



# IPS Academy

## INSTITUTE OF ENGINEERING & SCIENCE

*Knowledge, skills and values*



# MECHAZINE

**Department of Mechanical Engineering**  
**Annual Magazine**  
**2022-23**

## *Letter from the Editors*

*Dear Readers,*

Welcome to the latest edition of our Mechanical Engineering Department Magazine *Mechazine*. We're excited to present to you a diverse range of insights, achievements, and inspirations from our vibrant department. As we navigate through the pages of this publication, we are reminded of the immense potential, innovation, and dedication that characterize our mechanical engineering community.

One of the most remarkable aspects of mechanical engineering is its versatility. It's a field that has a hand in virtually every aspect of our lives, from the vehicles we drive to the appliances we use, from the skyscrapers that define our skylines to the machines that manufacture our products. This diversity of application is reflected in the myriad of interests and passions our students bring to the department.

We take this opportunity to thank our respected Principal **Dr. Archana Keerti Chowdhary**, HOD **Dr. Amit Chandak** and all the faculty members for their incessant inspiration and kind support. We extend our gratitude to all who have contributed to this magazine. Your hard work and dedication shine through in these pages, reminding us why we're proud to be part of this dynamic community.

*Editors...*





**THE  
EDITORIAL  
BOARD**

## Student Magazine Coordinators

<b>S. No.</b>	<b>Name of Student</b>	<b>Year</b>
1.	Mr. Gourav Undhaliya	Final Year
2.	Mr. Anirudh Mishra	Third Year
5.	Mr. Shiv Sen	Second Year
6.	Mr. Goutam Goswami	Second Year

## Editorial Team

1.	Mr. Kapil Patodi	Assistant Professor
2.	Mr. Pradeep Singh Hada	Assistant Professor



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# STUDENTS ARTICLES



# Industry 4.0: The Revolutionizing Force in Manufacturing

## **Introduction**

The advent of Industry 4.0 represents a significant leap in the evolution of manufacturing, promising to transform industries and reshape the global economy. Often referred to as the "Fourth Industrial Revolution," Industry 4.0 is driven by a convergence of digital technologies that blur the lines between the physical and digital worlds. This article explores the core concepts, technologies, benefits, and challenges associated with Industry 4.0.

## **Understanding Industry 4.0**

Industry 4.0 is a term that originated in Germany and has gained worldwide recognition. It signifies a fundamental shift in the way manufacturing processes are designed, operated, and optimized. This revolution is characterized by the integration of the Internet of Things (IoT), artificial intelligence (AI), big data, robotics, 3D printing, and more into the manufacturing ecosystem.

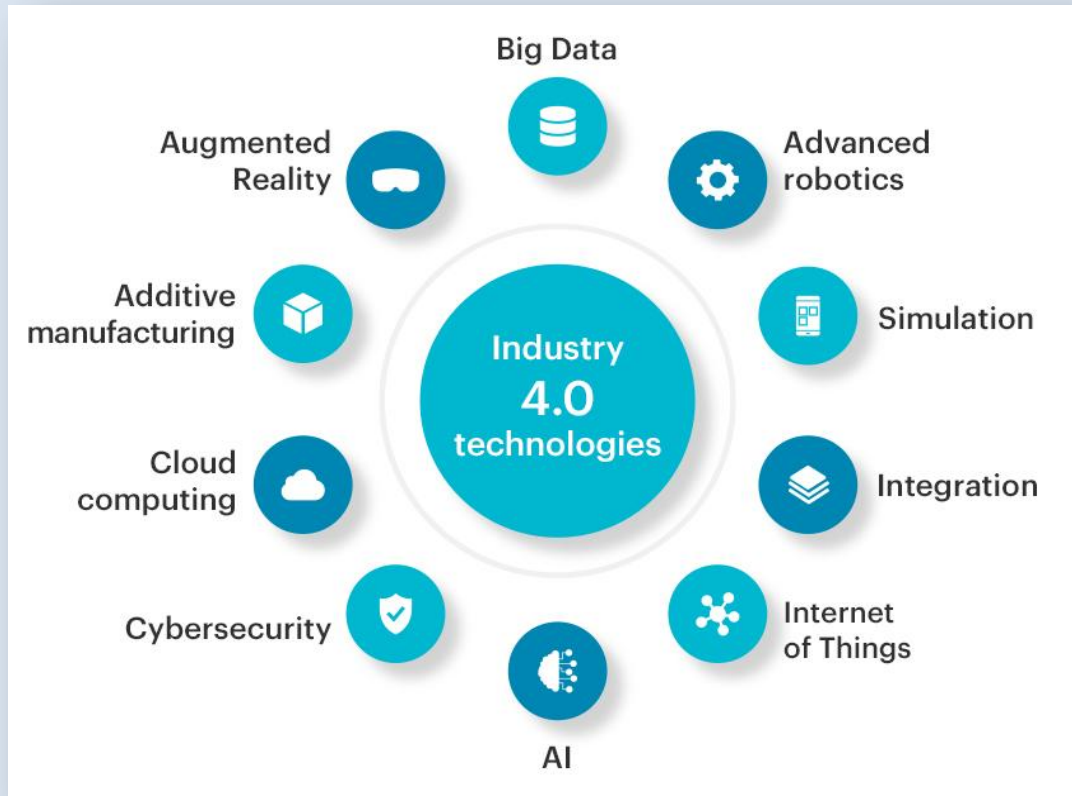
## **Key Technologies of Industry 4.0**

1. **Internet of Things (IoT):** IoT devices, such as sensors and smart machinery, are embedded in the

production process. They collect real-time data and enable machines to communicate and make autonomous decisions.

2. **Big Data and Analytics:** The enormous amount of data generated is analyzed to identify patterns, optimize processes, and make informed decisions.
3. **Artificial Intelligence (AI) and Machine Learning:** AI algorithms enhance predictive maintenance, quality control, and even autonomous manufacturing processes.
4. **Robotics and Automation:** Advanced robots and automation systems take over repetitive and hazardous tasks, improving efficiency and reducing errors.
5. **Additive Manufacturing (3D Printing):** 3D printing allows for rapid prototyping and customized production, reducing waste and enabling new design possibilities.
6. **Cloud Computing:** Centralized data storage and computing resources enable real-time data sharing, remote monitoring, and collaboration.





### Benefits of Industry 4.0

1. **Increased Efficiency:** Automation and data-driven decision-making lead to improved production efficiency and reduced downtime.
2. **Quality Control:** Real-time monitoring and predictive analytics enhance product quality and reduce defects.
3. **Cost Reduction:** Through efficient resource utilization and predictive maintenance, manufacturing costs can be significantly reduced.
4. **Customization:** Industry 4.0 enables mass customization and the production of highly personalized products.

5. **Sustainability:** Optimized processes reduce waste and energy consumption, making manufacturing more environmentally friendly.
6. **Global Connectivity:** Businesses can connect with partners and customers worldwide, creating new market opportunities.

### Challenges and Concerns

While Industry 4.0 promises remarkable benefits, it also comes with its set of challenges:

1. **Security:** The interconnected nature of Industry 4.0 introduces security vulnerabilities. Protecting



data and systems from cyber threats is a top concern.

2. **Skilled Workforce:** There is a growing demand for workers with digital skills to operate and maintain advanced manufacturing systems.
3. **Privacy:** Collecting vast amounts of data can raise privacy concerns, necessitating robust data protection measures.
4. **Implementation Costs:** Adopting Industry 4.0 technologies can be expensive, particularly for small and medium-sized enterprises.
5. **Resistance to Change:** Many organizations face internal resistance to embracing new technologies and processes.

### Conclusion

Industry 4.0 represents a revolutionary shift in manufacturing, where digital technologies converge with physical processes, creating more efficient, flexible, and connected systems. Embracing this transformation offers substantial benefits in terms of efficiency, quality, customization, and sustainability. However, businesses must also address challenges related to security, workforce skills, and privacy to fully realize the potential of Industry 4.0. As this fourth industrial revolution continues to unfold, the companies that successfully adapt will

emerge as leaders in a new era of manufacturing.

**Mohit Kumar (IV Year)**

## ChatGPT: Transforming Conversational AI

### Introduction

Chatbots and virtual assistants have come a long way since their inception, and ChatGPT is at the forefront of this evolution. Developed by OpenAI, ChatGPT represents a groundbreaking leap in conversational AI, demonstrating the remarkable capabilities of artificial intelligence to understand, generate, and respond to human language in a more natural and coherent manner. In this article, we will delve into the world of ChatGPT, exploring its development, applications, strengths, and the ethical considerations surrounding it.

### The Evolution of ChatGPT

ChatGPT is built upon the foundation of OpenAI's GPT (Generative Pre-trained Transformer) architecture, which is designed to understand and generate human-like text. Over the years, GPT-based models have made significant advancements, and ChatGPT is the result of OpenAI's continuous research and development in the field of natural language processing.







### Key Features of ChatGPT

1. **Natural Language Understanding:** ChatGPT excels in comprehending context, allowing for more coherent and contextually relevant responses.
2. **Multi-turn Conversations:** Unlike earlier models, ChatGPT is designed to handle multi-turn conversations, making it a more suitable tool for real-world applications.
3. **Customization:** ChatGPT can be fine-tuned for specific tasks and industries, offering a more tailored conversational experience.
4. **Reduced Biases:** OpenAI has made efforts to minimize biases in ChatGPT's responses, though challenges still exist.

### Applications of ChatGPT

1. **Customer Support:** Many businesses have integrated ChatGPT into their websites to provide instant responses to customer queries, enhancing user experiences.
2. **Content Generation:** ChatGPT can assist content creators by generating ideas, editing content, or even writing pieces of text.
3. **Language Translation:** It can help in real-time language translation, facilitating cross-cultural communication.
4. **Education:** ChatGPT can serve as a virtual tutor, answering questions and assisting students with their coursework.



- 5. Healthcare:** In healthcare, ChatGPT can provide information on medical topics, answer general health questions, and even offer basic mental health support.

### **Ethical Considerations**

The rise of conversational AI like ChatGPT brings forth ethical concerns:

- 1. Bias and Fairness:** Despite efforts to reduce biases, ChatGPT may still produce biased or inappropriate responses, which could perpetuate stereotypes.
- 2. Privacy:** The use of conversational AI raises questions about data privacy and how user information is handled.
- 3. Misuse:** ChatGPT can be used for malicious purposes, such as generating fake news or fraudulent activities.
- 4. Dependency:** Over-reliance on AI for conversations may hinder human communication skills and critical thinking.

### **Conclusion**

ChatGPT represents a remarkable stride in the development of conversational AI, offering a glimpse into the potential of human-computer interaction. Its natural language understanding and generation capabilities make it a valuable tool for

various industries and applications, from customer service to content generation. However, as with any powerful technology, ethical considerations must be at the forefront of its development and application to ensure that it enhances human experiences without compromising privacy, fairness, or safety. As ChatGPT continues to evolve, it will undoubtedly play a pivotal role in shaping the future of how we communicate and interact with machines.

**Roshik Vyas (III Year)**

## [The Ripple Effect: The Impact of the Russia-Ukraine War](#)

### **Introduction**

The ongoing conflict between Russia and Ukraine, which began in 2014, has not only reshaped the geopolitical landscape but has also had profound and far-reaching effects on various aspects of the global community. This article explores the multi-faceted repercussions of the Russia-Ukraine war, ranging from regional stability and humanitarian crises to energy security and international relations.

#### **1. Humanitarian Crisis**

The war in Ukraine has given rise to one of the most significant humanitarian crises





in Europe since the Balkans conflict of the 1990s. The conflict has resulted in the displacement of millions of people, both internally and externally. Families have been torn apart, and countless lives have been disrupted. Access to healthcare, education, and basic necessities has been severely hampered, affecting the most vulnerable segments of the population.

## 2. Economic Consequences

The economic impact of the conflict extends beyond the borders of Ukraine. Russia, Ukraine, and the European Union have all experienced economic ramifications. Ukraine's economy has suffered due to damaged infrastructure and lost industrial production in the conflict zones, while Russia's economy has faced sanctions and declining oil prices. Europe has also had to adapt to the instability,

including fluctuations in energy prices due to disrupted gas supplies from Russia.

## 3. Geopolitical Tensions

The Russia-Ukraine war has heightened geopolitical tensions between Russia and the Western world, primarily the United States and the European Union. Sanctions imposed on Russia by Western nations have resulted in retaliatory measures, creating an ongoing diplomatic standoff. These tensions have ramifications far beyond the immediate conflict, influencing international relations and strategic alliances.

## 4. Energy Security

The war in Ukraine has had a significant impact on energy security, especially in Europe. Russia is a major supplier of natural gas to European countries, and the

instability in the region has raised concerns about the reliability of energy supplies. European nations have been actively seeking to diversify their energy sources and reduce their dependence on Russian gas, aiming for increased energy independence.

### 5. NATO and Defense Posture

The security situation in Eastern Europe has prompted NATO to reevaluate its defense posture. Member countries, particularly those in Eastern Europe, have sought increased NATO presence and support to counter potential threats. This shift has led to changes in defense budgets and military strategies in various NATO member states.

### 6. Cybersecurity Concerns

The Russia-Ukraine war has also intensified concerns about cyber threats. Russia has been accused of engaging in cyberattacks targeting various Western

nations. These incidents have underscored the importance of enhancing cybersecurity measures and international cooperation to combat cyber threats effectively.

### Conclusion

The Russia-Ukraine war is not a localized conflict; its effects resonate on a global scale. Humanitarian suffering, economic consequences, geopolitical tensions, energy security, and cybersecurity concerns all underscore the complexity of this conflict. The international community must continue its efforts to seek a peaceful resolution to the conflict, support those affected by it, and address the broader implications it has on the world order. The ripple effects of the war serve as a stark reminder of the interconnectedness of nations in an increasingly interdependent world.

**Goutam Goswami (II Year)**



## Departmental News & Updates

### Students Achievements

#### 1) Special Award

S. No.	Name of Student	Date	Achievement (Detail)
1	Utkarsh Sinde	17/03/2023	Winner Best paper Award at DAVV in International Conference
2	Swaroop Mali & Team	08/04/2023	First Runner-up in E-BAJA competition held at Chikara University , Baddi

#### 2) Paper Presented in Seminar / Conference International

S. No.	Name	Topic / Title of Paper Seminar / conference	Date		Details of Seminar / conference Proceeding and organized by
			From	To	
1	Utkarsh Shinde	Elevation Painting Machine)	17/02/2023	18/02/2023	International Conference on Innovation and Challenges in Engineering Sciences (ICICES DAVV Indore

#### 3) Workshop Attended

S. No.	Name	Date	Details of Workshop	Topic
1	Utkarsh Shinde	20/01/2023	Hands on training of Refrigeration & AC	RAC
2	Utkarsh Shinde	03/08/2022	One Day Entrepreneurship Awareness Programme (EAP)	Entrepreneurship
3	Utkarsh Shinde	Jan-Feb 2023	NPTEL Online Certification	Inspection & Quality Control in Manufacturing

#### 4) Sports

S. No.	Student Name	Organize Place	Name of Events	Awards
1.	Mr. Noor Mohd. & Team	IES-IPSA	Carom	Runner Up



**5) List of Students Who Got First/Second Position (Academics) (UG)**

S. No	Name of Student	Branch	Sem/Year	Position	Percentage
1	Anisha Singh	ME	I/I	I	9.05
2	Nikhil Pal	ME	I/I	II	8.10
3	Shiv Sen	ME	IV/II	I	8.90
4	Yuvraj Saini	ME	IV/II	II	8.77
5	Roshik Vyas	ME	VI/III	I	9.05
6	Anirudh Mishra	ME	VI/III	II	9.04
7	Utkarsh Shinde	ME	VIII/IV	I	9.42
8	Gourav Undhaliya	ME	VIII/IV	II	9.11

**6) List of Students Who Got First/Second Position (Academics) (PG)**

S. No	Name of Student	Branch	Sem/Year	Position	Percentage
1	Abhishek Malviya	ME	III/II	I	7.87
2	Manish Kumar Bharti	ME	III/II	II	7.80
3	Himanshu Goud	ME	I/I	I	8.45
4	Alex Louis	ME	I/I	II	7.50



## Academic Event Details 22-23

### [1] One Day Entrepreneurship Awareness Programme (EAP) (03 August 2022)

Micro, Small and Medium Enterprises (MSME) Development & Facilitation office, Indore organize one day Entrepreneurship awareness programme (EAP) on 03/08/2022 in collaboration with IPS Academy, Institute of Engineering and Science, Indore. Aim of the EAP was to create awareness among the students and to guide them for the government schemes and facilities provided.



**[2] ISHRAE Student Chapter installation followed by Expert lecture (05 August 2022)**

The Indian Society of Heating, Refrigerating and Air Conditioning Engineers (ISHRAE), was founded in 1981 at New Delhi by a group of eminent HVAC&R professionals. ISHRAE today has over 28,780 HVAC&R professionals and Student-members. ISHRAE operates from over 44 Chapters and sub Chapters spread all over India. Student chapter was installed and oaths are taken by newly elected student chapter working committee. Expert lecture delivered by Mr Pankaj Tiwari, vice president of Pankaj Dharkar & Associates, about the Internet of Things, How to daily life easier by IOT and how to save electricity, man power and health by this things.





### [3] Workshop on Early Diagnosis of Oral Cancer in Microfluidic Platform (22-28 August 2022)

This is Karyashala High – End 7-day workshop, was funded by SERB, DST, Govt. of India, organized from 22 to 28 August 2022, to support regular PG/ PhD students (25 students only) who are having a strong orientation towards Microfluidics Interdisciplinary scientific research and are pursuing their degree from University within India in the fields of science or engineering and having an interest in developing diagnostic devices for rapid diagnosis of various diseases. Experts from various multidisciplinary fields (Doctors, Engineers, Microbiologist, Pharmacologist, Chemist) conducted each session and delivered highly impactful lectures related to device development for oral cancer diagnosis.



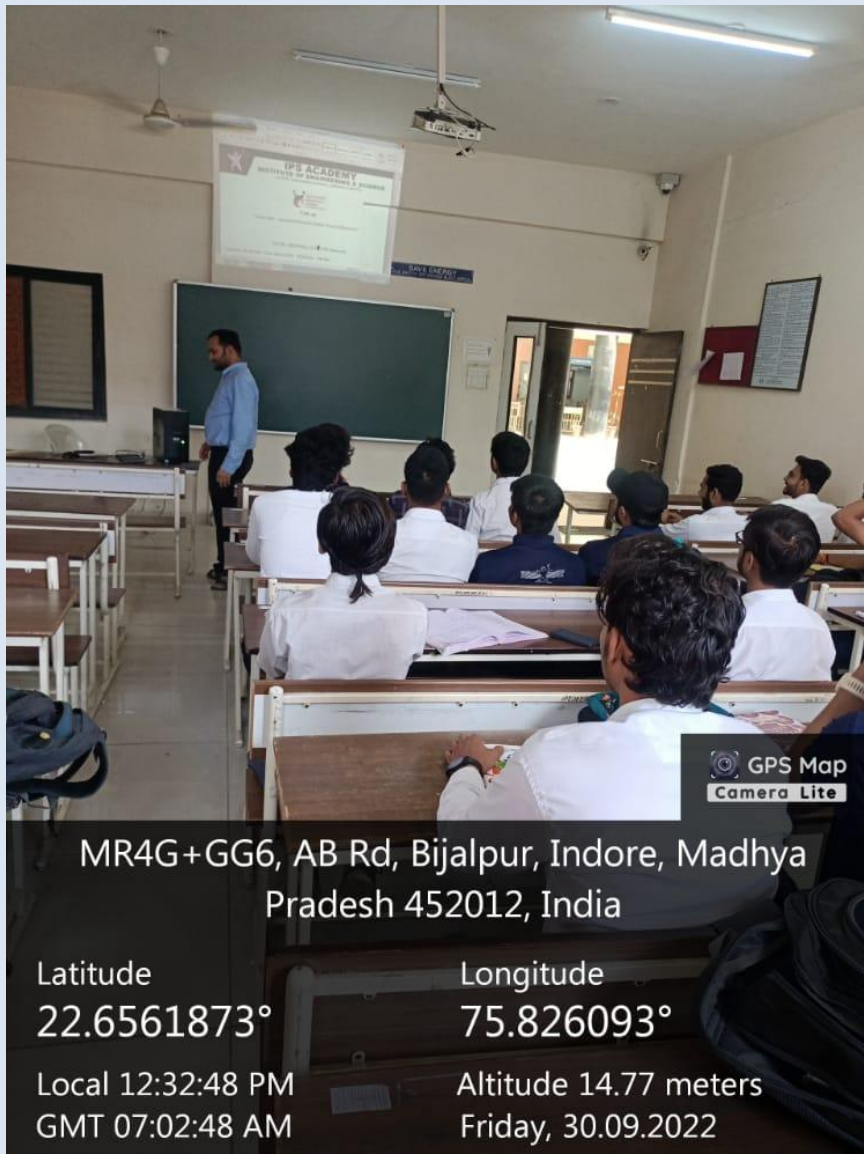
**[4] Expert lecture on “Career opportunities for Mechanical Engineering students” (15 September 2022)**

Expert lecture on “Career opportunities” for students of Mechanical Engineering department, delivered by Mr. Jasmeet Singh Dang, Executive Engg. Aditya Techno Fab Engineering and Ex-Student of Mechanical Engineering department of the Academy. 25 students attend the lecture. Mr. Dang explained about different sector in which student can build their career.



**[5] Expert lecture on “Lean Start – up and Minimum Viable Product/Business” (30 September 2022)**

Expert lecture on “Lean Start – up and Minimum Viable Product/Business” for students of Mechanical Engineering department delivered by Mr. Mayank Gurjar, Assistant Professor, IPS Academy, IES. 20 students attend the lecture. He explained that the lean startup method first identifies a problem that needs to be solved. It then develops a minimum viable product or the smallest form of the product that allows entrepreneurs to introduce it to potential customers for feedback.



**[6] Expert lecture on “Higher study opportunities (19 November 2022)**

Expert lecture on “Higher study opportunities” for students of Mechanical Engineering department delivered by Mr. Sidharth Karandikar, Executive SI-UK Study Center, Indore. 18 students attend the lecture. Mr. Karandikar explained about the opportunities for higher education in top universities of UK and the process followed by the universities for admission.



MR4G+GG6, AB Rd, Bijalpur, Indore, Madhya Pradesh 452012, India

Latitude

22.6561619°

Longitude

75.8260889°

Local 12:33:23 PM

GMT 07:03:23 AM

Altitude 514.4 meters

Saturday 19, Nov 2022



**[7] Industrial Visit for engineering students to SAFEFLEX International Ltd, Pithampur (28 December 2022)**

An Industrial Visit is organized for students at SAFEFLEX International Ltd, Pithampur. Fifty Four Students from I year (FT&S and ME) and Three Faculty Members of Mechanical Engineering Department visited to industry to interact with the professionals working there along with having an interactive informative session with Mr. Pushendra Yadav Engineer SAFEFLEX International Ltd. The expert expresses their knowledge about the Manufacturing of FIBCs, Lumber Covers, Container Liners, Agro Nets, Garden Nets, Tensile Fabrics, and Environment Protection Systems and their working principle.



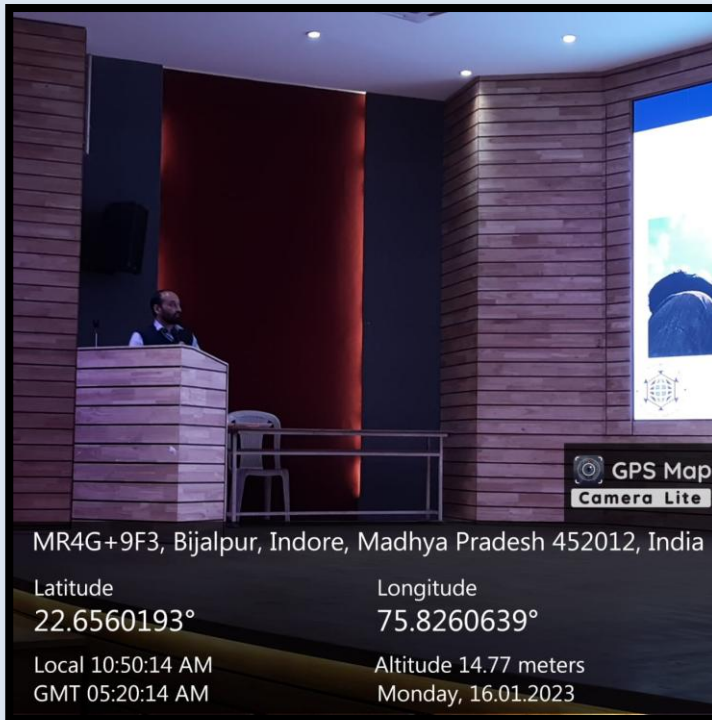
**[8] Expert lecture on “Higher Education opportunities for mechanical Engineering students” (12 January 2023)**

Expert lecture on “Higher Education opportunities” for students of Mechanical Engineering department delivered by Mr. Harshit Yadav, Supply Chain Manager, Amazon, USA and Ex-student of the academy. 18 students attend the lecture. He shares his experience with the students.



### [9] Workshop on Recent Advances in Heating Ventilation and Air Conditioning and Refrigeration (HVAC&R) System and Their Application (16-20 January 2023)

This is a High End workshop, was funded by SERB, DST, Govt. of India, organized from 16 to 20 January 2023. This workshop was open to Industry Persons and Faculty members (regular/ ad-hoc/ temporary)/Research Scholars/Post Graduate Students from any Indian university/ college. 62 Participants includes faculties from various engineering institutes, professional from industries, research associates and M Tech students were attained this workshop.



**[10] Industrial Visit for students at Degree Day Ltd. Indore. (17 January 2023)**

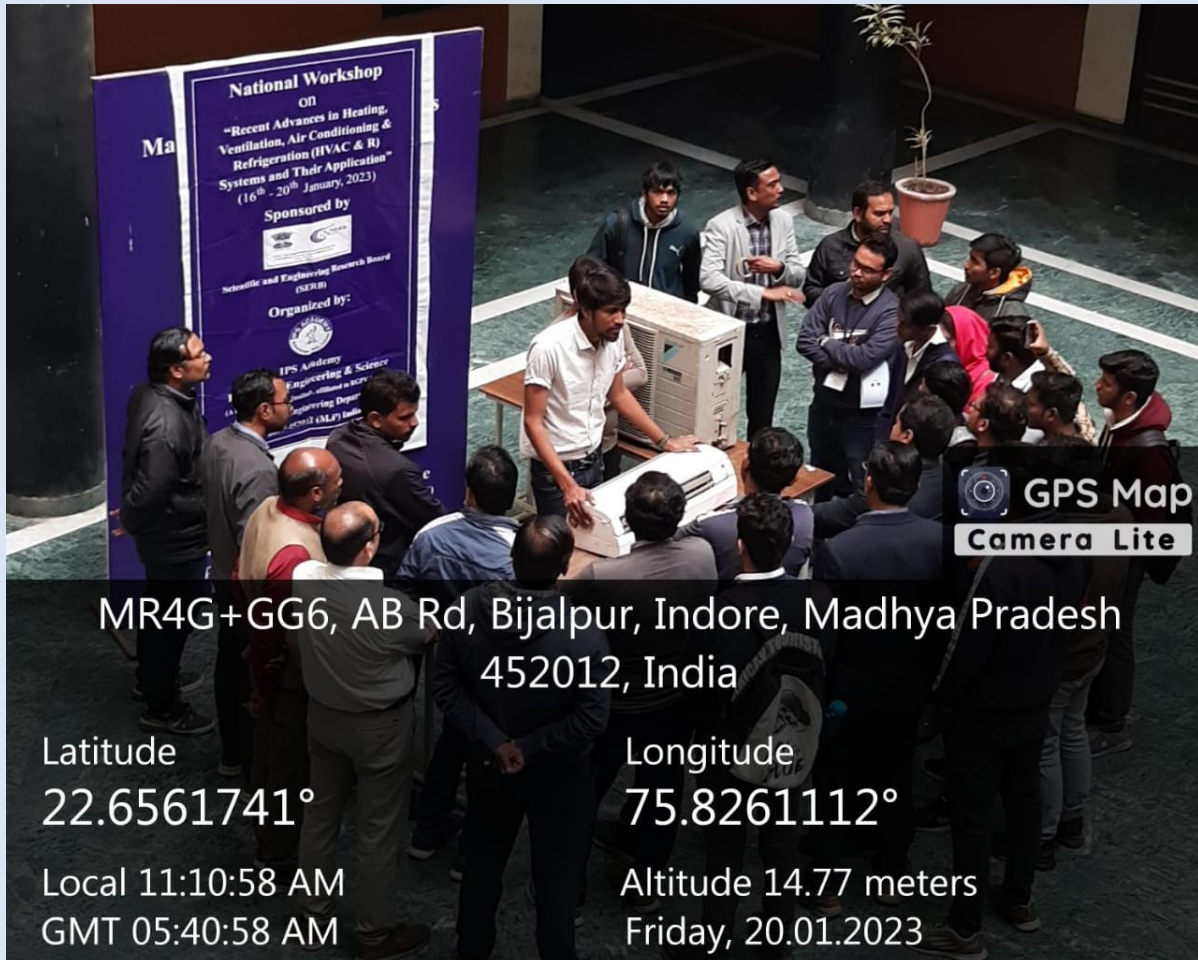
An Industrial Visit for students Degree Day Ltd. Indore was organized. Degree Day is an ISO 9001:2015 certified Indore based Air-conditioning firm, which provides one-stop HVAC system solutions. 25 Students and 12 Faculty Members of Mechanical Engineering Department visited to industry to interact with the professionals working there.





**[11] Hands on training of Refrigeration & AC. (20 January 2023)**

Hands on training of Refrigeration & AC for students of Mechanical Engineering department were organized given by Mr. Nimish Jaiswal. Expert were explained about the working of different components of an air conditioning system, different problems which comes under practical working, how they solved and what kind of maintenance required for AC. Training is attended by the students and all the faculties and lab staff of the department.



MR4G+GG6, AB Rd, Bijalpur, Indore, Madhya Pradesh  
452012, India

Latitude  
22.6561741°

Longitude  
75.8261112°

Local 11:10:58 AM  
GMT 05:40:58 AM

Altitude 14.77 meters  
Friday, 20.01.2023



**[12] Expert lecture on “Opportunities in Quality Control”. (27 March 2023)**

Expert lecture on “Opportunities in Quality Control” for students of Mechanical Engineering department delivered by Nitin Vishwakarma Q & A HoD , Moherson Electricals Wire Colombo, Shrilanka. 18 students attend the lecture.



**[13] Expert lecture on “Vehicle Design Evaluation & Analysis” (06 May 2023)**

Expert lecture on “Vehicle Design Evaluation & Analysis” for students delivered by Mr. Praduman Patidar, Co Convener – BAJA SAEINDIA 2023 Pithampur & Technical Committee Head. 25 students of mechanical and electrical engineering attend the lecture. He explains about what approach should be adopted by the students for designing a ATV for the BAJA Event.



## Placement Details (2019-2023 Batch)

S.No.	Name of the Company	Student Name	CTC Offered
1	Tesla	Himanshu Singh	4 Crore PA
2	Reliance Industries limited	Utkarsh Shinde	8 LPA
3	Reliance Industries limited	Nishant Patel	8 LPA
4	Reliance Industries limited	Somya Jain	8 LPA
5	L&T	Utkarsh Shinde	6.5 LPA
6	MU Sigma	Prateek Kapde	30 L for 4 years
7	MU Sigma	Somya Jain	30 L for 4 years
8	ACG World Wide	Gaurav Mehra	5.5 LPA
9	Vedanta Limited	Aryan Soni	14 LPA
10	Vedanta Limited	Gourav Undhaliya	14 LPA
11	Vedanta Limited	Siddharth Purohit	14 LPA
12	Vedanta Limited	Prateek Kapde	14 LPA
13	Vedanta Limited	Shreyansh Vyas	14 LPA
14	Vedanta Limited	Amarnath Kunwar	14 LPA
15	DTDC	Swaroop Mali	4.8 LPA
16	Chegg	Vedansh Thakur	5 LPA
17	Chegg	Prakhar Parsai	5 LPA
18	Chegg	Gaurav Mehra	5 LPA
19	Praj Industries	Swaroop Mali	4.5 LPA
20	Techture	Swaroop Mali	2.5 LPA
21	Tata Consulting Engineering	Mohit Kumar	5.5 LPA
22	Tata Consulting Engineering	Siddharth Purohit	5.5 LPA
23	Tata Consulting Engineering	Amarnath Kunwar	5.5 LPA
24	Tata Consulting Engineering	Shreyansh Vyas	5.5 LPA

### Higher Education Details

S. No	Name of Student	Specialization
1	Himanshu Singh	GATE Qualified
2	Shiv Pratap Singh	GATE Qualified

