



Sakeshwar Gramin Vikas Seva Sanstha's  
**Adsul's Technical Campus,**  
Ahmednagar  
Department of Mechanical Engineering



Shri Aniruddha Adsul  
Chairman



Dr. P.M. Patil  
Principal



Mr. Jaware A. R.  
Head of Department



### Vision of Institute

To be a most preferred Rural Technical Campus in the region by creating competent multifaceted Engineers and Professionals ready to serve the industry and society at large.

### Mission of Institute

To establish state-of-the-art facilities and create a conducive environment for transforming the rural minds into competent, skilled, professional, researchers, technically sound, innovative aptitude, and ethics through value-based education to develop the nation for global competitiveness.

### Objectives of Institute

- To provide quality education with futuristic trends in engineering and technology
- To ensure continual improvement in quality management system
- To impart innovative teaching and learning

### Vision of Department

To be a premier department in Mechanical engineering to serve the need of industry and society

### Mission of Department

M1: To provide state-of-the-art facilities to impart quality education.

M2: To undertake various value-added and add-on courses to make students technically sound and thorough professionals.

M3: To collaborate with the industries and strive to instil the research and problem-solving attitude amongst students and faculty.

M4: To inculcate high moral, ethical values, and spirit of national pride amongst students and faculty.

## Program Educational Objectives (PEOs)

**PEO1:** To prepare Mechanical engineering graduate with standing knowledge of Mathematics, Science, Engineering, Technology, Management, Humanities and various other interdisciplinary subjects for successful career.

**PEO2:** To equip students with modern tools, technology and advance soft wares for deliberating Engineering solutions.

**PEO3:** To equip students with broad based knowledge to support the service industry, economic development and to address social and engineering challenges of nation.

**PEO4:** To inculcate student with leadership skill with high level of integrity and ethical value for team building and team work.

## Program Outcomes (POs)

**PO-1: Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering Programs.

**PO-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.

**PO-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.

**PO-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.

**PO-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.

**PO-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.

**PO-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.

**PO-8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO-9: Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO-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.

**PO-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.

**PO-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.

## Program Specific Outcomes (PSOs)

**PSO1:** An ability to design solution for thermal, hydraulic systems, design components and production processes that meet the specified needs with team work and management skill for safety, societal and environmental aspects through lifelong learning..

**PSO2:** An ability to use modeling and analysis software such as NX, Creo, CATIA, Ansys etc. technologies for obtaining quick, economical and accurate solution of engineering problems.

**PSO3:** An ability to design electromechanical and automation systems in multidisciplinary environments through better communication.

## Silent features of Department:

- **Supportive learning for placement:** Placement learning is immersive and iterative. Support in the form of formative tasks and activities are crucial for student success, whilst being mindful of the need to ensure parity of student workload between modules of the same credit weighting. Placement assistance can offer students professional guidance and support to help them build successful careers. Students who might feel overburdened by the job search process might greatly benefit from placement assistance services.
- **Value added courses:** Value Added courses are career and market oriented, skill-enhancing courses that empower the students beyond their domain of study. The certificate programmers enable them to enrich their capability and enhance their employability. Value added courses are conducted for one week during the semester breaks by department faculty and external trainers.
- **Career oriented Add-On Courses:** Job-oriented courses are training and academic courses that prepare professionals for a particular career field or role. A traditional academic course may provide an overview of a certain topic or area, but a job-oriented course focuses on the knowledge and skills required for a particular job.
- **Teacher as Mentor:** The role of the Mentor Teacher is a complex blend of modeling, coaching, instructing, collaborating, and encouraging as candidates build competency in program standards. Mentor Teachers are expected to support candidates in developing the skills and knowledge to meet these standards.
- **Report writing and Paper Presentation:** A report is a specific form of writing, written concisely and clearly and typically organized around identifying and examining issues, events, or findings from a research investigation. Reports often involve investigating and analyzing a problem and coming up with a solution.
- **Professional Development for Industrial Engagement:** There are three types of employee engagement: **cognitive**, **emotional**, and **physical**. When employees are cognitively engaged, they're committed to their job, when they're physically engaged, they're invested in their work, and when they're emotionally engaged, they have an emotional connection to their work.
- **Personality Development and Soft Skill Training:** Personality Development teaches us how to communicate and display ourselves as having caring skills. It also emphasizes personal management, grooming, health, and nutrition, as well as soft skills. This course educates students on the numerous aspects of self-development. Soft skills comprise pleasant and appealing personality traits as self-confidence, positive attitude, emotional intelligence, social grace, flexibility, friendliness and effective communication skills.

## Group Discussion



A Group Discussion was organized by the Department of Mechanical Engineering for B.E. (Mechanical Engineering) students on 20th January 2024. The topic selected for the discussion was “3D Printing vs. Traditional Manufacturing Methods.” The activity was conducted with the objective of providing students with an opportunity to understand, analyze, and critically compare modern additive manufacturing technology with conventional manufacturing techniques.

The discussion enabled students to familiarize themselves with the principles, advantages, limitations, applications, and industrial significance of 3D printing and traditional manufacturing methods. Students were encouraged to express their views on various aspects such as manufacturing flexibility, production cost, material utilization, production time, accuracy, surface finish, sustainability, mass production, and suitability for different industrial applications. By comparing both approaches, students gained a better understanding of how manufacturing technologies are evolving and how the selection of an appropriate manufacturing method depends on the specific requirements of a product. The event also encouraged students to develop an interest in research and innovation and motivated them to explore the practical applications of emerging technologies in mechanical engineering. The interaction among participants and the audience created an environment for the exchange of ideas, knowledge sharing, and constructive discussion.

Overall, the MESA Paper Presentation Competition was a valuable academic and co-curricular activity that contributed to the technical, intellectual, and professional development of students, while encouraging them to stay updated with the latest trends and innovations in the field of Mechanical Engineering.

## Chhatrapati Shivaji Maharaj Jayanti



Adsul's Technical Campus, Chas, Ahmednagar, took the initiative to celebrate Chhatrapati Shivaji Maharaj Jayanti on 19th February 2024 with great enthusiasm and respect. The program was organized for all members of the institute, including teaching staff, non-teaching staff, and students. Chhatrapati Shivaji Maharaj, the founder of the Maratha Empire, was born on 19th February 1630 at Shivneri Fort in present-day Pune district, Maharashtra. He is remembered as one of the most remarkable rulers and military leaders in Indian history. His courage, visionary leadership, administrative abilities, and commitment to the welfare of his people continue to inspire generations.

Shivaji Maharaj established an independent kingdom by challenging the prevailing political powers of his time. He developed a well-organized and progressive administrative system supported by a disciplined military. He is particularly renowned for his innovative military strategies, which effectively utilized geographical advantages, mobility, strategic planning, and surprise tactics. His leadership and administrative principles played a significant role in the establishment and expansion of the Maratha Empire. The program aimed to inspire students to imbibe values such as courage, discipline, determination, leadership, patriotism, and social responsibility in their personal and professional lives.

The Principal of the Institute was the guest speaker for the program. In his address, he shared valuable insights into the life, achievements, leadership qualities, and inspiring experiences associated with Chhatrapati Shivaji Maharaj. His speech motivated the students and encouraged them to learn from the exemplary qualities and principles demonstrated by Shivaji Maharaj. Approximately 40 students attended the program.

## Savitribai Phule Jayanti



Savitribai Phule Jayanti is celebrated every year by the Department of Mechanical Engineering, Adsul's Technical Campus, Chas, Ahmednagar, to commemorate the birth anniversary of Savitribai Phule, a pioneering social reformer, educator, and poet who made remarkable contributions to the advancement of women's education and social equality in India. Savitribai Phule was born on 3rd January 1831. Along with her husband, Mahatma Jyotirao Phule, she played a significant role in promoting education, particularly for girls and women, during the 19th century. She worked tirelessly against social discrimination and advocated for women's education, dignity, equality, and empowerment. Her remarkable efforts have made her an inspiring figure in the history of women's education and social reform in India.

The Department of Mechanical Engineering, Adsul's Technical Campus, Chas, Ahmednagar, celebrated Savitribai Phule's birth anniversary on 3rd January 2024 as Women Empowerment Day. On this occasion, the department organized a "Savitribai Phule Jayanti Memorial Lecture" focusing on important issues related to women's rights, women's education, equality, and empowerment. The program commenced with an address by the Principal of the Institute, who highlighted the remarkable contributions and social work of Savitribai Phule. Following this, Prof. S. A. Gaikwad delivered an informative and thought-provoking lecture on Women's Rights and Women Empowerment. He discussed the importance of equal opportunities, access to education, social awareness, and active participation of women in the development of society. The program was an inspiring and enriching experience for all the participants and reinforced the message that education and equality are powerful tools for social transformation.

## Subhash Chandra Bose Jayanti

The Subhash Chandra Bose Jayanti, celebrated on January 23<sup>rd</sup> 2024, marks the birth anniversary of **Netaji** Subhash Chandra Bose, one of India's greatest freedom fighters and national heroes. His leadership in the Indian National Army (INA) and his vision for an independent India continue to inspire millions. The Mechanical Engineering Students' Association (MESA) organized an event to honor Netaji's contributions and legacy, reflecting on his courage, determination, and relentless pursuit of freedom.



The event commenced with a warm welcome by the MESA president, who spoke about the significance of Subhash Chandra Bose's contributions to India's freedom struggle. The president highlighted Bose's unique approach to the fight for independence and his unwavering dedication to the cause. Students were reminded of his famous slogan, "Give me blood, and I shall give you freedom!", which inspired millions during the freedom movement.

A panel discussion was held on the topic "Leadership and Nationalism: Lessons from Subhash Chandra Bose's Life." The panel included faculty members, senior students, and guest speakers who discussed the qualities of leadership exemplified by Netaji, such as resilience, vision, and strategic thinking. They also explored how Netaji's ideas on nationalism and unity continue to inspire and resonate in contemporary India. The panelists emphasized the importance of youth involvement in shaping the nation's future, much like Netaji did during India's fight for independence.

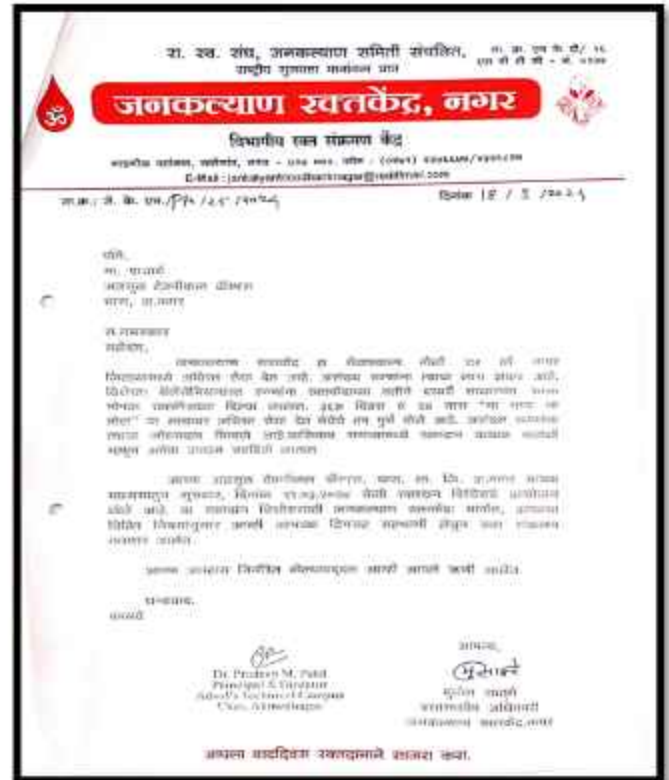


## Blood Donation Camp

Adsul Technical campus organized blood donation camp integrated with Jankalyan blood bank at ATC Chas dated on 21/03/24. Blood Donation Camp with the primary aim of contributing to the community's need for blood and raising awareness about the importance of voluntary blood donation. This program is organized under mechanical department as a part of social activity. This type of activity is helpful to nations. On this day 111 blood donors donated the blood.

### Objective:

- To facilitate voluntary blood donation and contribute to the local blood bank.
- To raise awareness about the importance of donating blood and its impact on saving lives.
- To promote a sense of community and social responsibility among students and faculty.



## आडसूळ टेक्निकल कॅम्पसमध्ये रक्तदान शिबिर

अध्यक्षता : नगर सहाय

आज रोजी आडसूळ टेक्निकल कॅम्पस असे सामाजिक दायित्वी सोपास अनेक सामाजिक उत्कम वेळेत आता. त्याच एक भाग म्हणून आडसूळ टेक्निकल कॅम्पस आणि जनकल्याण रक्त बँक, अहमदनगर यांचा संयुक्त विद्यमाने रक्तदान शिबिर आयोजित केले होते. डॉ. प्रदीप एम. पाटील यांचा मार्गदर्शनाखाली कॅम्पसमधील विद्यार्थी विभागाने हीन प्र. सोडित याचकाड यांनी या कार्यक्रमाचे आयोजन केले होते.



मदतलीस मोठे, समन्वयेक मध्ये तोडक्याक आणि त्याचे सहकारी उपलब्ध होते. सहविद्यार्थ्याचे डॉक्टर व प्रत्येक डॉ. प्रदीप एम पाटील यांनी पाहणी सोपितले कि रक्तदान करून तुम्ही केवळ हक्काचे अशुभ बायलांचे नहान करी

या उपक्रमामे सहभागे आडसूळ अभिमुख आडसूळ, उपाध्यक्ष विभाग मणिक आडसूळ, सेक्रेटरी सीमातां आडसूळ, सहविद्यार्थी वरलेक आडसूळ, संवातक कृष्णा आडसूळ, प्रत्येक व बायलेकर डॉ. प्रदीप एम. पाटील, पॅसिटीव्हिटीचे प्रचारक मेघ वडळ, इलेक्ट्रॉनिक विभाग प्रमुख डॉ. विवेक अडक, संगणक विभाग प्रमुख डॉ. जेनेत लखर, सिव्हील विभाग प्रमुख प्र. अनिल होते. एम बी. र. विभाग प्रमुख डॉ. विवेक काडके, मेकेनिकल विभाग प्रमुख प्र. अभिषेक जाधव, प्रथम वर्ष विभाग प्रमुख प्र. अनंत कुते व विद्यार्थी विभागाने हीन प्र. सोडित याचकाड यांनी कोटक केले आणि पुढील वाटचालीत सुलोक्य दिला.

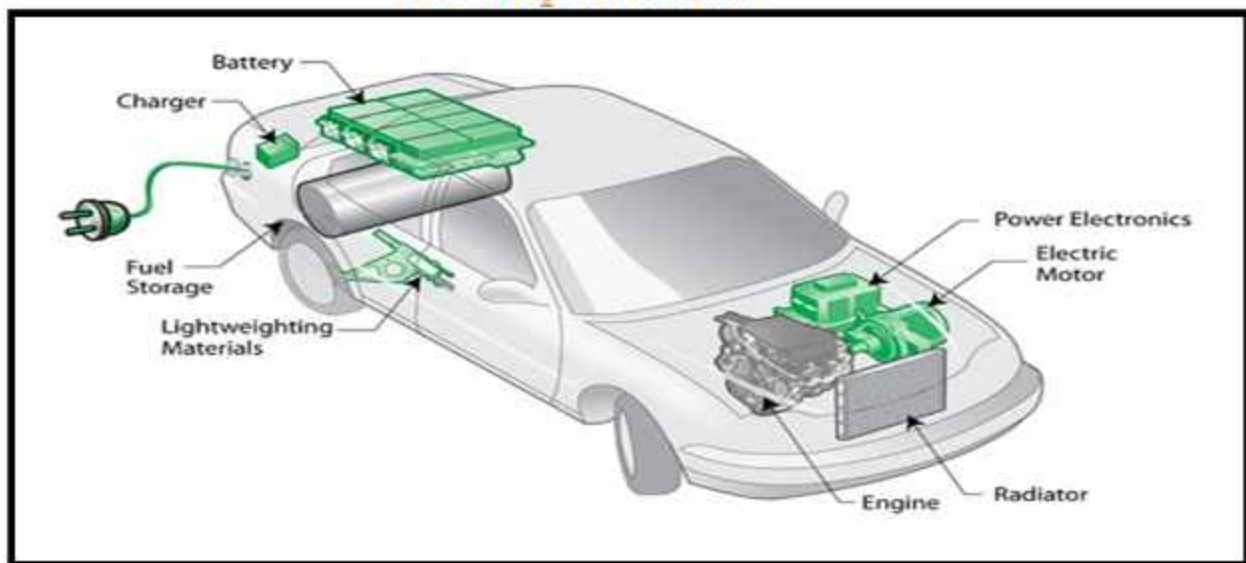
The event was coordinated by the MESA committee, with support from the Institute administration, medical faculty, and the local blood bank. Prior to the event, a detailed plan was devised to ensure smooth logistics, including:

- Partnering with a Jankalyan blood bank for blood collection.
- Creating awareness about the event through posters, social media, and word-of-mouth campaigns.
- Setting up donation areas and medical staff to handle the process effectively.
- Ensuring proper refreshments and post-donation care for participants.

It was a meaningful event that highlighted the importance of giving back to the community and saving lives. MESA plans to continue organizing such events in the future and hopes to engage even more participants.

## Student Articles

### Electric and Hybrid Vehicles: Driving the Future of Transportation



Electric and hybrid vehicles (EVs and HEVs) represent a significant shift in the transportation industry, offering solutions to reduce greenhouse gas emissions, decrease dependence on fossil fuels, and improve energy efficiency. With advancements in battery technology, electric motors, and power electronics, these vehicles are becoming increasingly popular worldwide.

#### **Types of Electric and Hybrid Vehicles:**

- Battery Electric Vehicles (BEVs)
- Plug-in Hybrid Electric Vehicles (PHEVs)
- Hybrid Electric Vehicles (HEVs)
- Fuel Cell Electric Vehicles (FCEVs)

#### **Components of Electric and Hybrid Vehicles**

- HEVs Electric Motor
- Battery Pack
- Power Electronics
- Regenerative Braking System
- Internal Combustion Engine (for and PHEVs)
- Hydrogen Fuel Cell (for FCEVs)

#### **Challenges in Adoption**

- Inadequate availability of charging stations in many regions.
- Long charging times compared to refueling ICE vehicles.
- Higher upfront costs for EVs compared to traditional vehicles.

- Swami Siddhaling (SE Mech)

## Tribology



Tribology is the interdisciplinary study of friction, wear, and lubrication, focusing on the interactions of surfaces in relative motion. Derived from the Greek word "tribos" meaning "rubbing," tribology plays a crucial role in improving the performance, efficiency, and longevity of mechanical systems. This field is vital in industries such as automotive, aerospace, manufacturing, and biomedical engineering.

### Importance of Tribology

- 1. Efficiency Improvement:** Reducing friction minimizes energy losses, leading to higher system efficiency.
- 2. Wear Reduction:** Proper tribological practices enhance the lifespan of components.
- 3. Cost Savings:** Decreased maintenance and replacement costs due to reduced wear.
- 4. Environmental Benefits:** Lower energy consumption and reduced emissions in industrial and automotive applications.
- 5. Enhanced Performance:** Improved reliability and functionality of mechanical systems.

### Future Prospects

The future of tribology lies in:

- Developing sustainable and high-performance lubricants.
- Understanding wear mechanisms in advanced materials like composites and nanomaterials.
- Expanding tribological applications in emerging fields such as robotics and renewable energy.
- Leveraging computational tools for predictive tribology.

By addressing current challenges and leveraging innovative approaches, tribology continues to drive progress across diverse industries, shaping a more efficient and sustainable future.

- Pande Rahul (SE Mech)

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We acknowledge the efforts of our editorial team, comprising faculty and students, for their valuable contributions in this publication:

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