MECH VISTA

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Department of Mechanical Engineering

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It is a privilege to present the current issue of the Bi-Annual Newsletter of the Department of Mechanical Engineering. This publication highlights the key academic, technical, and co-curricular activities undertaken during the past six months.

The newsletter captures departmental events such as workshops, seminars, expert lectures, industrial visits, student projects, faculty achievements, and outreach activities. These initiatives reflect our commitment to providing quality technical education and practical exposure to our students.Such contributions not only enhance communication skills but also foster confidence, creativity, and professional growth.

I sincerely thank all students, faculty members, and the editorial team for their valuable contributions and continuous support in bringing out this issue successfully. Their dedication and teamwork strengthen the academic culture of the department.

Let this newsletter inspire us to pursue excellence, innovation, and responsibility in shaping the built environment for a better tomorrow.

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Message from the Principal

It is truly heartening to witness the Mechanical Engineering Department of our college publish its annual newsletter “GIACR MechVista” a compelling testament to its vibrant academic culture, technological foresight, and unwavering commitment to excellence. This publication encapsulates the department’s dynamic engagement with both foundational engineering principles and cutting-edge innovations.

Mechanical Engineering, long regarded as the backbone of industrial progress, continues to evolve and expand its influence across emerging domains such as autonomous mechanical systems, renewable energy technologies, smart manufacturing, and sustainable infrastructure development. These areas not only redefine traditional engineering paradigms but also position mechanical engineers at the forefront of global problem-solving.

In response to the rapidly shifting landscape of science and technology, the department has proactively introduced a suite of initiatives—ranging from interdisciplinary curriculum enhancements and industry-aligned training modules to research-driven student projects and innovation labs. These efforts are strategically designed to cultivate technical proficiency, systems thinking, and a future-ready mindset among students.

This annual newsletter serves as a reflection of the department’s holistic approach to education and innovation. It showcases key academic activities, research achievements, collaborative ventures, and outreach initiatives that collectively foster intellectual growth, technological advancement, and meaningful societal impact.

Message from the Head

Greetings!

I am truly delighted to witness the launch of the Department of Mechanical Engineering's annual newsletter "GIACR MechVista" —a vibrant and insightful platform that fosters meaningful connection among students, faculty, alumni, and stakeholders. This publication serves not only as a chronicle of the department's dynamic activities but also as a celebration of its enduring commitment to engineering excellence.

This edition proudly showcases hallmark initiatives such as the *Project Expo*, where student ingenuity meets real-world application, and the department's ongoing *Research and Development* efforts that push the boundaries of innovation in areas like thermal systems, robotics, materials science, and sustainable design. These features reflect the academic rigor, technical depth, and forward-thinking spirit that define our department.

Equally commendable are the contributions of our dedicated faculty members, whose mentorship and scholarly pursuits continue to elevate the standards of Mechanical Engineering education. The newsletter also highlights best practices in pedagogy, industry collaboration, and experiential learning—reinforcing our mission to produce engineers who are not only technically proficient but also socially responsible.

I extend my heartfelt congratulations to all the students and faculty of the Mechanical Engineering Department for their collaborative effort and unwavering dedication in bringing out this publication. May it continue to inspire innovation, foster excellence, and strengthen the bonds within our academic community.

Vision and Mission of the Institution

Vision

To become a globally recognized, value-driven educational institution committed to excellence in delivering quality education, nurturing students' inherent talents, and developing innovative professionals in technical and managerial fields, thereby equipping them to meet the future challenges of the global economy.

Mission

M_1: To deliver quality education through effective teaching–learning processes that foster academic excellence in technical and managerial disciplines.

M_2: To nurture students' inherent talents by encouraging creativity, critical thinking, innovation, and lifelong learning.

M_3: To develop competent and ethical professionals with strong values, leadership skills, and social responsibility.

M_4: To promote industry-oriented learning and research through collaboration, practical exposure, and adoption of emerging technologies.

M_5: To prepare globally competitive graduates capable of adapting to evolving challenges and contributing effectively to the global economy.

Vision & Mission of Department of Mechanical Engineering

VISION

To be a premier knowledge hub in mechanical engineering education, entrepreneurship, and industry engagement, producing skilled engineers ready to address industrial challenges.

MISSION

M1. To impart strong fundamental and advanced knowledge in mechanical engineering through effective teaching–learning practices and modern pedagogical methods.

M2. To promote innovation and entrepreneurship by encouraging creative thinking, problem-solving, and startup-oriented initiatives among students.

M3. To strengthen industry engagement through internships, industrial training, consultancy, and collaborative projects to enhance practical skills.

M4. To develop technically competent and ethical engineers with leadership qualities, professional integrity, and social responsibility.

M5. To equip graduates with industry-relevant skillsand adaptability to effectively address real-world engineering challenges.

Program Outcomes (POs)

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

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

3. Design/ development of solutions: Design solutions for well-defined technical problems and assist with the design of systems 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 projects and effectively communicate about well-defined engineering activities.

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

Program Educational Objectives

PEO_1: To impart science-based engineering education to develop professional skills that will prepare the students for immediate employment in relevant branch of mechanical engineering in industry.

PEO_2: To develop human potential to its fullest extent so that intellectually capable and creatively gifted leaders can emerge in range of professions.

PEO_3: To develops among students the awareness of and the competence to be savvy users of information technology.

PEO_4: To Develop among students the ability to work with others, in professional and social settings.

PEO_5: To develop a global view among students so that they can appreciate diversity in the world and in intellectual pursuits and the desire and ability to keep learning throughout life.

Programme Specific Outcome

PSO 1: Apply the acquired knowledge in design, thermal, manufacturing and interdisciplinary areas for solving industry and socially relevant problems.

PSO 2: To enhance the abilities of students by imparting knowledge in emerging technologies to make them confident mechanical Engineers.

PSO 3: Provide socially responsible, eco –friendly broad base solution to mechanical Engineering related problems adopting professional ethics.

Orientation Programme @ GIACR

The Orientation Programme for the newly admitted students of the Mechanical Engineering Department, GIACR, was successfully conducted on 20th August 2025 with the objective of familiarizing freshers with the academic environment and institutional culture. The programme commenced with a formal meeting held in the college auditorium. The session was graciously presided over by the Principal, Dr. Pratap Chandra Mishra, along with the Heads of various departments and faculty members.

In his address, the Principal warmly welcomed the students to the GIACR campus and motivated them to pursue academic excellence, discipline, and ethical values during their course of study. The department heads also interacted with the students and briefed them about departmental facilities, academic regulations, and future opportunities in the field of mechanical engineering.

Following the formal session, a vibrant cultural programme was organized, where students showcased their talents through music, dance, and other performances, creating an atmosphere of enthusiasm and camaraderie. The programme concluded with a common lunch, providing an opportunity for students and faculty to interact informally.

Overall, the orientation programme served as a memorable and meaningful beginning for the freshers, helping them feel confident, motivated, and connected to the GIACR community.

Independence Day Celebration – GIACR

The **79th Independence Day** was celebrated with great enthusiasm and patriotic spirit at **GIACR on 15th August 2025**. The programme began with the ceremonial **flag hoisting by the Principal, Dr. Pratap Chandra Mishra**, in the presence of faculty members, staff, and students. As the National Flag was unfurled, the gathering paid homage to the sacrifices of the freedom fighters by singing the National Anthem with pride and respect.

In his address, Dr. Pratap Chandra Mishra highlighted the significance of Independence Day and emphasized the responsibilities of citizens, especially the youth, in contributing to nation-building through education, discipline, and innovation. He encouraged students to uphold the values of unity, integrity, and social responsibility.

The celebration included various cultural and patriotic activities such as speeches, patriotic songs, and performances by students, which reflected love for the country and respect for its rich heritage. The active participation of students added vibrancy and meaning to the event.

The programme concluded with a vote of thanks, acknowledging the efforts of the organizing committee and participants. The Independence Day celebration at GIACR served as a reminder of India's glorious past and inspired everyone to work collectively towards a progressive and self-reliant nation.

Teachers' Day Celebration – Department of Mechanical Engineering, GIACR

Teachers' Day was celebrated with great warmth and respect by the Department of Mechanical Engineering, GIACR, in the presence of all faculty members of the department. The programme was organized to honor the dedication, commitment, and invaluable contribution of teachers in shaping the academic and personal growth of students.

The celebration began with a brief address by student representatives, who expressed heartfelt gratitude towards the faculty for their continuous guidance, encouragement, and support. This was followed by a joyful cake-cutting ceremony, symbolizing appreciation and togetherness among teachers and students.

As a mark of respect and thankfulness, students presented small gifts and greeting cards to the faculty members as a token of gratitude. The gesture reflected the strong bond between teachers and students and highlighted the spirit of mutual respect and admiration within the department.

Faculty members shared their experiences and motivated students to remain disciplined, focused, and committed to learning. The event was marked by a cheerful and positive atmosphere, strengthening the sense of unity within the department.

The Teachers' Day celebration concluded on a pleasant note, leaving lasting memories and reinforcing the values of respect, gratitude, and lifelong learning among the students of the Mechanical Engineering Department.

Expert Talk on "Recent Trends in Mechanical Engineering"

The Department of Mechanical Engineering organized an expert talk on the topic "Recent Trends in Mechanical Engineering" on 20th October, 2025 to enhance the technical knowledge and industry awareness of students. The session was delivered by Prof. I. Mohan Rao, a distinguished Professor of Raghu Engineering College, who is well known for his academic excellence and vast experience in the field of mechanical engineering.

The programme began with a brief welcome address by the Head of the Department, followed by the introduction of the resource person. Prof. I. Mohan Rao highlighted emerging trends and advancements in mechanical engineering, including **automation, additive manufacturing, robotics, Industry 4.0, sustainable engineering, and the integration of artificial intelligence in mechanical systems**. He emphasized the importance of interdisciplinary skills and continuous learning to meet current industry demands.

The speaker also guided students on career opportunities, higher studies, and the relevance of practical knowledge alongside theoretical concepts. The session was highly interactive, with students actively participating in the question-and-answer segment and gaining valuable insights.

The expert talk proved to be informative and inspiring, motivating students to update their technical skills and align themselves with modern engineering practices. The programme concluded with a vote of thanks, expressing gratitude to the resource person for sharing his valuable knowledge and experience.

Industrial Tour to J K Paper Mill, Rayagada by 3rd Semester Mechanical Engineering Students

As part of its unwavering commitment to experiential learning, the Department of Mechanical Engineering at GIACR organized an industrial study visit for 3rd semester diploma students to **JK Paper Mill, Rayagada** on 8th November, 2025 as it is a leading facility in paper manufacturing and process engineering. The initiative aimed to bridge the gap between theoretical instruction and practical application by immersing students in real-world mechanical operations.

During the visit, students gained firsthand exposure to a wide array of mechanical systems integral to the mill's functioning. Key areas of observation included:

- **Steam generation and boiler operations** for process heating
- **Pulp processing machinery** involving fluid mechanics and material handling
- **Rotary and reciprocating pumps**, compressors, and gear-driven systems
- **Preventive maintenance protocols** and condition monitoring techniques
- **Automation and control systems** used in continuous production lines

Faculty members guided students through technical discussions on thermodynamic cycles, mechanical power transmission, and the role of mechanical engineers in optimizing industrial efficiency and sustainability.

The visit not only reinforced classroom concepts such as heat transfer, machine design, and industrial safety but also highlighted the importance of interdisciplinary collaboration in large-scale manufacturing environments. Students interacted with plant engineers, gaining insights into career pathways, operational challenges, and the evolving role of mechanical engineering in process industries.

This enriching experience deepened students' understanding of applied engineering and strengthened their readiness for future industrial engagements.

Plantation Drive at GIACR

In alignment with its commitment to environmental stewardship and sustainable engineering practices, the **Department of Mechanical Engineering**, in collaboration with the **Eco Club of GIACR**, organized a **Plantation Drive**on 20/11/2025 within the college campus. This initiative aimed to foster ecological awareness among students while contributing to climate resilience and campus beautification.

The drive was inaugurated by **Prof. Dr. Pratap Chandra Mishra**, Principal of GIACR, and **Er. Manoranjan Behera**, Head of the Mechanical Engineering Department. Their presence underscored the institutional emphasis on integrating sustainability into academic and co-curricular activities.

The selected plantation site within the campus was chosen for its potential to enhance green cover and promote biodiversity. A total of **100 saplings**were planted strategically across the premises. These trees will be nurtured and maintained by the Eco Club, ensuring long-term care and monitoring.

Mechanical engineering students actively participated in the drive, reflecting their growing awareness of the intersection between engineering and environmental responsibility. The event also served as a platform to discuss sustainable technologies, green manufacturing, and the role of engineers in mitigating climate change.

By combining technical education with ecological action, the Plantation Drive reinforced the department’s vision of producing socially responsible engineers equipped to address global

sustainability challenges. The initiative was a meaningful step toward creating a greener, healthier, and more conscious campus environment.

Cleanliness Drive at GIACR

A Cleanliness Drive was conducted at Roit Colony on 1st December 2025 by the Diploma Mechanical Engineering students with the objective of promoting hygiene and environmental awareness in the local community. The programme was organized as part of the students' social responsibility initiative to encourage clean and healthy surroundings.

The students actively participated in cleaning streets, public areas, and nearby open spaces by collecting plastic waste, dry leaves, and other litter. They segregated biodegradable and non-biodegradable waste to spread awareness about proper waste management practices. The team also interacted with local residents and explained the importance of maintaining cleanliness to prevent diseases and improve the overall quality of life.

Pamphlets were distributed, and residents were encouraged to reduce the use of plastic and adopt eco-friendly alternatives. The community appreciated the efforts of the students and assured their cooperation in keeping the area clean. The drive was a meaningful step toward fostering civic sense and environmental responsibility among students and residents alike.