

TULSIRAMJI GAIKWAD-PATIL College of Engineering & Technology An Autonomous Institute



NAAC Accredited

www.tgpcet.com

Department of Basic Sciences and Humanities

FUSION Magazine 2024-25

Volumn:1 1ssue:2



B.Tech | B.Arch | M.tech | MBA | MCA | Polytechnic | BAMS | D.Pharm | B.Sc | Nursing | Physiotherapy

Vision Mission of the Institute



"To emerge as a learning Center of Excellence in the National Ethos in domains of Science, Technology and Management"



- To strive for rearing standard and stature of the students by practicing high standards of professional ethics, transparency and accountability
- To provide facilities and services to meet the challenges of Industry and Society.
- To facilitate socially responsive research, innovation and entrepreneurship.
- To ascertain holistic development of the students and staff members by inculcating knowledge and profession as work practices.

POs

- 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- 6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- 9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- 10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- 11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- 12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Our Management



Dr. Mohan Gaikwad-Patil Chairman, Gaikwad-Patil Group

"Education is the passport to the future, for tomorrow belongs to those who prepare for it today."

Dr. Mohan Gaikwad-Patil, with more than 35 years of experience in the education system to his credit, established the Gaikwad-Patil Group of Institutions in Nagpur to cater to the quality education needs of the youth in Vidarbha. His early experience teaching in an engineering college made him acutely aware of the dissonance between engineering education in the country and the requirements of the industry. He therefore began with the dream of starting an engineering college that equips students with knowledge, skills, and attitudes relevant to the industry. That dream has manifested today in the form of an educational group well known in the region for its constant striving to impart quality and industry-relevant education to the students by teaching courses like B.Tech, M.Tech, Architecture, Polytechnic, MBA, MCA, Pharmacy, BAMS, Physiotherapy and Nursing. Hardly in his early forties, Dr. Mohan Gaikwad-Patil is the young and dynamic face of the group. His contagious enthusiasm and unflagging drive are truly inspiring.



Mr. Akash Gaikwad-Patil Vice Chairman, Gaikwad-Patil Group

"Education is not preparation for life, education is life itself."

In a world brimming with challenges, the need for brilliant engineers who can think critically, solve problems creatively, and adapt to a rapidly evolving technological landscape has never been greater. At TGPCET, we are committed to providing an education that goes beyond textbooks. Our curriculum is meticulously crafted to equip students with the technical expertise, soft skills, and design thinking abilities necessary to thrive in the ever-changing engineering landscape. We believe in nurturing well-rounded individuals with a strong foundation in ethics, social responsibility, and a passion for making a positive impact on the world. Our state-of-the-art facilities, coupled with a dedicated and experienced faculty, provide a stimulating learning environment that ignites curiosity and encourages exploration. We don't just produce engineers; we empower future leaders, innovators, and entrepreneurs who will shape the world of tomorrow. We are confident that our graduates will be at the forefront of technological advancements, tackling global challenges, and building a future brimming with possibilities.

Our Management



Dr. Anjali Patil-Gaikwad President, Gaikwad-Patil Group of Institutions

"Shaping Minds, Building Futures: Welcome to the Engineering Innovation Hub."

"Welcome to TGPCET, a premier institution dedicated to nurturing exceptional engineers who can shape the world of tomorrow. Here, we believe in cultivating a stimulating learning environment that fosters creativity, critical thinking, and a passion for innovation. Our vision is to provide a holistic learning experience that equips you with the technical expertise, leadership skills, and innovative thinking needed to thrive in a dynamic industry. With a rich legacy of academic excellence, we offer a diverse range of engineering and management programs designed to equip you with the knowledge, skills, and experiences needed to thrive in the ever-evolving engineering landscape. Our dedicated faculty, state-of-the-art facilities, and strong industry partnerships ensure you receive a wellrounded education that prepares you for success in your chosen field. We invite you to join our vibrant community and embark on a journey of excellence."



Dr. Sandeep Gaikwad students to make use Treasurer, Gaikwad-Patil Group glorious career ahead. of Institutions

"Creating a Brighter Tomorrow, One Investment at a Time: Your Pathway to Engineering Excellence ."

The essence of life is to live a life for others and die for a noble cause. We express our gratitude for receiving an opportunity to serve the nation. We have a crystal-clear vision of enlightening the student brain with a sound and technology-rich academic curriculum. We pledge to ensure that the students will not only progress in their respective fields but will also become responsible citizens by abiding by the rules and will live disciplined life. Our college has state-of-the-art facilities for teaching, research and development. The students who have passed out of our college have already proved their mettle in various fields. I personally appeal to all the students to make use of the facilities here and improve their skills to have a

Our Management



Dr. P. L. Naktode Principal Principal@tgpcet.com

"Nurturing Innovation, Empowering Leaders - Engineering Education Redefined ."

It is my privilege to warmly welcome you to the college, which is an autonomous institution, committing to quality education. We work on the principle of "Learn to Grow" With this very inspiring thought, Vidarbha Bahu Uddeshiya Shikshan Sanstha Nagpur has laid a foundation to provide education in the field of engineering to the students to enable them to become good practicingengineers, capable managers and above all a good human being to build a stronger, vibrant and skilled India. We dream that TGPCET should play a definite role in shaping the careers of tomorrow's leaders and developing individuals to have an impact on global development.

Looking at our track records, TGPCET has achieved many feathers in terms of consistently good results, placements, and extracurricular activities too. We are continuously in the process of imparting quality education to our budding engineers. This journey is succeeding more gloriously year after year making our Engineers rule the world. Success depends on opportunity. Try to get the maximum from the available resources. I wish best of luck in all your endeavors.



Dr. Pragati Patil Vice Principal viceprincipal@tgpcet.com

Welcome to Tulsiramji Gaikwad Patil College of Engineering and Technology (TGPCET) in Nagpur, Maharashtra, a leading educational institution. Inspired by the words of Shri. APJ Abdul Kalam, "Dreams are not those which we see while sleeping, but dreams are those which do not let us sleep,". TGPCET strives for ambitious goals through knowledge acquisition, hard work, and perseverance. Our institution has quickly emerged as one of Maharashtra's premier technical education institutions. We emphasize academic excellence and technical skill development to meet industry demands while instilling values of integrity, morality, and sustainability.

At TGPCET, we leverage cutting-edge technology to foster an innovative learning environment, encouraging students to think critically and explore new ideas. Our students engage in national and international competitions to tackle real-world challenges, supported by faculty who stay updated with the latest technologies. Professional organizations like IEEE, CSI, ISTE, SAE-India, and SESI enhance skills through robust platforms. Beyond academics, we promote holistic development through sports, cultural activities, and social initiatives, nurturing responsible citizens. Join TGPCET to excel, innovate, and lead in a supportive environment where growth and transformation are limitless.

Head of Department

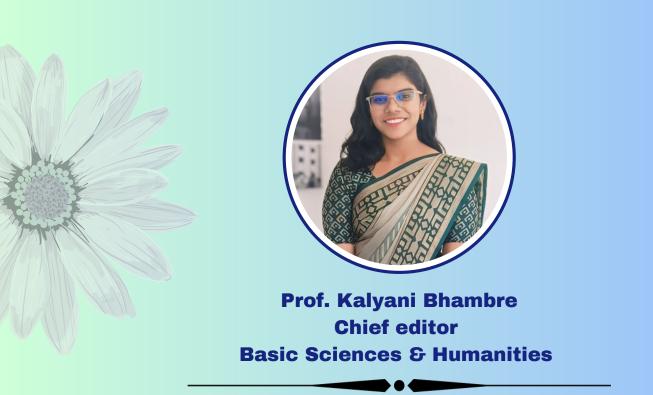


Welcome to Department of Basic Sciences and Humanities. Department is laying the strong foundation for budding engineers, through our determined, devoted dedicated team of young dynamic faculty members. The department enhances students' knowledge, critical thinking, ability to understand the technology and command of analyzing the things in modern society.

Department of Basic Sciences and Humanities plays Vital role in an engineering college to lay a strong foundation of basic principles such as Mathematics Physics, Chemistry and Communication Skills in the mind of the learners. I am confident that the students of the department would justify the credibility of the department by showing a high level of professional competence in their respective field.

I wish Best of Luck to the students.....

Editor Board



It brings me immense joy & pleasure to introduce the First edition of the departmental MAGAZINE "FUSION". All the creative energies that came on to this platform in the form of faculty experts & students are finally presenting a replica of their enthusiastic hard work through this extravaganza that has come out so organically. Technical & Arts every section shines out differently in its true sense. All the events conducted throughout the year where perfectly planned & the overwhelming response it received said it all! This piece of art would not have been complete without the sheer determination & perseverance of all the students who pushed their limits every time to bring out this artistic reality. Their efforts coupled with immense support from the faculties truly have done justice to carry on the legacy. I am grateful for all the support MAGAZINE "FUSION" has received throughout the year in every possible way from the faculties & Students. I hope the readers of MAGAZINE have a wonderful reading experience & wish this year's edition too receives your love & support like it has always received till date.

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The Quantum Revolution: How Physics is Changing Our World

The quantum revolution is transforming our understanding of the universe and reshaping the world around us. Classical mechanics cannot explain phenomena at the atomic and subatomic level, such as the behavior of electrons, photons, and atoms.

The quantum revolution began with a series of discoveries that revealed the limitations of classical physics. At the heart of these discoveries was the realization that energy, which had been thought of as continuous, actually comes in discrete units called quanta. This idea was first introduced by Max Planck in 1900 when he was studying blackbody radiation.

Albert Einstein expanded on Planck's work by explaining the photoelectric effect in 1905, a phenomenon where light hitting a metal surface releases electrons. Einstein proposed that light itself is composed of particles, or photons, each carrying a quantum of energy. This was a radical departure from the wave theory of light and marked the beginning of the duality concept, where particles exhibit both wave-like and particle-like properties depending on the context.

Niels Bohr further developed quantum theory with his model of the atom, which explained the stability of atoms and the emission of spectral lines by assuming that electrons could only occupy certain discrete orbits around the nucleus. Bohr's model introduced the idea of quantized angular momentum, a concept that would later be refined through the development of quantum mechanics.

Erwin Schrödinger and Werner Heisenberg independently developed the mathematical framework of quantum mechanics in the 1920s. Schrödinger's wave equation provided a way to calculate the probability of finding a particle in a given location, while Heisenberg's matrix mechanics described the behavior of particles in terms of observable quantities like position and momentum. Heisenberg also formulated the Uncertainty Principle, which states that the more precisely one property of a particle is known (e.g., its position), the less precisely its conjugate property (e.g., momentum) can be known. This principle challenged the deterministic nature of classical physics and introduced an inherent uncertainty in the quantum world.

From cutting-edge technologies to innovative solutions, quantum physics is driving unprecedented advancements in various fields.



Quantum Computing



Cryptography

Quantum **Teleportation**

Quantum **Materials**

Ouantum Medicine

The quantum revolution is not just a scientific phenomenon – it's a transformative force that's reshaping our world. As we continue to harness the power of quantum physics, we can expect unprecedented innovations and discoveries that will shape the future of humanity.

As we continue to explore the mysteries of the quantum world, the quantum revolution will likely continue to shape the future of science, technology, and our understanding of the universe. The ongoing research and discoveries in quantum mechanics promise to open new frontiers, leading to innovations and insights that will further change our world in ways we can only begin to imagine.



Dr. Mamta Takarkhede Associate Professor, HoD S& H, TGPCET

WILLIAM SHAKESPEARE – THE BARD AND SWAN OF AVON ENGLISH POET AND PLAYWRIGHT



Dates of life: April 26, 1564 – April 23, 1616 Place of birth: Stratford upon Avon, Warwickshire, England "He was not of an age, but for all time!" – Ben Johnson

"Yet he was more original than his originals. He breathed upon dead bodies and brought them into life." Ralph Waldo Emerson (1803-1882), Letters and Social Aims

William Shakespeare, playwright of the Renaissance, the greatest English-speaking writer in the history and also known as England's national poet, was born in the town of Stratford. His name is immortal in the history of world literature and theatre. He has had more theatrical works performed than any other playwright. To this day, countless theatre festivals around the world, honour his work, students memorize his eloquent poems and scholars reinterpret the million words of the text he had composed. They also hunt for clues about the life of the man who inspires such "bardolatry" (as George Bernard Shaw derisively called it), much of which remains shrouded in mystery. Born into a family of modest, in Elizabethan England, the "Bard of Avon" wrote at least 37 plays and a collection of sonnets, established the legendary Globe theatre and helped to transform the English language.

The great playwright created an immortal treasury that has nourished world culture for more than five centuries in a row. The plots of his plays inspired not only actors of drama theatres, but also many composers and film directors. Throughout his creative life, Shakespeare repeatedly changed the nature of writing in his works.

His first plays in their structure often copied popular genres and plots of the time, such as chronicles, Renaissance comedies (The Taming of the Shrew), "tragedies of horror" (Titus Andronicus). These were cumbersome works with a large number of characters and an unnatural style for perception. Using classical forms for that time, young Shakespeare learned the basics of writing drama.

The second half of the 90s of the 15th century was marked by the appearance of dramatic works for the theatre, polished in form and content. The poet searches for a new form, without departing from the given framework of the Renaissance comedy and tragedy. He fills old obsolete forms with new content. Thus, the brilliant tragedy Romeo and Juliet, the comedies A Midsummer Night's Dream, The Merchant of Venice are born. The freshness of the verse in Shakespeare's new works is combined with an unusual and memorable plot, which makes these plays popular with the public of all strata of the population.

At the same time, Shakespeare creates a cycle of sonnets, a genre of love poetry lyrics famous at that time. These poetic masterpieces of the master were forgotten for almost two centuries, but with the emergence of romanticism, they again gained fame. Thematically, the poems are love letters to an unknown young man, and only the last 26 sonnets out of 154 are an appeal to a black-haired lady.

The practically established, creatively and financially successful playwright created a number of tragedies that brought him fame not only in England but also worldwide, through these plays Hamlet, Macbeth, King Lear, Othello. These works raised the popularity of the Globe Theatre to the heights of one of the most visited entertainment venues in London. At the same time, the fortune of its owners, including Shakespeare, increased many times in a short period.

At the end of his career, Shakespeare had composed a number of immortal works that surprised his contemporaries with their new form. They combined tragedy with comedy, and fairy-tale plots were woven into the canvas of describing situations from everyday life. These were the fantasy plays The Tempest, The Winter's Tale, as well as dramas based on ancient themes - Coriolanus, Antony and Cleopatra. In these works, Shakespeare acted as a great connoisseur of the laws of drama, who easily and gracefully brought together the features of tragedy and fairy tale, complex high style and understandable turns of speech.

Many of Shakespeare's dramatic works were published separately during his lifetime. But the complete collection of works, which included almost all of the playwright's canonical plays, appeared only in 1623. The collection was printed on the initiative of Shakespeare's friends William John Heminge and Henry Condel, who worked in the Globe troupe. The book, consisting of 36 plays by the English author, was published under the name "First Folio".

The great English poet had a phenomenal memory, his knowledge could be compared to encyclopaedic. In addition to mastering two ancient languages, he also knew the modern dialects of France, Italy and Spain, although he himself never left the borders of the English state. Shakespeare understood both subtle historical issues and the current political situation. His knowledge touched on music and painting, he thoroughly studied a whole layer of botany.

Shakespeare literally translates from English as "Spear-Shaking." The playwright had an excellent memory and amazing abilities that any scientist could envy. Shakespeare knew the history of not only England, but also of many European countries, and also spoke Latin, French, Italian and several other languages. He also understood medicine, politics and botany. Without William Shakespeare, study of English-Literature is incomplete and that's the main reason he is also known as the Bard and Swan of Avon and English-Literature.

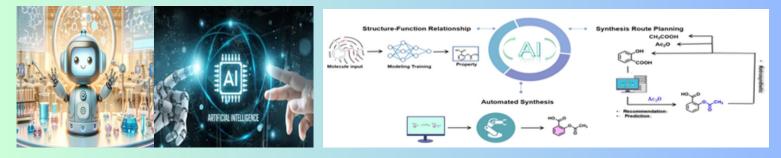
Article by Dr. Kanchan J

Dr. Kanchan R. Gopal BS & H

Advancements of Artificial intelligence in Automated Synthesis

Automated synthesis represents a transformative leap in the field of chemical research and manufacturing, advanced robotics and artificial intelligence (AI) with traditional chemical processes. Traditionally characterized by labor-intensive, time-consuming procedures, chemical synthesis has now entered an era where efficiency, precision, and scalability are dramatically enhanced by automation technologies. This evolution not only accelerates the pace of discovery and production but also reshapes how chemical compounds are created and utilized across various industries. The integration of automation into chemical synthesis has been driven by the need for more efficient, reproducible, and scalable processes. Automated synthesis systems incorporate robotics, sensors, and sophisticated control algorithms to perform chemical reactions with minimal human intervention. These systems can handle tasks such as reagent dispensing, reaction monitoring, and product isolation with a level of consistency and speed that far surpasses manual methods. Automated synthesis tasks. Robots equipped with AI algorithms can handle intricate procedures and adapt to new tasks with minimal reprogramming.

Artificial intelligence has become a backbone of modern automated synthesis, AI play an important key role in the area of research and development field. AI's ability to process and analyze large datasets facilitates the discovery of new chemical entities and reaction pathways. Machine learning algorithms can identify patterns and correlations that might be missed by human researchers, leading to novel compounds and innovative applications. AI assists in designing and planning experiments by generating data-driven hypothesis and experimental protocols. This capability enables researchers to systematically explore chemical space and optimize experimental conditions more efficiently. AI enhances the ability to detect and correct errors in the synthesis process. By continuously analyzing operational data, AI systems can identify issues such as contamination or equipment malfunctions and initiate corrective actions to ensure high-quality outcomes. In areas like pharmaceuticals, AI can help tail or synthesis processes to individual patient needs. By analyzing patient-specific data, AI can optimize drug formulations for particular genetic profiles, concrete the way for personalized medicine.



Automated synthesis facilitates the creation of new materials with specific properties for applications in electronics, energy storage, and manufacturing. AI-driven discovery processes enable the exploration of novel materials and optimization of material properties.

Automation enhances the scalability and efficiency of chemical production processes. Continuous monitoring and optimization reduce production costs and improve safety and quality. Automated synthesis, encouraged by artificial intelligence, is revolutionizing chemical research and production. By enhancing efficiency, precision, and scalability, these technologies are transforming traditional methods and opening new avenues for discovery and innovation. As automation and AI continue to evolve, they promise to further accelerate progress and unlock new possibilities in chemistry and related fields.

Dr. Atul Jichkar Associate Professor, BS& H, TGPCET

"Unlocking Molecular Interactions: The Power of Molecular Docking in Drug Discovery"

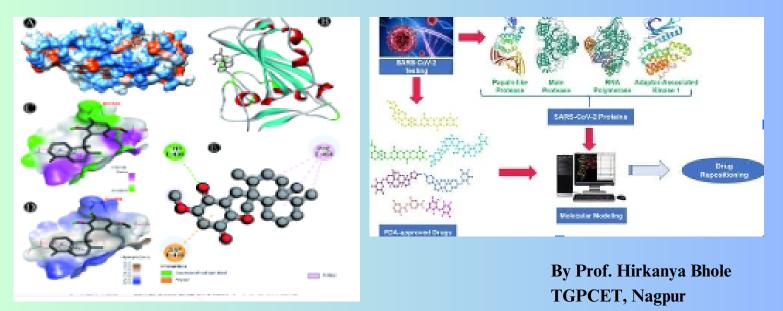
Molecular docking is a fascinating tool in the world of computational chemistry, playing a vital role in drug discovery. Imagine trying to fit a key into a lock—molecular docking does something similar but at a microscopic level. It helps scientists understand how a small molecule, like a drug, fits and binds to a larger target, such as a protein in the body. By predicting how well these molecules fit together, researchers can determine how effective a potential drug might be.

This process is powered by advanced computer simulations that mimic the behaviour of molecules in different environments. Special algorithms, known as scoring functions, evaluate the strength and stability of the bond between the drug and the protein. While this might sound complex, it's essentially about finding the best match—like choosing the right key for a lock.

However, molecular docking isn't without its challenges. Predicting the exact fit between molecules can be tricky, especially for large or flexible ones. Additionally, the process requires significant computational power, making it time-consuming. But with the rise of artificial intelligence and machine learning, these challenges are becoming easier to overcome. These technologies are helping scientists make more accurate predictions faster, pushing the boundaries of what molecular docking can achieve.

The impact of molecular docking is already evident in modern medicine. It has been instrumental in developing HIV drugs and cancer treatments, speeding up the discovery process and improving drug design. As these computational methods continue to evolve, molecular docking is expected to play an even bigger role in personalized medicine, where treatments are tailored to an individual's genetic makeup. This means that in the future, we could have more effective drugs with fewer side effects, designed specifically for each patient.

In short, molecular docking is a key player in the future of medicine, helping us unlock the secrets of molecular interactions and paving the way for groundbreaking therapies.



THE SCIENCE OF HAPPINESS: How small daily habits can transform your life

Happiness is often viewed as a destination—a state we hope to reach through achievements, possessions, or life milestones. But modern science tells a different story: happiness is not so much a destination as it is a practice. It's not found in grand gestures or perfect moments but in the small, intentional habits we weave into our daily lives.

Recent findings from psychology and neuroscience show that simple, consistent behaviors can actually rewire the brain for positivity, increase resilience, and improve emotional wellbeing. In other words, you don't need to wait for your life to change in order to feel happier—you can start by changing how you live each day.



Researchers define happiness not just as fleeting pleasure, but as a long-term sense of well-being and contentment. According to positive psychology, which studies what makes life worth living, happiness is strongly influenced by our thoughts, actions, and behaviors.

In fact, a widely cited model developed by psychologist Sonja Lyubomirsky suggests that:

- 50% of our happiness is determined by genetics,
- 10% by life circumstances,
- and 40% by intentional activities—what we do every day.

That 40% is powerful. It means we can significantly improve our happiness through the choices we make and the habits we form.

THE ROLE OF THE BRAIN IN HAPPINESS

Neuroscience shows that our brains are not fixed—they're constantly changing, adapting, and forming new connections, a concept known as neuroplasticity. When we repeatedly engage in positive habits, we strengthen neural pathways associated with joy, calm, and connection.

Feel-good neurotransmitters like dopamine, serotonin, oxytocin, and endorphins are released when we do things like exercise, express gratitude, connect with others, or even smile. Over time, these small actions create lasting changes in how we think and feel.

5 SMALL DAILY HABITS THAT BOOST HAPPINESS

You don't need to make radical changes to feel better. In fact, the most effective strategies are often the simplest. Here are five science-backed habits that can transform your outlook and improve your mental well-being.

Start with Gratitude
Move Your Body
Connect with Others
Be Mindful
Perform Acts of Kindness



WHY SMALL HABITS WORK

It's easy to underestimate the power of small actions. But much like saving money or building muscle, happiness compounds over time. Repeated daily habits create longterm change, not through force, but through consistency. When practiced regularly, these small moments of intention accumulate. They build resilience during hard times, elevate mood on ordinary days, and transform the way you experience life.

CONCLUSION: BUILD A LIFE THAT FEELS GOOD

Happiness isn't something you stumble upon—it's something you cultivate. It lives in the choices you make every day: to pause and breathe, to connect, to appreciate, to move, to be kind. You don't need a new job, a perfect relationship, or more money to be happy. You need habits that align your life with joy, meaning, and presence.

Start small. Start today. The science says it works—and your life might just feel better because of it.

Prof. Kalyani Bhambre IT Engineer

Student Article

"Revolutionizing Cybersecurity: How AI Is Changing the Landscape"

Introduction:

In today's digital age, cybersecurity is a top concern for individuals, businesses, and governments. As technology advances, threats are increasing, making it harder for cybercriminals to advance. However, artificial intelligence (AI) has become a game-changer in combating cyber threats. In this article, we will explore how AI is changing cybersecurity and what it means for the future. This method can be slow and ineffective against attacks. AI-powered systems, on the other hand, use machine learning algorithms to analyze big data, identify patterns, and instantly detect anomalies. This makes it faster, more sensitive to threats, and reduces the risk of crime. Intelligence can predict potential threats by analyzing historical data and analyzing trends, allowing organizations to take proactive actions (MTTD) and time to detection. AI helps automate maintenance, disassembly, and recovery, reducing damage and downtime. , providing a safer, more effective alternative to authentication. As AI technology continues to evolve, we can expect new solutions to emerge. Stay ahead of the curve and join the AI-driven cybersecurity revolution!

Other sections (optional):

- AI in Cybersecurity: Separating the Hype from Reality

- About Cybersecurity Risks Related to - The Future of AI in Cybersecurity: Trends and Predictions Cyber Security With AI is revolutionizing cybersecurity by providing advanced tools and technologies for threat detection, response, and prevention. By using machine learning algorithms and analyzing data in real time, intelligent machines can identify unusual patterns and potential security risks that traditional methods may miss. Automation powered by AI improves incident response by quickly isolating and mitigating risk, reducing the burden on human analysts, and increasing response time. Additionally, AI's ability to anticipate and adapt to changing threats can help organizations stay ahead of cyberattacks. However, integrating AI into cybersecurity also presents challenges, such as ensuring data privacy, preventing fraud, and maintaining relationships with existing systems. As AI continues to evolve, its role in cybersecurity will become more important, and a balance will need to be struck between the use of its capabilities and the resolution of integrity and security-related issues.

AI-driven risk analysis can create the content of reliable alerts and accelerate emergency response, quickly investigate and combat 55%. AI technology also helps identify vulnerabilities in the threat landscape and prevent cybercriminals and cybercrimes. AI models can help balance security and user experience by identifying the risk of each login attempt and identifying users from behavioral data, thus facilitating access to user credentials and reducing fraud rates by up to 90%. In addition, AI systems provide a high level of security by helping prevent phishing, malware and other threats. Alert on potential threats to criminals who access or gain access to information.

Shashank Nagose B.E.(DS)

Grants/Research project



VAANI Proposal from the First Year Department is approved by AICTE, New Delhi for the Marathi Language.

FDP_Application_N umber: 2289714324 Coordinator_Name: Dr Kanchan Rambhau Gopal Institute_Name: TULSIRAMJI GAIKWAD-PATIL COLLEGE OF ENGINEERING AND TECHNOLOGY Institute_State: MAHARASHTRA Thrust_Area: Energy, Sustainability & Climate Change Title_of_FDP: SUSTAINABLE ENERGY MANAGEMENT IN THE CONTEXT WITH CLIMATE CHANGE Event_type: Marathi



Dr. Kanchan Gopal and Dr. Punam Lambat 💐

NPTEL ACHIEVEMENTS

NPTEL Certification

SN	Name of Faculty	Name of Course	Performance
1	Dr. Geeta Padole	Outcome based Padagogic principles for effective teaching	Elite
2	Dr. Mamta Takarkhede	Effective Engineering Teaching in Practice	Elite + Silver
3	Dr. Mamta Takarkhede	Introduction to Professional Scientific Communication	Elite + Silver
4	Dr. Mamta Takarkhede	Leadership and Team Effectiveness	Elite
5	Dr. Mamta Takarkhede	Qualitative Research Methods and Research Writing	Completed
6	Dr. Mamta Takarkhede	Ethics in Engineering Practice	Completed
7	Mr. Sourabh Umredkar	Outcome based Padagogic principles for effective teaching	Elite
8	Prof. Nadir Hussain	Outcome based Padagogic principles for effective teaching	Elite
9	Prof. Pranjali Lute	Accreditation and Outcome Based Learning	Elite
10	Prof. Pranjali Lute	Teaching and Learning in Engineering (TALE)	Elite
11	Prof. Pranjali Lute	Roadmap for patent Creation	Completed

NPTEL Certification



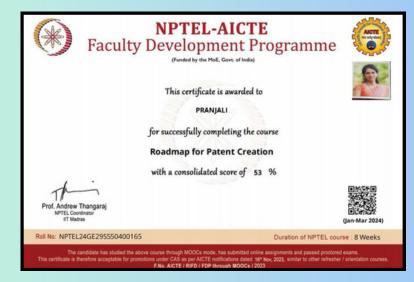




NPTEL Certification







NPTEL & Research Paper Publications Certificates



Global Academic Research Excellence Awards Best Researcher Award in field of Mathematical Science

Technical Workshop

TECHNICAL WORKSHOP

Sr. No.	Name of Guest	Торіс	Branch	Date
1	Mr. Sarang Gurve	2 days Hands on Training on Frontend Development Using Bootstrap	CSE/IT/DS/ AIML	9 May 2025 & 10 May2025

Technical Workshop

AIM:

To provide First Year Engineering students from Software-related branches with practical exposure and foundational knowledge in Front-End Design using Bootstrap, through expertled hands-on industrial training by Mr. Sarang Gurve.

Objectives:

- To introduce students to the core principles and components of responsive web design.
- To provide practical skills in using Bootstrap framework for building modern and mobilefriendly websites.
- To demonstrate the integration of HTML, CSS, and Bootstrap classes for real-time frontend development.

Outcome:

- After completing the two-day training, students will:
- Understand the fundamentals of front-end web development using Bootstrap.
- Be capable of creating responsive and well-structured web pages.
- Gain hands-on experience in working with Bootstrap components, grids, and forms.
- Develop a mini-project or basic portfolio webpage using the skills learned.



Inauguration of two days workshop on Frontend development using bootstrap



Workshop conduction on Frontend development using bootstrap



Conducted by Mr Sarang Gurve from IT networkz Pvt Ltd Nagpur

Departmental News

FROM THE COLLEGES

TGPCET



DEPARTMENT of Basic Sciences and Humanities, of Tulsiramji Gaikwad-Patil College of Engineering and

Technology, (TGPCET) had successfully conducted an insightful industry expert lecture on Web Development for B Tech. students. The session began with the lamplighting by the hands of the chief guest, Sharad Bansod, along with Dr P L Naktode - Principal, Dr Mamta Takarkhede, Prof Nadir Husain, HoDs, BS&H and First year faculties. Sachika Singh anchored and proposed the vote of thanks. Dr Mohan Gaikwad-Patil, Chairman, GPGI, Akash Gaikwad-Patil, Vice-Chairman, GPGI, Dr Sandeep Gaikwad-Patil Treasurer, GPGI, Dr P L Naktode, Principal, Dr Pragati Patil-Bedekar, Vice-Principal supported in organising this guest lecture. The Guest Lecture was planned and coordinated by Faculty member Prof Kalyani Bhambre along with other faculties.

इंजीनियरिंग सामग्री, गणितीय मॉडलिंग और प्रौद्योगिकी में इसके अनुप्रयोगों में हालिया रुझानों पर राष्ट्रीय स्तर पर एक सप्तांह के संकाय विकास कार्यक्रम का उद्घाटन

ß



रहोंकसत्ता

गायकवाड अभियांत्रिकीत व्यक्तिमत्त्व विकास कार्यशाळा

तळशीरामजी गायकवाड-पाटील कॉलेज ऑफ इंजिनिअरिंग अँड टेक्नॉलॉजीच्या मूलभूत विज्ञान विभागाच्यावतीने १३ जुलैला एकात्मिक व्यक्तिमत्त्व विकास अभ्यासक्रमावर कार्यशाळा पार पडली. प्रमुख पाहुणे म्हणून प्रा. हरिकृष्ण गोहिल (सुरत), प्राचार्य डॉ. पी.एल. नाकतोडे, उपप्राचार्य डॉ. प्रगती पाटील, उपप्राचार्य, डॉ. ममता टाकरखेडे, प्रा. नादिर हुसेन उपस्थित होते. प्रा. अनुप गाडे यांचे समारोपीय भाषण झाले.

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गायकवाड-पाटील ग्रुप ऑफ इन्स्टिट्युशन्सने साजरा केला प्रेरणा दिवस



Freshers Day – AAGHAAZ Organized by Department of Basic Sciences and Humanities of Tulsiramji Gaikwad-Patil College of Engineering and Technology, Nagpur





टीजीपीसीईटीमध्ये पालक-शिक्षक संमेलनाचे यशस्वी आयोजन

K ber 7, 2024 in Education, latest Ne



[']वैदिक गणित' या विषयावर दोन) दिवसीय कार्यशाळा गायकवाड इंजिनिअरिंग कॉलेजात संपन्न

न परंच मुमगाब : मूलभूत विज्ञान आणि मानविकी त्रिया बतीने तुक्शीरामजी गायकबाड पार्टील ऑफ इजिनिअरिंग औड टेक्नॉलॉजर्जा क्र মনিৰ এপিছ ব্ৰিনিসদিশে এটে ঠেলাকেঁছনা নিৰদান নামপুৰ দঁখাঁজ উসাটো তাৰে হাঁজ কৈ ঘাঁইছে নাগাঁৱত বংশবাৰ আমা বাঁন বিৰম্বাথ ঘাঁইদানা বাঁকে বিয়েম্বাৰ কৰে নাঁৱা নাঁৰা নাঁৰা হাৰ্কসম বাঁকে বিয়ে মন্ত্ৰনা কৰান নাঁৰা নাঁৰা মান্ব নাঁৰা বিৰম্বায় কৰা নাঁৰা নাঁৰা মান্ব নাৰ বিৰম্বায় কৰা নাঁৰা নাঁৰা মান্ব নাৰ বাঁকে বিয়ে নাৰ্বা নাঁৰা নাঁৰা নাঁৰা ব্যক্ত বিৰম্বা বাঁকে নাৰ্বা নাঁৰা মান্ব নাৰ বাঁকে নাৰ্বা বাঁকে নাৰ্বা নাঁৰা মান্ব নাৰ বাঁকা বিৰম্বা নাঁৰা বাঁকা নাঁকা মান্ব না বাঁকা বাঁকা বাঁকা নাঁৰা মান্ব নাঁকা বাঁকা বাঁকে নাৰ্বা নাঁকা মান্ব নাৰ বাঁকা বাঁকা নাঁকা মান্ব নাৰ বাঁকা বাঁকা নাঁকা মান্ব নাৰ বাঁকা বাঁকা নাঁকা মান্ব নাঁকা না নাঁকা মান্ব না নাঁকা মান্ব না না মান্ব না না মান্ব না মান

डॉ. पी. एल. नाकतोडे यांनी केले. गणितातील समस्या सोडवण्याची कौशल्ये वाडवण्यासाठी त्यांनी वैदिक गणिताचे महत्व सण्ट केले. सत्रापूर्वी पूर्व-मूल्यांकन चाचणीसुद्धाः घेण्यात आर्छा आहे. पहिल्या दिवशीच्या पहिल्या सत्रात आहे आहे. पहिला दिकोशिण दीहरणा सहात घेदिक गाँगतात्मा स्टरप्यांस (यायस्क, परिवय आति सुदे) यासर प्रमुख पहुले स्वनीतिक धेदनसेठे यांनी चेदिक प्रसियानित प्रेतमेलास्क प्रवयनाने विद्यार्थाना मंत्रमुस्य केले. दैर्नादन यायजूर, वर्ग वोधन्यासाती आते न्याव्यार सुरुभ करण्यासाती स्वानी करनक पढडी। स्पन्त करण्यासाती स्वानी करनक पढडी। ग कार्यनात्रा बदनगढ, एस अड एसअएठ सुरुष करण्यातात त्याना करण्ठ पढता स्टंट रेतरावशे संध्यापत्र आति संसाकत प्राप्तुर, ही. केरण, एई के सम नात्रां स्ट्राष्ट्र प्रकुष्णों एस. नाक्टोड, प्राचार्य, टीजीपीसीर्टटी, बालू ठेवले, स्वागता चंदनशेडे यांनी गुपाकर बावार्या प्रा, प्रार्थ, प्रार्थ, प्रार्थ, मानार कारलेडे संख्यरना सण्ठ करण्यातांक्षे विथे नावित्रणूर्ण के प्रा, नावेर दुर्ह्नन, एप्रार्थेडी आदी मान्यसर रोड, सिन्तेश, रोगोकीण्या ज्यूनयोचा वाप्त स्था सेडो, प्रास्ताविक टीजीपीसीर्डटीये प्राचार्य करतन दाख्यले, दुसऱ्या दिक्ष्ठीव्या दुसऱ्या



भारतीय गणितज्ञांच्या जीवनातील गोरताच गोरतज्ञाच्या जाचमाताठ ठसकारात्मकतेची शत्फोठ या विषयावर स्वर्णाल चंदनखेडे यांनी सकारात्मकतेच्या परिवर्तनीय शत्फीया अभ्यास केला, प्रश्न्यात गणितव रामानुबन यांच्या जीवनाचा अभ्यास करुन चंदनग्रंदे यांनी लयविकता आणि दुइनिश्वयाची कथा उलगडली. ठद मॅथ मॅजिक शोठ वर आधारित स्पर्धा परीक्षेच्या दुसऱ्या दिवसाच्या तिसऱ्या सत्रात वैदिक गणिताद्वारे

बेरीज आणि वजाबाकीच्या तत्त्वांवरील ति बराज जागि वजावाकाच्या तत्पावराल तिष स्पष्टीकरणाने ओत्यांना मोहित केले आपि यणिताच्या क्रियांबद्दल एक नवीन दृष्टीको प्रदान केल. सजाव्या शेवटी मूल्यमापनोत वावणी घेण्यात आली.

यायका मन्नराठ आठत. या कार्यक्रमायी सांगता एका शतिप्रतार संदेशाने झाली: ठएक यशस्त्री जत होण्यासाठी, व्यक्तीने सतत उत्कृण्टतेसा प्रयत्न केले पाहित्रेत आणि कठोर परिश्र भागि समार्थमाचे मूल्य आवस्थात केलं पाहिनेठ. समारोपाचे देवेचन डॉ. ममत टाकरखेडे, एचओडी, प्रथम वर्ष यांनी केले. प्रा पूजा शर्मा आणि प्रा. मीनाकी तिजारी, सानिक ्रवेषळे, जान्हवी शेवरे, ज्ञानेश्वरी वांजळ आ प्रतीक पटमासे यांनी सूत्रसंवालनाची धु सांभाळली, रोहित वरबटे आणि प्रिया भग वांनी आभार मानले, तर कार्यक्रमाची सांग राष्ट्रगीत गाऊन करण्यात आली.

Departmental News

Intl meet on Indian Knowledge System and Science begins



The guests during the inauguration of an international conference organised by TGPCET.

The 10th international conference on Indian Knowledge System Science and Spirituality for Advancing Technology (IC-IKSAT 2K24) began at Tulsiramji Gaikwad-Patil College of Engineering & Technology (TGPCET) on Friday. The inaugural function commenced at Brahmakumari's Vishwa Shanti Sarovar, Nagpur, with

the traditional lamp lighting ceremony. The chief guest, BK Bala Kishor Batchu, Zisis Rousopoulos and Dr Sachin L Borse expressed their thoughts. Chair man GPGI, Nagpur Dr Mohan Gaikwad-Patil, vice-chairman Akash Gaikwad Patil, treasurer Dr Sandeep Gaikwad and vice principal Prof Pragati Patil were present on the occasion.

'Vedic Mathematics important to enhance problem-solving skills'

TGPCET organises workshop on Vedic Mathematics

LOKMAT NEWS NETWORK

Principal of TGPCET, Dr P L Naktode, has said that Vedic Mathematics is extremely im-portant for enhancing mathemat-ical problem-solving skills. He was speaking during the inauguration of a two day work-shop on Vedic Mathematics or ganised by Department of Basic Sciences and Humanities of Tul-siramji Gaikwad-Patil College of Engineering and Technology of Engineering and Technology at JRD Tata Hall recently. Founders of S&SPL Swapnil Chandankhede said various mathematical tricks

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Dignitaries during a two-day workshop on Vedic Mathe ics organised by TGPCET at JRD Tata Hall. can be derived from Vedic Scrip-tures. He capitvated the students with ingenious methods of find-ing squares and simplifying mul-tiplication, demonstrating the practical applications of Vedic maths in everyday calculations. Swapnil Chandankhede dur-ing his talk on the topic 'The Power of Positivity From the Life of Indian Mathematicians: delved into the transformative power of positivity. Through the life of the legendary Math-

ematician Ramanujan, Chan-dankhede he unfolded a narra-tive of resilience and determina-tion. Chief guest Swagata Chan-dankhede showcased innovative techniques, particularly the util-isation of rangoli patterns to elucidate multiplication con-cents.

While dealing with the topic The Math Magic Show' she cap-tivated the students with her explanation of the principles

of addition and subtraction through Vedic Mathematics of-fering a fresh perspective on mathematical operations.Post-Evaluation test was conducted at the end of the session. Principal of TGPCET, Dr P L Naktode, vice-principal, TGPCET, Prof Pragati Patil, Dr Mamta Takarkhede and head (first year) Prof. Nadir Husain and a large number of students were present on this occasion.

Department of Basic Sciences & Humanities had conducted Guest Lecture during Induction Program-SAGE on Day –

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तुळशीरामजी गायकवाड महाविद्यालयात प्रथम वर्षाच्या विद्यार्थ्यांचा प्रवेश समारंभ संपन्न



नवीन शैक्षणिक सत्राच्या सुरुवातीसह, तुळशोरामजी गायकवाड पाटील अभियांत्रिकी आणि तंत्रज्ञान महाविद्यालयाच्या मूलभूत विज्ञान आणि मानविकी विभागातफें, ०४ सप्टेंबर २०२४ ला प्रथम वर्षाच्या विद्यार्थ्यांचा प्रवेश समारंभ आयोजित करण्यात आला. सदर आयोजनात सर्व विद्यार्थी उपस्थित होते. तर'नवीन विद्यार्थ्यांना नवीन बाताबरणात जुळबून घेण्यास आणि आरामदायक बाटण्यास मदत करणे. त्यांच्यामध्ये संस्थेची नैतिकता आणि संस्कृती बिंबऊन, त्यांना इतर विद्यार्थी आणि प्राध्यापक सदस्यांशी बांध निर्माण करण्यास मदत करणे आणि त्यांना मोठ्या उद्देशाची जाणीव करून देण्याअंतर्गत सदर कार्यक्रमाचे आयोजन करण्यात आले होते.प्रामख्याने शाळेपासन विद्यापीठ/महाविद्यालयीन जीवनातील संक्रमण ही विद्यार्थ्यांच्या जीवनातील सर्वात आव्हानात्मक घटनांपैकी एक आहे. जेव्हा नवीन विद्यार्थी संस्थेत प्रवेश करतात तेव्हा ते विविध विचार, पार्श्वभूमी आणि तयारी घेऊन येतात. सदर कार्यक्रमात प्रमुख पाहुणे, किशोर ठाकरे, व्हाइस -ॲडमिरल, पाणबुडी तज्ञ, अतिथी मा. अजय अग्रवाल, अग्रवाल ग्रुप ऑफ कंपनीजचे संचालक, डॉ.मोहन गायकवाड पाटील, अध्यक्ष, जीपीजीआय, डॉ. मोहन गायकवाड-पाटील, कोषाध्यक्ष, जीपीजीआय, प्रा. गीता पडोळे, गायकवाड-पाटील, संचालक, प्रवेश कश्च, डॉ. पी. एल. नाकतोडे, प्राचार्य डॉ. प्रगती पाटील, उपप्राचार्य डॉ. कुलसचिव डॉ. अमेय खेडीकर, प्रा. रितेश बनपूरकर, डीन आयक्यूएसी डॉ. अनुप गाडे, डीन ॲकॅडेमिक्स, डॉ. संजय आसुटकर, एचओडी, इंसीइं. आदी मान्यवर्शनी विश्वार, कृती, सांधिक कार्य, संघी यांचे महत्त्व आणि पालक आणि शिक्षकांचा आदर करण्यास सांगितले. सदर कार्यक्रमाचे सूत्रसंचालन आणि आभार प्रा. अमिषा मालवीव यांनी मानले, कार्यक्रमाचे आयोजन प्रा. नादिर हुसेन आणि डॉ. ममता टाकरखेडे, मूलभूत विज्ञान आणि मानविको विभागाच्या अधिष्ठाता यांच्या मार्गदर्शनाखाली आयोजित करण्यात आले.

Annual social gathering Utkarsh-2K24 held at TGPCET



The guests during inaugural function of annual social gathering Utkarsh-2K24 at TGPCET.

The annual social gathering Utkarsh-2K24 of Tulsiramji Gaikwad-Patil College of Engineering and Technology (TGPCET) was celebrated recently. The inauguration of the annual social gathering took place at the hands of ex-ecutive director of Maha-Metro Naresh Gurbani, prin-cipal of St Claret School Father Martin, principal of St Apolis School Dr Vandana Benjamin and RJ Nisha in

the presence of vice-chairman Akash Gaikwad Patil, treas-urer Dr Sandeep Gaikwad, principal Dr P L Naktode, principal Prof Vandana Khante, vice-principal Prof Pragati Patil, staff members and students. On the last day, the prize distribution function took place in presence of Pri-yanka Giripunje, the Mrs India Global Queen, RJ Nisha and others. The event concluded with the vote of thanks.

Media Coverage



INSTAGRAM: https://www.instagram.com/tgpcet1st/





FACEBOOK:

https://www.facebook.com/tgpcet1styear





YOUTUBE:

https://www.youtube.com/@firstyeartgpcet1551





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