights far ahead of his time, and his intuitive approach to mathematics often baffled and inspired his peers.

SRINIVASA RAMANUJAN

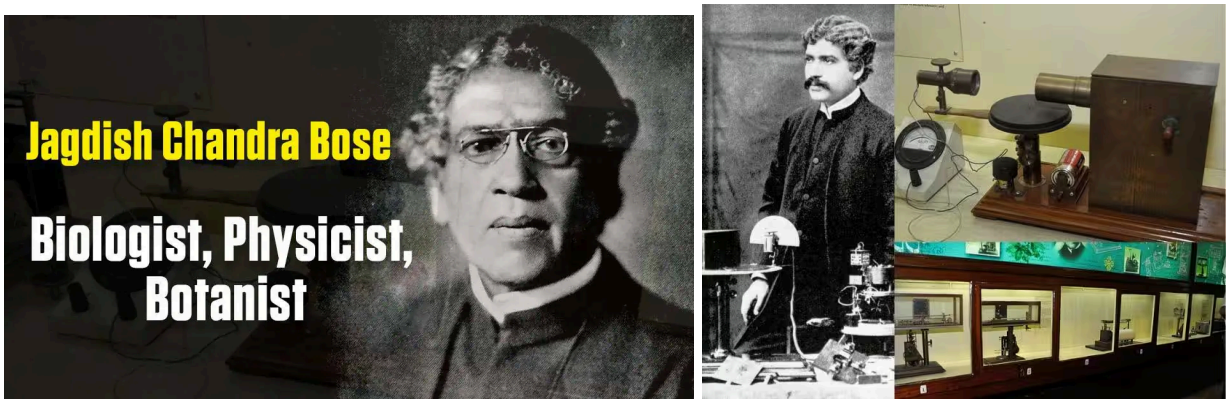


AND HIS INVENTIONS

Though his life was tragically short—he died at the age of 32—Ramanujan left behind notebooks filled with thousands of results, many of which continue to inspire modern research in mathematics and physics, including applications in string theory and black hole studies. Elected a Fellow of the Royal Society in 1918, he achieved international recognition. Ramanujan's legacy endures as a symbol of pure genius, blending deep intuition with a spiritual vision of mathematics as a divine language.

Jagadish Chandra Bose: Scientist of Waves and Life

Jagadish Chandra Bose (1858–1937) was born in Mymensingh, Bengal (now in Bangladesh) and educated in Calcutta and later at Cambridge. His early life was shaped by the egalitarian ideals of the Brahmo Samaj and exposure to diverse cultural traditions. After returning to India in 1885, he joined Presidency College, Calcutta, as a professor of physics. Despite facing racial discrimination under colonial rule, Bose persisted in his teaching and research, eventually gaining recognition for his brilliance. His experiments with radio waves in the 1890s demonstrated reflection, refraction, and polarization of electromagnetic waves, and he developed early semiconductor detectors. His mercury coherer was later used by Guglielmo Marconi to receive the first transatlantic radio signal, highlighting Bose's foundational role in wireless communication and solid-state physics.



By 1900, Bose expanded his research into plant physiology, applying physical principles to biological systems. He invented the **crescograph**, an instrument capable of measuring minute plant movements and growth. Through this, he demonstrated that plants respond to stimuli such as light, temperature, chemicals, and anesthetics with electrical and mechanical changes similar to nerve signals in animals. His findings revealed that plants experience fatigue, excitation, and even a death spasm, establishing the basis of what is now called plant neurobiology. His works, including *Response in the Living and Non-Living* (1902) and *The Nervous Mechanism of Plants* (1926), influenced future studies in biology and cybernetics.

Bose's legacy extended beyond his scientific discoveries. In 1917, he founded the **Bose Institute in Calcutta**, envisioned as a "temple of science" dedicated to research and learning. He was knighted for his contributions and became the first Indian scientist elected a Fellow of the Royal Society in 1920. His interdisciplinary approach, blending physics and biology, and his commitment to advancing science in India, made him a true pioneer. Today, Bose is remembered not only for his innovations in radio science and plant physiology but also for his vision of science as a force for cultural and national progress.