

Mechanical Marvels

Engineering Tomorrow: Innovations and Insights from the Mechanical World

MECHANICAL ENGINEERING

DEPARTMENTAL MAGAZINE

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Message from Vice-Chancellor's Office



Dear Readers,

We are thrilled to present the biannual Mechanical Engineering Department magazine. It is with great enthusiasm that I extend a warm welcome to our esteemed faculty, dedicated students, hardworking staff, and accomplished alumni. As we reflect on our achievements, let us also embrace the challenges that push us to innovate and grow. Remember, adversity is not an obstacle but an opportunity for development and progress. In the ever-evolving field of engineering, interdisciplinary collaboration is essential. The merging of diverse engineering disciplines sparks innovations that transcend traditional limits.

I encourage all of you to explore partnerships that offer new insights and fuel groundbreaking advancements. Our students are the driving force behind our success. Your curiosity, passion, and perseverance shape the future of our department and the legacy of our university. Seize every opportunity to learn and grow, for it is through challenges that we truly find our path to success.

Prof. Dr. Biswajoy Chatterjee
Vice Chancellor
UEM Jaipur

Message from Registrar's Office



Dear Readers,

I hope this message finds you in good health and spirits. On behalf of the Office of the Registrar at UEM Jaipur, I am pleased to introduce the latest edition of the biannual Mechanical Engineering (ME) magazine. Our ME department has long been a pillar of academic and professional excellence, fostering the growth of future engineers and innovators. With the unwavering support of our dedicated faculty, our students continue to reach remarkable milestones and gain recognition on both national and international platforms.

Our engineering students consistently excel in various competitions, demonstrating their technical proficiency and innovative problem-solving abilities. Our faculty members have made significant contributions to the field, publishing cutting-edge research in renowned journals and advancing both theoretical and practical aspects of mechanical engineering. The department has also established strong industry collaborations, offering valuable internships, guest lectures, and hands-on projects that deepen our students' practical experience and broaden their understanding of the engineering world.

We encourage all students and faculty to contribute to future editions of this magazine by sharing your stories, experiences, and insights. Together, we celebrate our collective achievements and the vibrant, innovative spirit that defines our ME department.

Happy reading!

Prof. Dr. Pradeep Kumar Sharma
Registrar
UEM Jaipur

Message from Dean's Office



Dear Readers,

I am excited to introduce the latest edition of our Mechanical Engineering (ME) magazine! This edition is not just a compilation of articles—it is a celebration of the vibrant and thriving community we have built together. Within these pages, you will find inspiring stories that reflect the heart of our ME department. From groundbreaking research to the outstanding achievements of our students and faculty, each feature highlights the diverse talents, innovation, and creativity that define us. Every article captures the unique perspectives that make our department a center of excellence and progress.

As you explore this edition, I encourage you to consider how each story contributes to the larger narrative of our department's growth and impact. It is your contributions—whether through research, mentorship, creative projects, or engagement—that keep our community dynamic and forward-looking. I am deeply grateful for your ongoing support and involvement. It is this collective spirit that not only drives our department's success but ensures its continued flourishing.

I hope this edition brings you inspiration and pride, just as it has inspired us while putting it together.

Enjoy reading!

Prof. Dr. Mukesh Yadav
Asso. Dean Academics & Foreign Affairs
University of Engineering and
Management (UEM), Jaipur

LETTER FROM HOD



Dear Readers,

Welcome to the Department of Mechanical Engineering! It is both a privilege and an honor to introduce you to our vibrant and dynamic department. Over the years, our department has continuously evolved to stay ahead of the curve in an ever-changing world of engineering. We are committed to providing our students with the skills, knowledge, and experiences necessary to succeed in the field of mechanical engineering, while staying aligned with the latest industry trends and technological advancements.

The Mechanical Engineering department is a unique blend of seasoned faculty and enthusiastic young professionals, all dedicated to delivering a comprehensive, Outcome-Based Learning experience. Our students benefit from a balanced approach that includes a strong foundation in engineering theory, hands-on practice, and exposure to the latest innovations in mechanical design, manufacturing, robotics, and more.

I invite you to embark on this exciting journey with us, as we work together to shape the future of mechanical engineering. Through collaboration, creativity, and a shared passion for progress, we aim to build a better tomorrow.

Prof. (Dr.) Umesh Gurnani
Head of Department, Mechanical Engineering
& Controller of Examinations
UEM Jaipur



Message From Associate HOD



Dear Students, Faculty, Alumni, and Friends,

It is my pleasure to welcome you to the first edition of our Mechanical Engineering department magazine. As we continue to strive for excellence in education, research, and community engagement, I am delighted to share with you the outstanding achievements and stories from our department. This issue highlights the cutting-edge research, innovative projects, and exceptional accomplishments of our students, faculty, and alumni. Their dedication, creativity, and perseverance are a testament to the department's commitment to fostering a culture of innovation and excellence.

I would like to take this opportunity to express my gratitude to our faculty, staff, and students for their tireless efforts in making our department a hub of intellectual curiosity and discovery. Your passion for mechanical engineering is inspiring, and I am honored to lead such a talented and driven community. Together, let's continue to push boundaries, explore new frontiers, and create solutions for a better tomorrow.

Role of mechanical engineers in nation building

Mechanical engineers play a pivotal role in nation-building, contributing significantly to a country's economic growth, infrastructure development, and social progress. They design, develop, and maintain complex systems, machinery, and equipment that drive industrialization, transportation, and energy generation. By optimizing energy consumption and developing sustainable solutions, mechanical engineers help reduce carbon footprints and promote environmental sustainability. Additionally, they develop life-saving medical devices, improve healthcare infrastructure, and advance aerospace and defense capabilities. Mechanical engineers also collaborate on policy-making, public-private partnerships, and disaster relief efforts, leveraging their problem-solving skills, innovation, and leadership abilities. Through their work, mechanical engineers enhance the quality of life, foster economic development, and ensure national security, making them indispensable to a nation's growth and prosperity. Their expertise spans various sectors, from manufacturing and construction to research and development, cementing their role as key architects of a nation's progress.

Prof. Dr. Anurag Hamilton
Professor
Dept. of Mechanical Engineering
UEM Jaipur

Past Events

Event Name

Streamline Hurdles

Organized by- UEM Aeromodelling Club

On 15th Sept 2024, UEM JAIPUR Aeromodelling club has organized Streamline Hurdles with around 25 participants.

About the Event:

In Streamline hurdles students are supposed to Navigate their RC-Boat through challenging obstacles in water, Race against the clock, maneuvering through tight turns and barriers.



Past Events

1. First position

Team-NoMan

Bishal saha

Team-F5

Ayusman singhal



2. Second position

Team- Gear Shifters

Adity Ranjan

Team-Shunya

Mohit Raj



Past Events

5th Anniversary Celebration of UEM Aeromodelling Club

UEM J Aeromodelling club of Department of Mechanical Engineering celebrated its 5th Anniversary on 27th August 2024. During the event students showcased their current ongoing projects and explained about their future plans. Registrar Sir, Prof. (Dr.) Pradeep Sharma addressed the students and guided them on new incorporations in projects to enhance the learning and also meeting the upcoming market demands on new applications of drone. The event was attended and well addressed by other authorities Prof. (Dr.) Mukesh Yadav, Prof. (Dr.) Preeti Sharma, Prof. (Dr.) Umesh Gurnani, Prof. (Dr.) Anurag Hamilton, Prof. (Dr.) Prashant Ranjan and also other faculty members of UEM Jaipur.



Past Events

5th Anniversary Celebration of UEM Aeromodelling Club



Past Events

UEM Jaipur Aeromodelling Club

UEMJ Aeromodelling club has organized an induction event for our B.Tech first-year students on 24th July 2024

Our team showcased some incredible projects and gave a glimpse of the thrilling events we organize throughout the year. The enthusiasm and energy were sky-high as many new faces have registered to become members of the UEM Aeromodelling Club family. Special thanks to 1st year coordinator Dr. Rahul Sharma for his support and guidance.



Past Events

UEM Jaipur Aeromodelling Club



Past Events

Event Name

Reverse Engineering

On 14th Sept 2024, UEM, JAIPUR Mechanical Engineering Department students have organized The Reverse Engineering Event with around 25 participants.

About the Event:

Reverse Engineering is process of dismantling a product to see how it works. It is basically used to analyze and gain knowledge about the way how something works but often is used to enhance the product feature. It can be used to reproduce parts that are no longer manufactured or difficult to obtain. By analyzing an existing part, engineers can create a new Machines/ Systems that replicates the original part's shape, dimensions, and function.

Further, Engineers can use reverse engineering to analyze an existing product to identify areas for improvement or modification. This can involve analyzing the product's design, materials, and manufacturing processes to find ways to increase efficiency, reduce costs, or improve performance.

Winner teams are as follows



Past Events

Event Name

Reverse Engineering



1. First position

Team AS- REVERSE

Aryan paliwal

Mohammad Sameer

Rahul saini

2. Second position

Team Jaguar

Sitaram saini

Rishi Sharma

Manish yadav

3. Third position

Team Rafal

Arpan Pramanik

Lakshya Sharma

Sanglap Ghosh

Articles By Professors



The Net Zero Energy Revolution: Powering a Sustainable Future in the face of climate change, the concept of Net Zero Energy (NZE) has gained significant traction as a critical approach to achieving sustainability in our built environment.

This initiative seeks to balance energy consumption with renewable energy generation, creating buildings and communities that not only meet their energy needs but do so in a way that minimizes their environmental impact. This article delves into the principles of Net Zero Energy, its importance, and how it is reshaping our approach to energy use.

What is Net Zero Energy?

Net Zero Energy refers to buildings or facilities that produce as much energy as they consume over a specified period, typically a year. This balance is achieved through a combination of energy efficiency measures and the use of renewable energy sources, such as solar, wind, and geothermal. The goal is to create structures that have a neutral impact on the environment, effectively reducing greenhouse gas emissions and reliance on fossil fuels.

The Importance of Net Zero Energy

The push for Net Zero Energy is fueled by the urgent need to combat climate change. Buildings are responsible for a substantial portion of global energy consumption and greenhouse gas emissions—approximately 40% of energy-related emissions come from the building sector. By transitioning to NZE practices, we can significantly reduce this footprint, making strides toward global sustainability goals.



Articles By Professors



The Importance of Net Zero Energy

The push for Net Zero Energy is fueled by the urgent need to combat climate change. Buildings are responsible for a substantial portion of global energy consumption and greenhouse gas emissions—approximately 40% of energy-related emissions come from the building sector. By transitioning to NZE practices, we can significantly reduce this footprint, making strides toward global sustainability goals. Moreover, Net Zero Energy buildings offer numerous benefits, including:

- **Lower Energy Bills:** By generating their own energy, NZE buildings can drastically reduce utility costs, leading to significant savings over time.
- **Increased Resilience:** Many NZE buildings are equipped with renewable energy sources and energy storage systems, enhancing their resilience against power outages and fluctuations in energy prices.
- **Improved Indoor Comfort:** NZE design often emphasizes energy efficiency and comfort, resulting in healthier indoor environments with better air quality and temperature control.

Key Strategies for Achieving Net Zero Energy

- **Energy Efficiency First:** The foundation of any NZE project is a strong emphasis on energy efficiency. This can be achieved through high-performance insulation, energy-efficient windows, and smart building technologies that monitor and optimize energy use.
- **Renewable Energy Integration:** Incorporating renewable energy systems, such as solar panels or wind turbines, is essential. Advances in technology have made these systems more accessible and cost-effective, enabling buildings to generate their own clean energy.
- **Passive Design Principles:** Utilizing passive design strategies—such as maximizing natural light, utilizing thermal mass, and optimizing orientation—can reduce the overall energy demand of a building.



Articles By Professors

Energy Storage Solutions: Integrating energy storage systems allows buildings to store excess energy generated during peak production times for use during periods of low generation. This enhances energy independence and reliability.

- **Behavioral Changes:** Encouraging occupants to adopt energy-saving habits can further support NZE goals. Education and awareness initiatives can foster a culture of sustainability within buildings and communities.

Numerous projects around the world exemplify the principles of Net Zero Energy. For example, the Bullitt Center in Seattle, often referred to as the "greenest commercial building in the world," generates more energy than it consumes through its innovative design and solar energy systems. Similarly, homes built under the U.S. Department of Energy's Zero Energy Ready Home program showcase how residential buildings can achieve NZE status with smart design and technology.

Prof. Vinod Kumar
Assistant Professor
Department of Mechanical Engineering
UEM, Jaipur



Articles By Professors



OWE MEN NOT OFF-Form

Liberation, Privatization, Globalization
 In 1990s Vengeanteconomicpowerwrought
 After Ms worldReetaFariyaofdevelopingnation
 India beingadjudgedtheWorldbeautytop.
 Onwards againwithMsUniverseSushmitaSen
 A series ofMsWorldfromIndianwomen
 Too manyfromotherpoornations,
 Eye to anchorandbuoyCosmeticandFashions.
 Raising Indian models and probables
 Effort vehement across levels
 Promote like passionable Marketables
 Whispers, not revolt, a school of thought.
 Live TelecastWorldBeautycontest
 Joyful the round of five closest,
 One memberofjury,non-European
 Seem place quiry to one
 Had you thepowertochange theWorld
 As a ladywhatyouplanforbest?
 Beauty queens'promptreplybracket
 Spectrum of children, poor, have-nots,
 Old aged,diseased,medicalslots,
 Women's right, lifestyle upgrade.

Articles By Professors

The hon'ble Jurymuchwiseandconversant
 Quest for quotient,foodforthought
 Search a responseWorldvibrant
 Current want newer,coveredroomsnot.
 Televiewer silentthoughtmonologue
 Emperor, King,Queen,Duchess,Duke,
 Prince, Princess,Lord,President
 Empire, Kingdom,Republic,Emirate.
 Nefrrtiti..... Queen Victoria
 Queen Elizabeth....SultanaRizia
 Beauty wealthyJacquelineKenedy
 Margarette Thatcher, Iron lady
 Bandernayeke, Indira Gandhi
 Deekshit, Banazir, Satpathy

Queen headedKingdom,Womenactivistbody
 Women's might,liberty-fancyorhobby?
 Is it Jury'snovelsincereprovocation
 In simpleandneatquestionform
 Imposed directindirectwoemen'splight
 Lip serviceswaiveWomenoutright?
 Ms beautyqueennottomiss
 More than fair, not to please
 Philosophy ahead, pseudo copy go torn
 What governance,classiccivilform
 Women's power, care and freedom

“QUEENDOM”!?

Prof. Tapan K. Sen
Professor Emeritus
Department of Mechanical Engineering
UEM Jaipur

Articles By Professors



Renewable Energy: Powering the Future

In an era where environmental sustainability is paramount, renewable energy stands as a beacon of hope. As a professor in the Department of Mechanical Engineering, I am excited to witness the rapid evolution of renewable energy technologies and the role our students will play in shaping this future. In this article, I'll explore the significance of renewable energy, the technologies driving its growth, and the role of engineers in accelerating its adoption.

The Urgency for Renewable Energy

Fossil fuels, once the cornerstone of global energy production, are increasingly being recognized for their environmental impact. Rising pollution, greenhouse gas emissions, and resource depletion have highlighted the need for cleaner, renewable alternatives. Unlike fossil fuels, renewable sources—such as solar, wind, and hydro—produce little to no waste, offering sustainable energy for the future. Key Renewable Energy Sources

1.Solar Energy

Solar power, harnessed via photovoltaic (PV) cells, is one of the most accessible and scalable renewable sources. With ongoing advancements in efficiency and cost reduction, solar energy is becoming increasingly viable for large-scale use.

2.Wind Energy

Wind turbines, both onshore and offshore, now provide a significant portion of global electricity. Innovations in turbine design have made wind power more efficient and reliable.

3.Hydropower

Hydropower, a well-established source of renewable energy, uses the force of moving water to generate electricity. While large-scale projects dominate, smaller systems are emerging as an alternative for local power needs.

4.Biomass & Geothermal

Biomass energy, derived from organic waste, and geothermal power, sourced from the Earth's internal heat, are also important contributors to the renewable energy landscape.



Articles By Professors

Challenges & Innovations

Despite their promise, renewable energy technologies face challenges, primarily in energy storage and grid integration. Solar and wind energy are intermittent, making energy storage crucial for reliable power supply. Advances in battery technologies and smart grid solutions are helping overcome these obstacles.

Another challenge lies in the economic cost of renewable energy infrastructure. While the cost of solar panels and wind turbines is decreasing, initial investments remain high. However, with continued technological advancements and supportive policies, renewables are becoming more affordable and accessible.

The Role of Engineers

As engineers, our responsibility is clear: to innovate and optimize renewable energy systems. In mechanical engineering, we focus on improving the efficiency of energy conversion systems, developing sustainable manufacturing processes, and designing better energy storage solutions. Our work directly impacts the adoption and effectiveness of renewable technologies.

Conclusion

Renewable energy is more than a trend—it's the key to a sustainable future. As engineers, we must embrace this shift and contribute to creating energy solutions that benefit the planet and future generations. At UEM Jaipur, we are committed to preparing our students to be the innovators and leaders who will drive this change forward. Together, we can harness the power of renewable energy to build a cleaner, greener world.



Prof. IqbalAhmed
Assistant Professor
Department of Mechanical Engineering
UEM, Jaipur

Articles By Professors



The Future of Mechanical Engineering with AI: Unveiling a New Era of Innovation

As technology continues to reshape industries across the globe, mechanical engineering—a field traditionally grounded in physics and material science—is undergoing a seismic transformation. The catalyst behind this shift? Artificial Intelligence (AI). The integration of AI into mechanical engineering is not only enhancing existing practices but opening doors to groundbreaking possibilities. Here's an exploration of how this dynamic field is evolving and what it means for the future.

Smart Manufacturing: The Age of Industry 4.0

Industry 4.0, often referred to as the Fourth Industrial Revolution, is redefining the landscape of manufacturing. At the heart of this revolution are smart factories—environments where AI, the Internet of Things (IoT), and advanced robotics operate in harmony, creating systems that are adaptive, efficient, and remarkably autonomous.

These factories bring a new level of agility to manufacturing processes, allowing for real-time adjustments based on data-driven insights. Predictive maintenance, powered by machine learning algorithms, foresees equipment malfunctions before they occur, reducing downtime and optimizing productivity. As these technologies become more advanced, mechanical engineers with expertise in AI are playing a central role in designing, operating, and optimizing the intelligent systems that will power the future of industry.

Sustainable Engineering: Crafting a Greener Tomorrow

Sustainability is no longer a choice; it's a necessity. In response to environmental challenges, AI is driving the development of sustainable engineering solutions. Through AI-driven insights, mechanical engineers can now design energy-efficient systems, create environmentally friendly processes, and minimize waste—all of which contribute to a more sustainable world.

Articles By Professors

AI algorithms can refine machine operations to reduce energy consumption, making a substantial difference in energy-intensive industries like transportation and manufacturing. Moreover, with the help of AI-powered simulations, engineers can analyze the environmental impact of their designs and optimize them to use fewer materials, reduce emissions, and minimize waste. This alignment of technology with sustainability is reshaping engineering and allowing for a more harmonious relationship between industrial progress and ecological responsibility.

Human-AI Collaboration: The Power of Partnership

One of the most promising aspects of AI in mechanical engineering is the potential for human-AI collaboration. By combining human creativity with AI's analytical power, mechanical engineers can unlock solutions to challenges previously deemed insurmountable.

AI's ability to analyze massive datasets and identify patterns can complement engineers' intuition and strategic thinking. This partnership allows engineers to focus on creative design and innovation, while AI handles data-intensive tasks. As the boundaries between human and machine capabilities blur, engineers and AI will increasingly collaborate to produce solutions that are smarter, more resilient, and more innovative.

New Career Horizons: The Rise of Hybrid Expertise

The fusion of AI and mechanical engineering is reshaping the career landscape, creating new opportunities for specialized roles. As companies seek to integrate AI into their mechanical processes, they require professionals with expertise in both fields.

Hybrid roles, such as AI Mechanical Engineer, Robotics Integration Specialist, and AI Systems Designer, are emerging as valuable positions across a range of sectors. Engineers with skills in AI, machine learning, and data analysis are in high demand, particularly in fields like automotive, aerospace, and renewable energy. These professionals are the bridge between traditional mechanical systems and the intelligent, adaptive systems that define the future.



Articles By Professors

Shaping the Future: Engineers as Visionaries of Tomorrow

Mechanical engineering, a field once focused primarily on physical systems, is evolving into a domain where intelligent technologies redefine the boundaries of possibility. From sustainable design to human-AI synergy, AI is empowering engineers to create a future that is smarter, greener, and more resilient.

As we look forward, mechanical engineers are poised to become visionaries, bridging the gap between traditional engineering practices and transformative potential of AI. With AI at their side, they will be at the forefront of innovations that not only elevate industry standards but also contribute to a better, more sustainable world. The future of mechanical engineering is not just about machines—it's about harnessing intelligence, adaptability, and creativity to shape the world of tomorrow.

Prof. Sasthi Charan Hens
Asst. Professor
Department of Mechanical Engineering
UEM, Jaipur



Articles By Professors



The Future of Advanced Registration and HVAC Systems: A Look Ahead

As we move deeper into the 21st century, industries across the globe are embracing technology to enhance efficiency, sustainability, and user experience. Among the many fields that are evolving at a rapid pace, two sectors stand out for their transformative potential: advanced registration systems and Heating, Ventilation, and Air Conditioning (HVAC) technology. Both industries are poised for significant growth and innovation, driven by advancements in smart technology, data analytics, and sustainability initiatives.

Advanced Registration: A Game-Changer in User Experience and Efficiency

Advanced registration systems are becoming an integral part of various industries, from education and healthcare to event management and customer service. These systems offer enhanced convenience and personalization, allowing users to register, access, and interact with services more efficiently. In the future, advanced registration will become more automated, leveraging artificial intelligence (AI) and machine learning to predict user needs and streamline the registration process.

For example, in education, AI-powered platforms will not only allow students to register for courses but also recommend personalized learning paths based on individual performance and interests. In healthcare, advanced registration systems will enable patients to book appointments, receive reminders, and even complete pre-appointment questionnaires, all while integrating seamlessly with electronic health records (EHR) for better patient outcomes.

One of the key drivers of this growth will be the need for seamless, frictionless experiences. As consumer expectations for convenience and speed increase, advanced registration systems will evolve to incorporate more sophisticated features such as biometric authentication, real-time data processing, and multi-channel integration, all while ensuring high levels of security.

Articles By Professors

HVAC: The Future of Comfort, Sustainability, and Smart Living

The HVAC industry is on the cusp of a major revolution, fueled by the growing demand for energy-efficient solutions, sustainable building practices, and smart home technologies. Traditionally, HVAC systems have been focused on maintaining comfort, but the future of HVAC is set to transform into an integrated, intelligent system that works in harmony with a building's design and energy management systems.

Smart HVAC systems, driven by the Internet of Things (IoT), will allow for more precise control over temperature, humidity, and air quality, adjusting automatically based on occupancy, weather conditions, and user preferences. These systems will not only optimize comfort but also reduce energy consumption, helping both residential and commercial buildings achieve greater energy efficiency. For instance, systems that use AI to predict usage patterns and adjust settings proactively will be standard in homes and offices, leading to lower energy bills and a reduced carbon footprint.

Sustainability will be a central theme in the future of HVAC. As climate change concerns rise, building codes and regulations are becoming stricter, pushing the industry toward more eco-friendly solutions. The use of renewable energy sources like solar and geothermal for HVAC systems will increase, as will the integration of energy recovery ventilators (ERVs) and heat pumps that minimize waste.

Looking Ahead

Both advanced registration systems and HVAC technology are integral to the future of smart, sustainable living. As these systems become more interconnected and intelligent, they will offer enhanced convenience, energy efficiency, and personalization. The next few decades will see both industries move from passive tools to active, adaptive systems that anticipate and respond to user needs in real-time, shaping the way we live, work, and interact with the world around us.

Ultimately, the scope for advanced registration and HVAC systems in the future is vast, offering a glimpse into a more seamless, comfortable, and sustainable future. Whether through personalized service or optimized environmental control, the next wave of technological innovations in these fields promises to revolutionize everyday life.



Prof. Ravindra Maanju
Asst. Professor
Mechanical Engineering Department
UEM, Jaipur

Articles By Students



Why would someone choose mechanical as their profession?

Nowadays, mechanical engineering has become an underrated course of engineering. But it is the most valuable engineering course. People think that this course can't give you a satisfactory remuneration, a better career opportunity and so on. But as a mechanical engineering student I have seen the broad career options which I have not seen for any other engineering course. If you think from the ground zero you will see that a normal brush which you use everyday and change it within a specific time period is made by a mechanical engineer. A bike or car is also made or repaired by a mechanical engineer. There are many industries of manufacturing, automobiles, power plants etc hire mechanical engineers. If you say the salary is too low compared to other courses, I'll say that yeah it's true but after gaining working experience of 1.5 or 2 years your salary will increase exponentially. Not only in the private sector if you look after the PSUs (Public Sector Undertaking), they offer a higher salary for a fresher. Nowadays the seats of mechanical engineering students are vacant in colleges and also in industries.

Let's talk about something else. What about the inflation and recession? If inflation occurs and demand increases very high compared to supply then there will increase the job opportunities for mechanical engineers. No I'm not joking. Suppose in a time the price of a pen increased to ₹40 from ₹10. Then to control the price of that pen you have to manufacture some pens. See, job opportunities increased!! If there is an increase in job opportunities during inflation then I don't think that recession will ever be faced by a mechanical engineer.

Articles By Students



Let's talk about the PSUs, do you know the perks of PSU jobs? Let me tell you, if I pay the bills for you and your family for medical treatment, whatever it is Rs. 10 or Rs. 10 million, and also give your petrol bills for travelling from your home or where you live to your workplace? If I give you money for maintenance of your car? If I give you a trip with your family every two years? If I give you money to buy a new phone and laptop and furniture every two or three years? If I say job security is at its peak? Would be interested in that kind of bargain ? I don't see a reason not to! Yes a PSU provides every employee that type of allowances. This is nothing there are so many perks or allowances, they even give you money to maintain your uniform. Many students are not aware of these things.

Sayak Sardar
B.Tech. 4th Year
Dept. of Mechanical Engineering
UEM Jaipur



Articles By Students



Need of Mechanical Engineers in India

India's mechanical infrastructure has seen significant growth, especially in recent years, but it still lags behind in several key areas. Here are some of the areas where India is lacking:

1. Manufacturing Technology and Automation- Low Adoption of Advanced Manufacturing Techniques, Insufficient Investment in R&D
2. Energy Infrastructure- Inconsistent Power Supply, High Energy Costs
3. Quality of Industrial Machinery- Outdated Equipment, Dependence on Imports for High-Tech Machinery
4. Skilled Workforce- Skill Gaps in Advanced Manufacturing, Lack of Continuous Skill Development, Slow up gradation Cycles

India's mechanical infrastructure faces several challenges which makes India import a significant amount of equipment and raw materials from China, which plays a crucial role in the Indian economy. Here's an overview of the key areas where India relies on Chinese imports: Electronic Equipment, Industrial Machinery, Solar Panels and Renewable Energy Components, Batteries and Energy Storage Systems, Textiles and Apparel, Automotive Components and so on.

In recent years, the Indian government has taken steps to reduce dependence on Chinese imports through initiatives like "Atmanirbhar Bharat" (Self-Reliant India). These measures aim to boost domestic manufacturing, encourage the production of critical components and raw materials within India, and diversify import sources.

Articles By Students



However, are we really “Atmanirbhar”. You see, currently the soles of the shoes you are wearing or the plastic cutlery you use to have your food are imported from China. Even the smallest and the most insignificant things that you use are imported due to the lack of passionate mechanical engineers in our country who will be able to cope up the advancement and automation goals our IT sectors and Computer industries are achieving. We see dreams of achieving next level automation through Artificial Intelligence and set our targets. However, practically we don't even manufacture that kind of hardware to fit it. This is where the need of mechanical engineers arises.

The problem is that people look into the market trends and remuneration policies in order to choose their profession. And this is where the lacking initiates. In order to counter it India needs mechanical engineers. What if I tell you that the scopes in mechanical engineering is higher and any other courses? Well yes, jobs, both in private and public sectors have vast vacancies in comparison to the low number of mechanical engineers.

So, I don't think mechanical engineers in our country will have to face any kind of problem with job opportunities or even job security which might encourage the future engineering aspirants in being a true and passionate MECHANICAL ENGINEER!!

Pranjal Bhattacharjee

B.Tech. 4th Year

Dept. of Mechanical Engineering

UEM Jaipur



Articles By Students



Department of mechanical engineering in UEM Jaipur has a sound experience to provide quality teaching to the students. All labs of mechanical engineering are well equipped to provide practical knowledge of the subjects. The department has well qualified and dedicated faculty members to guide them in projects, imparts quality technical teaching and to make there personality impressive so that they get placed in a good organization.

"I think everything is organised in a way that motivates and supports students to become the best version of themselves. The course content is engaging, the teaching standards are outstanding and every module has allowed me to develop useful skills."

UEM Jaipur is the Best B.Tech Mechanical Engineering college among all Mechanical Engineering colleges in Jaipur (India)

Abhishek Jhakar

B.Tech. 4th Year

Dept. of Mechanical Engineering

UEM Jaipur

Articles By Students



How Ai is important for mechanical engineering and what are the opportunity in future generations

Artificial Intelligence (AI) is revolutionizing mechanical engineering by enhancing design, analysis, and manufacturing processes. AI-powered tools enable engineers to optimize designs quickly, reducing the time and cost associated with traditional methods. For instance, AI can analyze vast amounts of data to predict the performance of mechanical systems under different conditions, leading to more efficient and reliable designs. In manufacturing, AI-driven automation improves precision and reduces errors, resulting in higher quality products and more efficient production lines.

For future generations, the opportunities are immense. As AI continues to evolve, mechanical engineers will increasingly collaborate with AI systems to solve complex problems that were previously unimaginable. This includes the development of advanced robotics, autonomous vehicles, and smart manufacturing systems. Additionally, AI will open new frontiers in areas such as renewable energy, where intelligent systems can optimize the performance and efficiency of wind turbines, solar panels, and other green technologies. Mastery of AI will be essential for future engineers, making it a critical skill in the evolving landscape of mechanical engineering.

Mohammad Nizam
B.Tech. 4th Year
Dept. of Mechanical Engineering
UEM Jaipur

Articles By Students

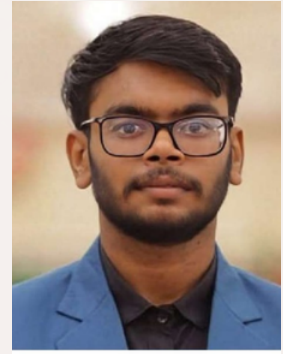


ENTREPRENEURIAL FINANCE

Entrepreneurship lights the spark of economic growth and paves the path of innovation. In the business world it stands as a vital force, driving change and offering opportunities to young minds. This field packed with various subjects for study each shedding light on different parts of this field. Entrepreneurial finance is the corner stone of turning innovative ideas into viable business. Some types of finance entrepreneurs can pursue including angel investment, venture capital, financial bootstrapping, buyouts, and loans. Business angels invest a part of their wealth in innovative companies in their earliest stages to help them grow expeditiously. Venture capital is a method in corporate by which financial investor take participation in the capital of a new or young private company in exchange for cash and strategic advice. Buyouts are forms of corporate finance used to change the ownership of a company through a variety of means. There are several variations of buyouts - Leveraged buyouts, Management buyout, Buy and built, Recaps. Historically, finance scholars have tended to view entrepreneurship as entirely separate from the field of corporate finance. Entrepreneurial finance differs from traditional corporate finance only in the sense that magnitude of these two problems is larger, there by contractual solutions that differ from those typically encountered in larger, more established corporations. From above article we can conclude that business require funding for day to day operations, growth and expansions.

Priyanshu Bhardwaj
B.Tech. 3rd Year
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Articles By Students



Hovercraft: A Journey from Concept to Reality

Hovercraft, or air-cushion vehicles (ACVs), are unique amphibious vehicles that can travel over land, water, mud, ice, and various other surfaces. They operate on a cushion of air, which allows them to "hover" above the ground, providing a smooth and efficient ride.

History and Development

The concept of a vehicle that could travel over both land and water dates back centuries. However, it wasn't until the mid-20th century that the first practical hovercraft was developed. The British inventor Christopher Cockerell is credited with pioneering the technology, developing the first successful hovercraft prototype in the 1950s. In the 1960s, the British government funded the development of the first commercial hovercraft, the SR.N1.

How Do Hovercraft Work?

Hovercraft use powerful fans to create a high-pressure air cushion beneath their hulls. This cushion lifts the vehicle above the surface, reducing friction and allowing for high speeds. To contain the air cushion and prevent it from escaping, hovercraft have flexible skirts that extend around the edges of the hull. These skirts create a seal between the vehicle and the ground. Hovercraft are typically equipped with propellers or jets for propulsion, allowing them to move forward, backward, and turn.

Advantages and Challenges

Hovercraft offers several advantages, including:

Versatility: They can operate on a wide range of surfaces, making them ideal for transportation in challenging environments.

Speed: They are capable of achieving high speeds, especially on smooth surfaces.

Shallow Water Navigation: Hovercraft can navigate in shallow water, making them suitable for coastal and inland waterways.

Reduced Environmental Impact: Compared to traditional boats, hovercraft can have a lower environmental impact, as they create less disturbance to the seabed.

However, hovercraft also face several challenges:

High operating costs: The fuel consumption and maintenance requirements of hovercraft are significant, making them more expensive to operate than traditional boats or vehicles.

Noise pollution: The loud noise generated by hovercraft engines was a concern in residential areas.

Articles By Students

Environmental impact: Some environmental concerns were raised about the potential impact of hovercraft on marine ecosystems.

Limited range and payload: Hovercraft typically have a limited range and payload capacity compared to traditional ships or aircraft.

Infrastructure requirements: The operation of hovercraft requires specialized infrastructure, such as hoverports, which can be expensive to build and maintain.

Famous Hovercrafts in History

SR.N1: The first commercially successful hovercraft, developed in the 1960s.

BH.7: A larger hovercraft designed for passenger transport, also known as the "Hover-bus."

CC.01: A small, experimental hovercraft used for research and development.

Hovercraft X-1: A high-speed hovercraft developed for military use.

Hovercraft X-2: A larger hovercraft designed for amphibious operations.

Hovercraft have been used in a variety of settings, from military operations to humanitarian aid. They have also been used for recreational purposes, such as sightseeing tours and racing. As technology continues to advance, we can expect to see even more innovative applications for hovercraft in the future.

The Future of Hovercraft

While the commercial use of hovercraft has declined in recent years, their unique capabilities and versatility make them a promising option for a variety of applications. As technology continues to advance, it is possible that hovercraft will find new and innovative uses in the future.

Keshav Goyal

B.Tech. 2nd Year

Dept. of Mechanical Engineering

UEM Jaipur



Articles By Students



Embracing the Future: The Role of Mechanical Engineers in a Sustainable World

As final-year students of Mechanical Engineering, we stand on the brink of an exciting and transformative era. Our field has always been the backbone of innovation, bridging the gap between science and society. Today, as the world shifts towards sustainability, our role as engineers becomes even more critical.

The challenges we face are complex. Climate change, depleting resources, and the push for carbon-neutral technologies demand solutions that are both efficient and eco-friendly. Mechanical engineers are uniquely positioned to lead this charge. Whether it's designing energy-efficient HVAC systems, optimizing manufacturing processes, or creating hybrid and electric propulsion systems for vehicles, our skills are vital.

One exciting frontier is renewable energy. Mechanical engineers are at the core of developing wind turbines, solar panels, and hydroelectric systems. By leveraging advanced simulations and material sciences, we can enhance the efficiency and durability of these technologies.

Another critical area is sustainable manufacturing. Concepts like 3D printing and lean manufacturing are redefining how products are made, reducing waste and promoting recycling. As engineers, we must not only design innovative solutions but also ensure their scalability and affordability.

As we prepare to graduate, let us remember that our profession is not just about machines; it's about using our knowledge to improve lives and protect our planet. By embracing sustainability, we can ensure that mechanical engineering remains a driving force in building a better future.

"The tools we create today will shape the world of tomorrow." Let's take pride in our role and rise to the challenge of engineering a sustainable world.

Mohit Sharma

B.Tech. 4th Year

Dept. of Mechanical Engineering

UEM Jaipur

Articles By Students



Aerospace Engineering: Bridging the Skies and Beyond

Aerospace engineering is a dynamic field that combines physics, mathematics, and engineering to design and develop aircraft, spacecraft, satellites, and missiles. It has revolutionized our understanding of the universe and the technology to explore it.

The Two Branches

1. Aeronautical Engineering: Focuses on aircraft like airplanes, helicopters, and drones, covering aerodynamics, propulsion, and structural design.
2. Astronautical Engineering: Deals with spacecraft, rockets, and satellites, advancing space exploration, communication, and emerging fields like space tourism.

Career Opportunities

Aerospace engineers are essential in:

- Aerospace Manufacturing: Designing aircraft and spacecraft.
- R&D: Innovating cutting-edge technologies.
- Government Agencies: Working with NASA, ISRO, and others.
- Defense & Commercial Aviation: Developing military systems and maintaining civilian aircraft.

Key Skills

Success in aerospace engineering requires expertise in mathematics, physics, aerodynamics, propulsion systems, control systems, and CAD tools.

The Future

Emerging trends like electric aircraft, autonomous flight, and deep space exploration are shaping the industry's future. Aerospace engineering continues to inspire innovation, offering endless possibilities for those passionate about flight and space.

Ansh Khandelwal

B.Tech. 1st Year

Dept. of Mechanical Engineering

UEM Jaipur

Industrial Tour



**Industrial visit to DAIKIN AC Plant,
Neemrana**



**Industrial visit to Glo Aire
Refrigeration, Jaipur**



**BSDU Air Cooling Tower, Mahindra Sez
Jaipur**



**Industrial visit to Sunrays
Image Technology Private
Limited, Jaipur**



**Industrial visit to Akash
Opti Fiber Private Limited,
Jaipur**

Industrial Tour



**Industrial visit to NPCIL,
Heavy Water Plant, Kota**



**Industrial visit to Glo Aire
Refrigeration, Jaipur**



**Bisalpur Water Dam, WRD
Project**



**BSDU Air Cooling Tower, Mahindra Sez
Jaipur**



**National Testing House, Govt. of India,
VKIA Jaipur**

ISHRAE Jaipur Chapter



ग्लो एयर मेक के हनी कॉम्ब कूलिंग पैड प्लांट का विजिट



जयपुर (मृदुल पत्रिका)। इंडियन सोसाइटी फॉर हीटिंग रेफ्रिजरेशन एण्ड एयर कंडीशनिंग इंजीनियर्स स्टूडेंट चैप्टर ने ग्लो एयर मेक के हनी कॉम्ब कूलिंग पैड के बगरू स्थित आधुनिक मैनुफैक्चरिंग प्लांट का तकनीकी विजिट किया। सभी ने पूरे मैनुफैक्चरिंग सिस्टम को समझा।

ग्लो एयर के डायरेक्टर मुदित और आकृति ने मैनुफैक्चरिंग यूनिट का अवलोकन कराया। सभी के प्रश्नों को भी उचित ढंग से समझाया। साथ में सोसाइटी के पदाधिकारी आनंद, तपन एवं मनीष भी उपस्थित रहे। संयोजक विनय गोधा ने बताया कि ग्लो एयर आज पूरे देश में ब्रांड से प्रसिद्धि पा रहा है।

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Glimpse of activities at Mechanical Engg



Placements



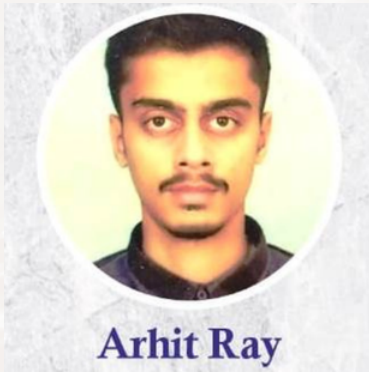
Ritija Adhikari

Eurostar Engineering Pvt Ltd., Mumbai
Indus Towers, Jaipur
JBM Automobiles, Ahmedabad
Scherdel Perfect Springs Pvt Ltd.



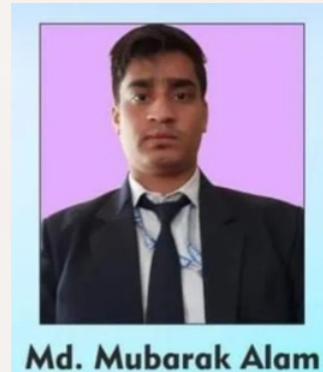
Ajay Sharma

Soilmec Foundation Pvt Ltd, Velgaon



Arhit Ray

Eurostar Engineering Pvt Ltd., Rishikesh
BuildMate Projects Pvt Ltd., Delhi
Design2Occupancy Services LLP
Synergy Steels



Md. Mubarak Alam

Polycab India Limited, Mumbai



Tanishq Kumawat

ITC Limited, Jaipur
Eurostar Engineering Pvt Ltd., Rishikesh
Design2Occupancy Services LLP
Synergy Steels



Mr. Swapnil Rudra

Polycab India Limited, Mumbai



ON BEHALF OF THE EDITORIAL BOARD, I FEEL BOTH PROUD AND HONOURED TO INTRODUCE THE MAGAZINE OF THE MECHANICAL ENGINEERING DEPARTMENT. LAUNCHING THIS NEW MAGAZINE WOULD NOT HAVE BEEN POSSIBLE WITHOUT THE INVALUABLE AND MUCH-APPRECIATED CONTRIBUTIONS FROM THE EDITORIAL AND TECHNICAL TEAM. THE ROBUST INTELLECTUAL SUPPORT AND TIMELY CONTRIBUTIONS OF OUR CONTENT WRITERS DESERVE A SPECIAL ROUND OF APPLAUSE.

SPECIAL THANKS TO PRANJAL SHARMA B. TECH. 4TH YEAR FOR HIS MAJOR CONTRIBUTION IN EDITING THE MAGAZINE.

OUR TEAM EXPECTS THE SAME LEVEL OF SINCERE DEDICATION AND CREATIVE EXCELLENCE FROM THE WRITERS IN THE FUTURE. THIS MAGAZINE AIMS TO SERVE AS A PLATFORM TO SHOWCASE AND CELEBRATE THE ACHIEVEMENTS AND INNOVATIONS WITHIN OUR DEPARTMENT.

THE CREATION OF A NEW MAGAZINE IS A JOURNEY THAT INVOLVES METICULOUS PLANNING AND EFFORT. EVERY ESSENTIAL STEP HAS BEEN TAKEN TO ENSURE IT STANDS AS A HIGH-CALIBER PUBLICATION, BOTH SCIENTIFICALLY AND CREATIVELY. WITH THE UNWAVERING ALLIANCE OF OUR WRITERS, EDITORS, AND CONTRIBUTORS, WE ASPIRE TO MAKE THIS MAGAZINE DYNAMIC, UP-TO-DATE, AND RELEVANT.

WE HOPE YOU ENJOY READING THIS INAUGURAL ISSUE AND FIND IT INSPIRING AND ENGAGING. WE INVITE YOU TO SUBMIT YOUR BEST ARTICLES, PROJECTS, AND IDEAS FOR UPCOMING EDITIONS.

FINALLY, WE WOULD LIKE TO EXPRESS OUR HEARTFELT GRATITUDE TO THE DEPARTMENT, THE UEM FAMILY, OUR PROFESSORS, AND THE STUDENTS FOR THEIR UNWAVERING SUPPORT AND ENCOURAGEMENT. LET US CONTINUE THIS JOURNEY OF KNOWLEDGE AND INNOVATION WITH THE SAME ZEAL AND COMMITMENT.

HAPPY READING!



Arnab JK Boruah
Editor