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TULSIRAMJI GAIKWAD-PATIL
College of Engineering & Technology

(Approved by AICTE, New Delhi and Govt. of Maharashtra & Affiliated to MSBTE, Mumbai)



POLYTECHNIC

“YANTRIK”

DEPARTMENT OF MECHANICAL NEWSLETTER

2023-2024

EVEN SEMESTER

ENGINEERING BEYOND EARTH INNOVATING FOR THE INFINITE



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Earth to Space: Mechanical Engineering at the Forefront

The Mechanical Engineering Department is proud to present its latest newsletter edition, *Engineering Beyond Earth: Innovating for the Infinite*, showcasing the pivotal role of mechanical engineering in shaping the future of space exploration and advanced technologies. This publication emphasizes how mechanical principles, design innovation, and engineering excellence drive solutions that extend humanity's reach beyond our planet. From spacecraft mechanisms to sustainable extraterrestrial systems, mechanical engineering forms the backbone of these groundbreaking developments. By highlighting research, projects, and visionary ideas, this edition inspires students, faculty, and professionals to explore the limitless possibilities of engineering innovation in the cosmic frontier.

VISION THAT INSPIRES, MISSION THAT EMPOWER

Vision of Institute

To emerge as a learning Center of Excellence in the National Ethos in Diploma in Engineering

Mission of Institute

M1: To elevate the standards of students through ethical practices .

M2: To provide facilities and services to meet the challenges of industry and community.

M 3: To ascertain holistic development of the students and staff members by inculcating and profession as work practices

MECHANICAL

Innovating for a Better Tomorrow, Leading with Purpose.

VISION OF DEPARTMENT

To be a premier center for producing competent Mechanical Engineers to cater the ever- changing industrial demands and societal needs.

MISSION OF DEPARTMENT

- **To provide better environment to the students and faculty members, creating an ambience conducive for excellence in Mechanical Engineering education.**
- **To strengthen industry institute interaction to made the challenges of industry and society.**
- **To impart quality technical education to inculcate moral values, professional ethics and entrepreneurial qualities.**

VISION THAT INSPIRES, MISSION THAT EMPOWER

Programme Educational Objectives:-

PEO1: Provide socially responsible, environment friendly solution to mechanical engineering related broad-base problem adopting professional ethics.

PEO 2: Adapt state of the art, mechanical engineering broad-based technologies to work in multi-disciplinary work environment.

PEO 3: Solve broad-based problems individually and as team member communicating effectively in the world of work.

Programme Specific Outcomes:-

PSO 1: Modern Software Usage: Use latest mechanical related software for simple design, drafting, manufacturing, maintenance and documentation of mechanical components and processes.

PSO 2: Maintenance and selection of machines, equipment, instruments: Maintain and select appropriate machine, equipment and instrument in field of Mechanical Engineering.

PSO 3: Manage Mechanical Process: Manage the mechanical process by selection and scheduling right type of machinery, equipment, substrates, quality control techniques, operational parameters and software for a particular mechanical process or job for economy of operations

Programme Outcome

1. Basic and Discipline specific knowledge: Apply the knowledge of basic mathematics, science, engineering fundamentals, and an engineering specialization to solve the engineering problems.

2. Problem analysis: Identify and analysis well-defined engineering problems using codified standard methods.

3 Design/ development of solutions: design solution for well-defined technical problems and assist with the design of system components or processes to meet specified needs.

4. Engineering tools, experimentation and testing: Apply modern engineering tools and appropriate technique to conduct standard tests and measurements.

5. Engineering practices for society, sustainability and environment: Apply appropriate technology in context of society, sustainability, environment and ethical practices.

6. Project Management: Use engineering management principles individually, as a team member or a leader to manage project effectively communicate about well defined engineering activities.

7. Life-long Learning: Ability to analysis individual needs and engage in updating in the context of technological changes.

GATEWAY OF INNOVATION



ABOUT TGPCET

Tulsiramji Gaikwad Patil College of Engineering and Technology (TGPCET) second shift Polytechnic was established in the year 2013 by VidarbhaBahu-uddeshiya Shikshan Sanstha(VBSS), a registered society. It is self- financed Private Polytechnic, which is affiliated to Maharashtra State Board of Technical Education (MSBTE).Mumbai and is approved by All India Council for Technical Education, New Delhi.



ABOUT DEPARTMENT

**The Dynamic Realm of Mechanical Engineering:
Where Innovation Meets Precision**

The Department of Mechanical Engineering stands as a cornerstone of technological evolution — a discipline that merges creativity with scientific rigor to shape the machinery of modern civilization. Often referred to as the “mother branch” of engineering, Mechanical Engineering transcends traditional boundaries, empowering students to design, analyze, and innovate systems that define human progress.

A Vision in Motion: Message from the DEAN



Dr. Aasif Baig

Dean , Polytechnic

Greetings to our Esteemed Readers,

It is with great pride and enthusiasm that I welcome you to this edition of the Mechanical Engineering Department's newsletter, themed *Engineering Beyond Earth: Innovating for the Infinite*. Mechanical engineering has long been a cornerstone of technological progress, and today it is propelling humanity into new frontiers of space exploration and advanced innovation. This publication highlights the department's unwavering commitment to research excellence, inventive design, and interdisciplinary collaboration, showcasing projects and initiatives that exemplify both ingenuity and practical impact.

I am confident that the ideas, achievements, and visionary insights presented in this edition will inspire our students, faculty, and readers alike to push the boundaries of knowledge and contribute meaningfully to the ever-expanding horizon of engineering innovation.

MESSAGE :Thinking without limits"

Leading the Drive: Words from the HOD



Dr. Niteen Kakade
HoD, Mechanical Department

Warm Greetings to Our Readers,

It gives me immense pride to present this special edition of the Mechanical Engineering Department's newsletter, themed *Engineering Beyond Earth: Innovating for the Infinite*. This theme reflects our department's commitment to transcending boundaries and exploring new horizons of knowledge and innovation. Mechanical engineering, often regarded as the foundation of all engineering disciplines, now extends its influence beyond terrestrial limits—contributing to space exploration, advanced manufacturing, robotics, and sustainable technologies.

Through this publication, we aim to showcase the creativity, research spirit, and technological excellence of our students and faculty who continue to innovate fearlessly and think beyond conventional limits. The insights and initiatives featured in this edition embody our collective vision—to inspire young minds to dream big, engineer boldly, and contribute meaningfully to a future where innovation knows no boundaries.

MESSAGE :Breaking new ground

Dr.Niteen Kakade
Editorial Chief



MR.HEMANT DHABALE
FACULTY COORDINATOR



MR.UMESH BOPACHE
STUDENT COORDINATOR



MR.JATIN HATGHARE
STUDENT COORDINATOR

OUR THEME



MR.PRAJWAL DHOTE
STUDENT COORDINATOR

India Outlook for Mechanical Engineers -The Heartbeat of a Progressive India"

The outlook for mechanical engineers in India is both dynamic and promising, reflecting the nation's rapid industrial growth and technological transformation. As India advances toward becoming a global hub for manufacturing, space research, sustainable energy, and smart technologies, the demand for skilled mechanical engineers continues to rise. Their expertise is essential across diverse sectors such as aerospace, automotive, renewable energy, robotics, infrastructure, and defense. The government's initiatives like *Make in India*, *Digital India*, and *Atmanirbhar Bharat* have further strengthened opportunities for innovation, design, and indigenous production. Moreover, the integration of emerging fields—such as automation, artificial intelligence, and advanced materials—has redefined the scope of mechanical engineering, making it more interdisciplinary and innovation-driven. With a strong foundation in core engineering principles and adaptability to modern technologies, mechanical engineers in India are poised to lead the nation's journey toward sustainable industrial excellence and global competitiveness.



Demand for Mechanical Engineers: Key Skills & Trends in INDIA vs ABROAD

The demand for mechanical engineers in the global and Indian job market is increasingly shaped by a combination of technical expertise and adaptability to emerging technologies. Employment trends indicate that proficiency in computer-aided design (CAD) and engineering (CAE) software such as AutoCAD, Solid-works, and ANSYS is highly sought after, as industries increasingly rely on digital modeling and simulation. Expertise in manufacturing processes, automation, and robotics is also in high demand, reflecting the rise of smart factories and Industry 4.0. Additionally, skills in thermodynamics, fluid mechanics, material science, and energy systems remain fundamental for traditional and advanced mechanical roles. Complementing technical capabilities, analytical problem-solving, project management, and effective communication are critical, as employers favor engineers who can lead interdisciplinary teams and translate complex designs into practical solutions. Engineers who combine these technical and soft skills enjoy higher employability, greater career mobility, and access to lucrative opportunities in aerospace, automotive, energy, and research sectors.

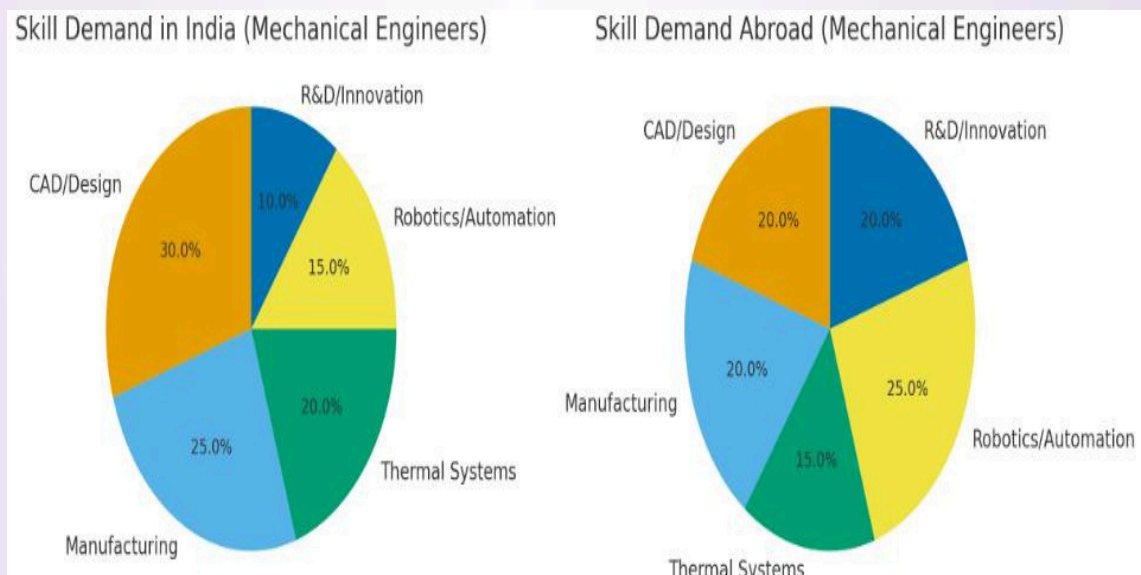


Fig: Skill demand distribution for Mechanical Engineers in India and Abroad.

Transforming Knowledge into Real-World Impact"

**Dated: 3-3-2023 : Personality Development Session by
Department**

On March 3rd, 2023, the Department of Mechanical Engineering conducted a lecture on "The Importance of Communication Skills in the Corporate Sector" as part of its Personality Development program. The session was presented by Mr. Allen Abraham from S.S. Infotech Pvt. Ltd., Nagpur. The primary objective of this lecture was to emphasize the critical role that effective communication skills play within a corporate environment and to demonstrate how proficiency in these skills can significantly enhance professional success. The department extends its sincere gratitude to Mr. Allen Abraham for sharing his expertise and insights with the students. Additionally, appreciation is expressed to Mr. Rajat Gajbhiye, Program Coordinator, for his successful organization of this informative session.



Moments That Inspire



Transforming Knowledge into Real-World Impact"

Dated:9-3-23: Lokmat Press, Butibori,



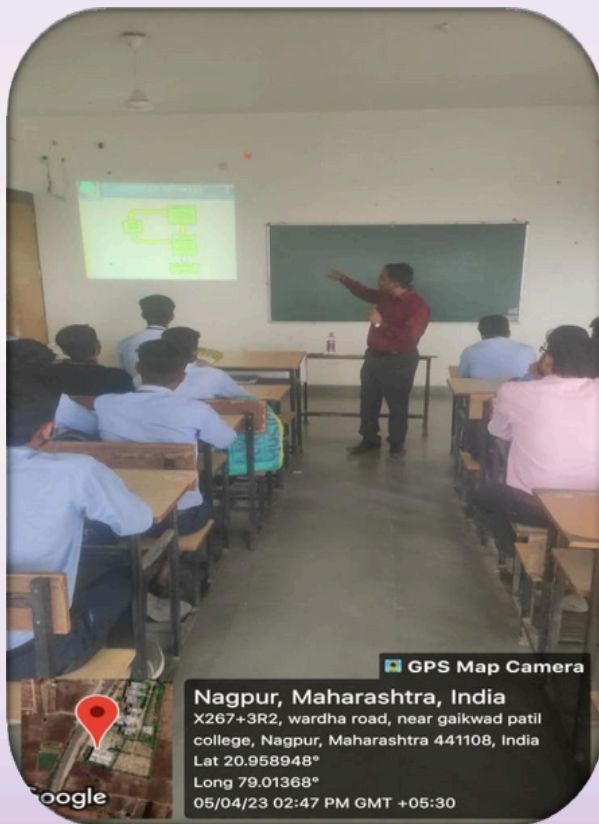
The visit aimed to provide students with practical exposure to the print media industry and to facilitate an understanding of large-scale newspaper printing operations within a real-time production environment. We wish to extend our sincere gratitude to **Lokmat Press, Butibori**, Nagpur, and to Mr. Sailesh Akare, Manager, for granting us the opportunity to observe and gain firsthand insight into the operations of one of the country's leading print media establishments. The visit proved to be highly informative, offering an in-depth understanding of advanced printing technologies, editorial workflows, and the comprehensive production processes involved in publishing a major newspaper. We greatly appreciate the warm hospitality and detailed explanations provided by the team, which rendered this experience both educational and enriching. This visit has substantially enhanced our knowledge of the media industry and its evolving dynamics. We also extend our thanks to the Mechanical Engineering Department and the faculty members involved for their efforts in organizing this insightful and successful visit.

Moments That Inspire



Transforming Knowledge into Real-World Impact"

Dated: 5-4-2023: Industrial Engineering



The Department of Mechanical Engineering organized an expert lecture on “**Industrial Engineering**”, delivered by **Mr. Prashant Mahkalkar** from the Department of Mechanical Engineering, JD College of Engineering, Nagpur, on **5th April 2023**.

The primary objective of the lecture was to provide participants with a comprehensive understanding of the fundamental principles and practical applications of Industrial Engineering. The session aimed to enhance students’ awareness of the discipline’s significance in optimizing processes, improving productivity, and fostering system efficiency within industrial settings.

The expert lecture proved to be highly informative and intellectually engaging, offering valuable insights into the various facets and benefits of Industrial Engineering. The session effectively met its intended objectives and contributed meaningfully to the participants’ academic and professional development.

Transforming Knowledge into Real-World Impact"

Dated : 14/2/ 24: “ How to Introduce Yourself?”

The Department of Mechanical Engineering organized a Personality Development lecture on “How to Introduce Yourself” on February 14, 2024, conducted by Mrs. Shweeta Mor, Soft Skill Trainer at TGPCET, Nagpur. The session aimed to enhance students’ communication and self-presentation abilities essential for academic and professional growth. Through an interactive and activity-based approach, Mrs. Mor effectively guided students on structuring a confident self-introduction, emphasizing key aspects such as body language, tone, and content organization. The session incorporated live demonstrations, role plays, and peer feedback, enabling participants to gain practical exposure and self-assessment opportunities. By fostering an environment of active learning and participation, the lecture significantly contributed to developing students’ self-confidence, interpersonal communication, and overall personality, preparing them to present themselves effectively in diverse professional and social contexts.

How to introduce.

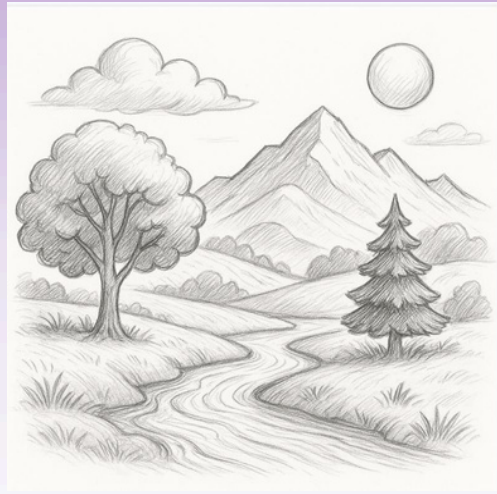


Perspectives that Matter

Industrial Engineering: The Backbone of Efficiency and Innovation

Industrial Engineering (IE) stands at the intersection of engineering, management, and technology, playing a crucial role in enhancing productivity, efficiency, and quality across industries. Unlike traditional branches of engineering that focus primarily on creating products or systems, industrial engineering emphasizes **optimizing the processes** that make those products possible. It is about designing systems that integrate people, machines, materials, information, and energy to achieve the best possible performance.

Name: Gautam Pranav Manoj
Enrollment no- 2216830060



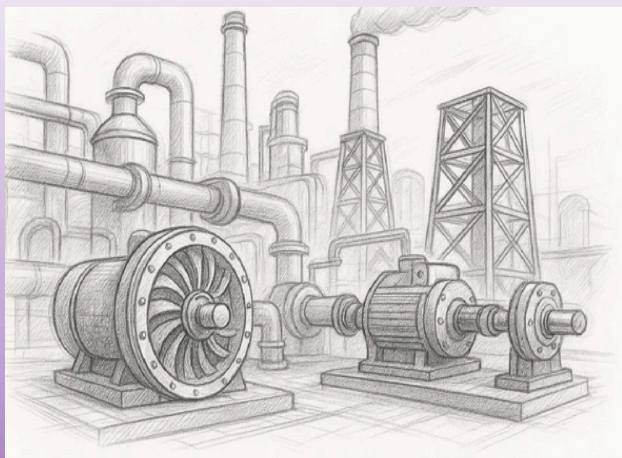
Nature: The Artistry of Earth's Soul.

Name: Aryan Shivkant Bangar

Enrollment
No: 2331800058

Where Innovation Meets Productivity

Name: Gautam Pranav Manoj
Enrollment no
2216830060



Soaring Toward Tomorrow

Name: Himanshu Hareram Yadav
Enrollment no
23318000749



Our Outstanding Performers

FY EVEN



Name: Akhil Falan Kujur
Enrollment No: 23318000583
Percentage: 77.66%



Name: Aryan Shivkant Bangar
Enrollment No: 23318000588
Percentage: 72.55%

SY EVEN



Name: Gautam Pranav Manoj
Enrollment no- 2216830060
Percentage: 78.12%



Name: Himanshu Hareram Yadav
Enrollment no- 23318000749
Percentage: 77.75%



Our Outstanding Performers

TY EVEN

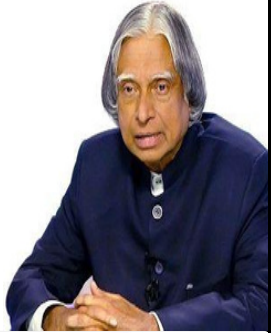
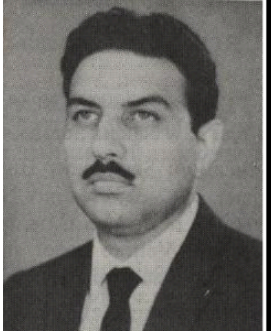


Name : Prajwal Nilkanth Dhote
Enrollment No: 2116830063
Percentage : 72.78%



Name : Lokesh Baliram Sahare
Enrollment No: 2116830573
Percentage : 74.56%



Indian Engineer's	Mechanical	Inventions	Photo
Dr. A.P.J. Abdul Kalam – The Missile Man of India		mechanical engineer who led India's missile and space programs, inspiring generations with his message of dreaming big and serving the nation.	
Dr. Kota Harinarayana – Creator of Tejas Fighter Jet		Chief designer of India's Light Combat Aircraft Tejas , he proved how mechanical engineering can take Indian innovation to the skies.	
Dr. Man Mohan Suri – Inventor of Suri Transmission		A pioneer in indigenous technology, his mechanical invention revolutionized diesel locomotive systems across India.	
Dr. E. Sreedharan – The Metro Man of India		Applied mechanical precision and leadership to create the Delhi Metro , setting new standards in engineering efficiency and ethics.	

**Dr. Tessy Thomas – The
Missile Woman of India**

From a small town to DRDO leadership, she inspired women engineers through her role in the **Agni missile program.**



We extend our heartfelt gratitude to all the mechanical engineers whose tireless innovation, dedication, and ingenuity have shaped India's technological journey. Their success stories ignite inspiration among young minds, reminding us that every gear turned and every idea refined contributes to a stronger, self-reliant India.
Thank you for your great contribution — you are the true architects of progress.

-EDITORIAL TEAM

A Note of Gratitude and Inspiration

A Note of Gratitude and Inspiration”

Every great achievement begins with a spark — an idea nurtured with perseverance and passion. This edition’s stories, from the vision of **Dr. Kota Harinarayana** in shaping India’s aerospace dreams to **Dr. Suhas Patankar’s** global influence in computational mechanics, remind us that mechanical engineering is not just a discipline — it’s a driving force of national progress.

We are deeply grateful to all the engineers, innovators, mentors, and visionaries whose dedication continues to inspire the next generation of learners and leaders. Your contribution fuels the nation’s growth and motivates every aspiring engineer to dream bigger, design smarter, and build stronger.

As we close this edition, we carry forward one message — **“Innovation begins with inspiration, and inspiration begins with you.”**

Thank you for being part of this journey of ideas, innovation, and impact.

TGPCET

With gratitude and respect,
*Editorial Team Department of
Mechanical Engineering*