



Polyयांत्रिकी



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FROM THE DESK OF DEAN (R&D)



Mr. Ajay Sharma
Dean (R&D)
IIMT College of Polytechnic

Green Tribology for Next-Gen Smart Manufacturing (Industry 4.0/5.0)

The concept of Green Tribology represents a sustainable evolution in the field of friction, wear, and lubrication. It focuses on designing and developing tribological systems that minimize environmental impact, conserve energy, and enhance the longevity of mechanical components. As industries transition from traditional manufacturing to the intelligent, interconnected frameworks of Industry 4.0 and 5.0, the role of green tribology becomes increasingly crucial in ensuring sustainable and efficient production.

Role of Green Tribology in Industry 4.0

Industry 4.0 emphasizes automation, digitalization, and the integration of technologies such as the Internet of Things (IoT), Artificial Intelligence (AI), and Cyber-Physical Systems to create smart factories. Within this ecosystem, green tribology supports sustainability by promoting the use of eco-friendly lubricants, self-lubricating materials (i.e. MoS₂), and surface engineering techniques that reduce frictional losses and extend machine life.

Real-time monitoring of tribological parameters using smart sensors and AI-based predictive maintenance further helps in reducing downtime and material waste.

Transition Towards Industry 5.0

Transitioning towards Industry 5.0, the focus shifts from full automation to human-centric, resilient, and sustainable manufacturing systems. Here, green tribology plays a vital role in bridging technology and environmental responsibility. The development of biodegradable lubricants, nano-based coatings, and adaptive surfaces aligns with the goals of Industry 5.0 by ensuring both operational efficiency and ecological balance. Moreover, the integration of digital twins and machine learning models enables the prediction and optimization of tribological behavior under varying operational conditions.

Green Tribology in Industry 4.0/5.0 symbolizes the convergence of sustainability, innovation, and intelligence. It ensures that the pursuit of industrial advancement does not compromise environmental stewardship. By embedding green tribological principles into smart manufacturing, industries can achieve the dual goals of technological excellence and ecological responsibility- paving the way for a more sustainable industrial future.



ORIENTATION PROGRAMME

The Orientation Programme “आरम्भ 2025” was organized on 20th August 2025 at CV Raman Hall, IIMT College of Engineering, Greater Noida, to warmly welcome the newly admitted students and introducing them with the institution’s academic, cultural, and administrative environment. The event began with the traditional lighting of the lamp, Saraswati Vandana, and Ganesh Vandana, marking an auspicious start of the event.

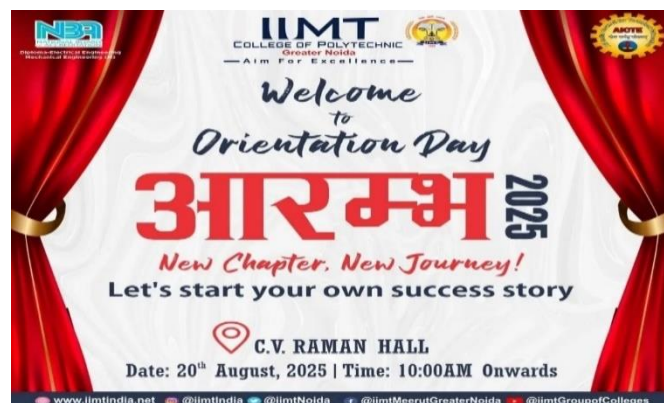
The Chief Guest, Mr. Amar Chaudhary, delivered a thought-provoking and motivational address. His words inspired the students to embrace challenges with courage, seize opportunities with confidence, and pursue excellence with determination.

The blessings of the Hon’ble Chairman Sir, MD Sir, and DG (Academics), further elevated the event. Their words of wisdom encouraged students to focus on holistic learning, innovation, and self-development while upholding ethical values.

The programme was further enriched by the insightful address of Director, Prof. Umesh Kumar, and senior officials, who shared insights on academics, training, and placements.

A special highlight of the programme was the interaction with prominent alumni, who shared their success stories and encouraged students to take advantage of the platforms offered by IIMT to shape their careers.

Moreover, the cultural performances and interactive activities added vibrancy to the day.



Felicitation of Mr. Amar Chaudhary (Chief Guest)



Inauguration of the Event with Lamp Lighting

Department of Mechanical Engineering



GUEST LECTURE

The Department of mechanical engineering organised a guest lecture on “Research Paper Writing and Publication in Reputed Journals” which was presented by Mr. Ajay Sharma, Dean R&D Department, IIMT College of Polytechnic on 24th September 2025 in Vishveshwarya Hall.

The session provided insights into writing and structuring high-quality research papers with academic integrity. Participants gained knowledge about journal selection, peer-review, and the overall publication process.

The lecture highlighted common challenges in research writing and shared strategies for successful acceptance. It aimed to inspire students and faculty to contribute impactful research to reputed journals and enhance the research culture.



Lecturer Delivered by Mr.
Ajay Sharma, Dean R&D



Faculties and Students
Attended the Guest lecture



31 Oct 1875-
15 Dec 1950

"It is in my nature to be a friend of the friendless."- Sardar Vallabhbhai Patel

VISHWAKARMA PUJA

The Department of Mechanical Engineering, IIMT College of Polytechnic, Greater Noida, organized Vishwakarma Puja on 17th September 2025 at 9:00 AM in the Workshop Lab, Ground Floor.

The program commenced with the worship of Lord Vishwakarma, the divine architect and engineer, seeking blessings for progress, innovation, and safety in technical pursuits. The event aimed to seek blessings for innovation, progress, and safety in technical pursuits. The entire workshop was beautifully decorated by the students and faculty members, creating an atmosphere of devotion and enthusiasm.

The occasion was graced by the presence of our Respected Director Sir, Head of Department of Electrical Engineering, Head of Department of Civil Engineering, along with the faculty members of the Mechanical Engineering Department and representatives from other departments. Their presence encouraged and motivated the students to uphold the values of dedication, creativity, and discipline in their professional and academic life.

During the puja, all the machinery and equipment in the workshop were also worshipped as a mark of respect, emphasizing the importance of tools and technology in engineering education. The puja highlighted the cultural and spiritual importance of acknowledging the resources that enable innovation and progress.

Students actively participated in the rituals with great enthusiasm. They not only experienced the spiritual significance of the day but also understood its professional relevance reminding them that true engineering is a blend of skill, creativity, respect for technology, and commitment to ethical practices. The event concluded with prasada distribution, leaving everyone with a sense of joy, inspiration, and renewed energy to achieve excellence in academics and future



Faculty and the Respected Director Sir Attended the Hawan Ceremony

Department of Civil Engineering



Engineer's Day Celebration – 2025

The Engineer's Day Celebration, organized by Department of Civil Engineering was held on 15 th September 2025 at Visvesvaraya Hall, IIMT College of Polytechnic. The objective of the event was to commemorate the birth anniversary of Bharat Ratna Sir M. Visvesvaraya, the legendary engineer and statesman, and to recognize the contribution of engineers toward the progress of society. The celebration aimed to inspire students to follow his legacy of dedication, innovation, and professionalism in the engineering field. The celebration successfully inspired students and faculty by creating awareness of the legacy of Sir M. Visvesvaraya. Students expressed that the session instilled a sense of pride in being future engineers and motivated them to contribute toward innovative and sustainable solutions for society. Over 45 students, along with faculty members, attend and appreciated the event.



Winner Honoured with Certificate



Student Enjoyed the Engineer's Day



31 Oct 1875-
15 Dec 1950

**"In a domestic government unity and cooperation are essential requisites."-
Sardar Vallabhbhai Patel**



GUEST LECTURE

On September 18th, the Civil Engineering Department of IIMT College of Polytechnic organized an insightful offline guest lecture on “Structural Health Monitoring (SHM) in Civil Engineering,” featuring the esteemed guest speaker, Dr. Indrajeet Singh, Assistant Professor in Gautam Buddha University, Greater Noida.

The objective of the guest lecture was to provide students with an in-depth understanding of Structural Health Monitoring, its role in ensuring the safety and durability of civil engineering structures, and to expose them to modern tools, techniques, and case studies relevant to the field. The lecture covered modern SHM techniques, including sensors, non-destructive testing, and data monitoring tools.

The session offered students a comprehensive understanding of the importance of Structural Health Monitoring in maintaining infrastructure safety and sustainability. The lecture bridged the gap between theoretical knowledge and real-world applications.

Over 35 students, along with faculty members, attend and appreciated the interactive and practical nature of the session. The event not only enhanced their understanding of the subject but also provided real-world insights into the applications of Structural Health Monitoring. The event motivated participants to consider Structural Health Monitoring, as a potential area for research and higher studies.



Lamp Lighting Ceremony by Dignitaries and Guest Speaker



Faculty and Students Attended the Guest Lecture



31 Oct 1875-
15 Dec 1950

“Today we must remove distinction of high and low, rich and poor, caste or creed.”- Sardar Vallabhbhai Patel

Department of Electrical Engineering



GUEST LECTURE

The Department of Electrical Engineering, IIMT College of Polytechnic, Greater Noida, organized a guest lecture on “*Electrical Automation*” on 25th September 2025 at Vishveshwaraia Hall, under the coordination of Mr. Nitesh Pathak, Lecturer, Department of Electrical Engineering. The main objective of the lecture was to familiarize students with the concept of electrical automation, introduce them to modern automation tools and technologies, and enhance their understanding of real-world industrial applications.

The program commenced with a welcome address by the faculty members of the Department of Electrical Engineering. After the formal introduction, the resource person, Mr. Saif Islam, initiated the session. The session included a live demonstration where Mr. Saif Islam showcased the working of automation tools, programming methods, and the integration of hardware and software components.

Students actively participated in the interactive discussions and clarified their queries on practical applications. The guest lecture provided an excellent platform for students to gain hands-on experience and learn about the industrial practices that are vital for their career growth.



Fecilitation by Dean (R&D)

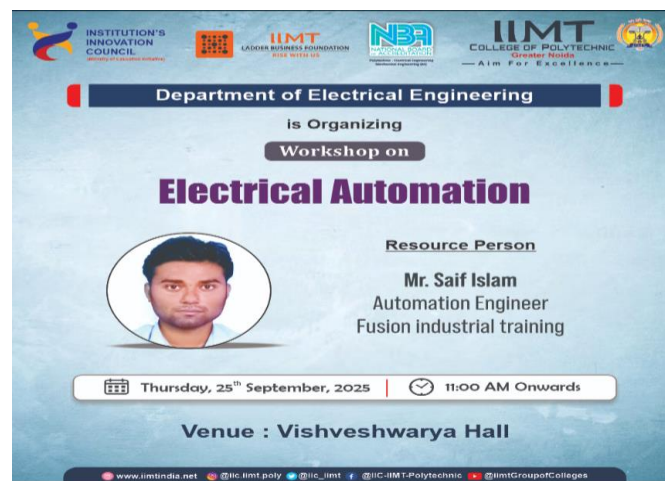
WORKSHOP

The Department of Electrical Engineering, IIMT College of Polytechnic, Greater Noida, organized a workshop on “*Electrical Automation*” on 25th September 2025 at Vishveshwariya Hall under the coordination of Mr. Mirtunjay Kumar, Lecturer, Department of Electrical Engineering. The main objective of the workshop was to familiarize students with the concept of electrical automation, introduce them to automation tools and technologies, and develop their skills in understanding real-world industrial applications. The session was carefully designed to bridge the gap between theoretical knowledge and practical exposure.

The workshop commenced with a welcome address by the faculty members of the Department of Electrical Engineering. Following the introduction, the resource person, Mr. Saif Islam, initiated the session by explaining the basics of automation and its growing relevance in present-day industries.

The session included detailed explanations, live demonstrations of automation tools, and case studies from industrial practices, which helped students gain practical insights into the subject. Active student participation and interactive discussions made the workshop more engaging and fruitful.

The event concluded with a Q&A session where students expressed great interest in learning more about emerging technology.



Faculties Attended the Workshop



Felicitation of Mr. Saif Islam (Resource Person)



31 Oct 1875-
15 Dec 1950

**“Non-violence has to be observed in thought, word and deed.” Sardar
Vallabhbhai Patel**

Department of Computer Science & Engineering



TEACHER DAY

The Teacher's Day Celebration, organized by Computer Science & Engineering Department, was held on 5th September 2025 at Visvesvaraya Hall, IIMT College of Polytechnic. The objective of the event was to commemorate the birth anniversary of Dr. Sarvepalli Radhakrishnan, the great philosopher, scholar, and former President of India, and to honor the invaluable contribution of teachers in shaping the future of students and society. The celebration aimed to highlight the importance of teaching as a noble profession and to inspire students to respect and value their mentors. The program successfully created an atmosphere of gratitude and respect, where students expressed their heartfelt appreciation towards teachers through speeches, cultural activities, and tokens of gratitude. The session instilled a sense of responsibility among students to uphold the values imparted by their teachers. Over 50 students, along with faculty members, attended and appreciated the event.



Faculties Enjoying Cultural Event



Faculties Attended the Cake Cutting Ceremony

FACULTY CORNER

Advancing Biomedical Chemistry with Biopolymer-based Hydrogels

In today's healthcare, the demand for smarter, safer, and more efficient drug delivery systems has been increased. Conventional formulations often fall short in ensuring patient compliance, targeted delivery, and controlled release of therapeutics. This is where biopolymer-based hydrogels are emerging as game changers, as innovative carriers capable of transforming the way drugs are delivered, absorbed, and utilized by the body.

Over the last decade, research in this field has expanded rapidly. Derived from natural polymers such as chitosan, alginate, hyaluronic acid, cellulose etc, these hydrogels form three-dimensional biofluids-rich networks that closely mimic the body's extracellular matrix. Their biodegradability, non-toxicity, and tunable chemical properties make them ideal for diverse medical applications.

In drug delivery, hydrogels enable controlled and targeted release of therapeutic agents, improving drug stability and bioavailability. In wound healing and tissue regeneration, they provide a moist, protective environment and act as scaffolds for cell growth. Their role in biosensing and diagnostics is equally promising, where functionalized hydrogels enhance sensitivity for detecting glucose, pathogens, or cancer biomarkers. Injectable and stimuli-

responsive hydrogels are also being developed for cancer therapy, offering localized treatment with reduced side effects.

However, despite their potential, translation into large-scale applications has been relatively slow. To truly harness this potential, academia and industry must come together. By fostering innovation and collaboration, biopolymer-based hydrogels can stand at the forefront of next-generation drug delivery systems, thus improving efficacy, reducing side effects, and ultimately enhancing patient quality of life



Dr. Priyanka Meena
PhD (Chemistry)
Senior Lecturer, ASH
IIMT College of Polytechnic



STUDENT CORNER

HEALTH AND DISCIPLINE: THE KEYS TO A BALANCED LIFE

In today's competitive and busy world, health and discipline are two essential keys to achieving balance and success. While many students focus only on academics, it is equally important to understand that without good health and self-discipline, true success is difficult to sustain.

The Role of Health: Health is the foundation of life. A healthy body supports a healthy mind. Good nutrition, regular exercise, and proper rest improve concentration, memory, and energy levels.

The Role of Discipline: Discipline gives direction to life. It helps students manage time, stay focused on studies, and build positive habits. A disciplined student knows how to balance academics, activities, and personal growth.

Conclusion: Health and discipline are not separate goals but partners in a successful journey. By maintaining good health and practicing discipline, students can achieve not only academic excellence but also a fulfilling and meaningful life.



Aditya Raj
CSE, 1 Yr

GENERAL CORNER-QUIZ

General Knowledge Questions

1. Which is the largest continent in the world?
2. First Indian to land on space?
3. India's first solar mission?
4. Who is the first permanent president of constituent assembly of India?
5. In which year was Quit India Movement launched?
6. Which is the national animal of India?
7. India's first national park?
8. Which is the largest planet in our solar system?
9. National river of India?
10. First Battle of Panipat?

Answers of Previous Newsletter General Corner (April-June 2025)

- | | |
|-------------------------|---------------|
| 1. Antonio Guterres | 2. Japan |
| 3. Valentina Tereshkova | 4. Canberra |
| 5. 1947 | 6. Mars |
| 7. Au | 8. Nile River |
| 9. Rabindra Nath Tagore | 10. Bengaluru |



31 Oct 1875-
15 Dec 1950

"Your place is by the side of your countrymen, how are fighting the freedoms battle." - Sardar Vallabhbhai Patel

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FROM THE



**EDITOR'S
DESK**

"We extend our sincere appreciation to our dedicated readers, whose engagement and support drive the success of our esteemed quarterly newsletter. We also express profound gratitude to our talented authors, whose innovative research enriches the scholarly discourse in our field."

Finally, we extend special thanks to our distinguished Editor-in-Chief for his guidance, leadership, and unwavering commitment to excellence.



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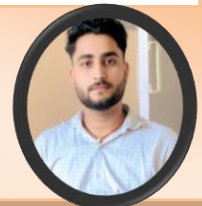


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31 Oct 1875-
15 Dec 1950

"The main task before India today is to consolidate herself into a well-knit and united power"- Sardar Vallabhbhai Patel