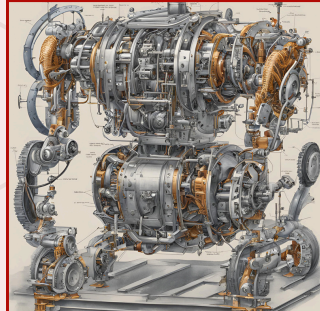
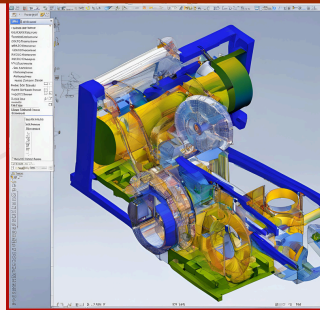




Bharatiya Vidya Bhavan's
Sardar Patel College of Engineering

Department of Mechanical Engineering



Annual Report 2023-24



Institute Vision

"Sardar Patel College of Engineering aspires to be an institution of national repute that will create professionals with competence and motivate research for the progress of the nation."

Institute Mission

- To impart quality education through the time-relevant curriculum in academic programs,
- To enhance career opportunities for students through industry institute interaction and value-added courses,
- To promote excellence by encouraging innovative ideas and lateral thinking,
- To inculcate a sense of discipline and responsibility toward society.

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Message from the Head of the Department

Dear Students,

As the Head of the Department of Mechanical Engineering, I am excited to share insights into the evolving career landscape for mechanical engineering graduates, both in India and globally. The traditional boundaries of mechanical engineering are rapidly expanding, fueled by technological advancements and industry demands. Today, there is a growing need for skilled professionals in cutting-edge fields like robotics, automation, artificial intelligence, and renewable energy systems. The rise of Industry 4.0 has revolutionized manufacturing processes, leading to an increased demand for expertise in mechatronics, additive manufacturing (3D printing), and smart factory technologies.

In India, the government's focus on initiatives like 'Make in India,' sustainable infrastructure, and the push towards electric mobility are creating numerous opportunities in sectors such as automotive, aerospace, defense, and energy. Mechanical engineers are at the forefront of designing innovative solutions that contribute to national growth. Abroad, similar trends are visible, with developed countries emphasizing sustainable practices, green technologies, and advanced automation, opening doors in high-demand areas like robotics design, thermal systems engineering, and HVAC (heating, ventilation, and air conditioning) technologies.

Additionally, the integration of mechanical engineering with software and data analytics is unlocking new roles in product lifecycle management, computational fluid dynamics, and simulation-based design. Emerging job profiles such as design engineer, R&D specialist, automation engineer, and energy consultant are gaining prominence. Upskilling in areas like CAD/CAM, finite element analysis (FEA), IoT, and programming languages such as Python or MATLAB can significantly enhance your employability.

To seize these opportunities, I encourage you to stay proactive in learning, engage in internships, participate in research projects, and seek certifications that align with industry trends. The future of mechanical engineering is bright, and with the right skills and knowledge, you can position yourself at the forefront of innovation and make a significant impact in your chosen field.

Warm regards,

Dr. Ramsubhash Maurya

Head of the Department
Mechanical Engineering

Department Overview

The Department of Mechanical Engineering at Sardar Patel College of Engineering, established in 1962, offers the following programs:

- B.Tech. in Mechanical Engineering (Intake: 60)
- M.Tech. in Thermal Engineering (Intake: 18)
- M.Tech. in Machine Design (Intake: 18)
- Ph.D. Program (Total permissible seats: 60)

Both B.Tech. and M.Tech. programs are accredited by the NBA. The department boasts modern infrastructure with state-of-the-art laboratories and computational facilities equipped with the latest hardware and software resources. A team of well-qualified and experienced faculty members ensures the effective delivery of fundamental and applied knowledge in Mechanical Engineering, utilizing both conventional and advanced teaching and assessment tools.

Recently, two new faculty members, Prof. Dipak Singh and Prof. Don Augusty Placal, have joined the department, further strengthening our academic team.

The curriculum of all programs is designed to align with current industry requirements, offering courses in emerging areas alongside fundamental and applied mechanical engineering topics. In line with the recommendations of the New Education Policy 2020, the department has implemented Regulation R-23 for the first year of engineering, along with a revised credit scheme for both UG and PG programs. Significant changes have been made to the curriculum, and the academic year 2023-24 saw the coexistence of R-23, R-22, and R-18 regulations across different years of the B.Tech. in Mechanical Engineering.

To enhance industrial exposure and practical application of technologies, each program includes frequent industrial visits and tours. Students gain insights into cutting-edge technologies through guest lectures from industry experts, industry-sponsored projects, and internships.

Beyond academic knowledge, the department provides platforms to develop students' skills and qualities through active participation in various student chapters like MESA, TESA, IIIE, ASHRAE, ISHRAE, and SAE, all mentored by the department's faculty. Additionally, co-curricular activities encouraged through platforms like SPCE Racing, SPCE WAVE, and SPCE Robocon, fostering holistic student development.

Our undergraduate students frequently secure admissions for higher studies at top national and international universities

Vision and Mission of the Department

Vision

"To be a nationally recognized mechanical engineering department producing a blend of responsible and competent engineering graduates with research motivation and inculcation of human values."



Mission Statements

- To impart need-based technical education by designing a curriculum in collaboration with stakeholders
- To develop linkages with renowned industries and research organizations in India and abroad for excellence in teaching and research
- To provide state of art laboratories and facilities to encourage innovative ideas and lateral thinking and to impart field knowledge to mechanical engineering students
- To encourage the students to participate in extracurricular activities for overall personality development and be responsible person of the society.

Program Educational Objectives (PEOs)

BTech in Mechanical Engineering

PEO1: Graduates will apply knowledge gained in engineering to improve lives and subsistence through a successful career in mechanical engineering and other interdisciplinary fields

PEO2: Graduates will become entrepreneurs, innovators and researchers to address social, technical and business challenges.

PEO3: Graduate will engage in lifelong learning such as higher studies, research and other continuous professional development activities.

MTech in Machine Design

PEO1: Graduates will apply knowledge gained in engineering to improve lives and subsistence through a successful career in Design Engineering and associated fields

PEO2: Graduates will become academicians, researchers, and consultants to address social, technical, and business challenges

PEO3: Graduate will engage in lifelong learning such as higher studies, research, and other continuous professional development activities.

MTech in Thermal Engineering

PEO1: Graduates will apply knowledge gained in engineering to improve lives and subsistence through a successful career in Thermal Engineering and associated fields

PEO2: Graduates will become academicians, researchers, and consultants to address social, technical and business challenges

PEO3: Graduate will engage in lifelong learning such as higher studies, research and other continuous professional development activities.

Program Outcomes (POs)

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Academic Curriculum Updates

The academic year 2023-24 marked a significant transformation for the Institute under the framework of the New Education Policy (NEP) 2020. Following directives from DTE Maharashtra, the Institute adopted and implemented the new Regulation R23 for the first year of engineering while formulating a credit scheme for the remaining three years.

Based on program completion, the following qualification titles were introduced:

1. **Certificate in Mechanical Engineering** (1 year of BTech)
2. **Diploma in Mechanical Engineering** (2 years of BTech)
3. **Bachelor of Vocational Mechanical Engineering** (3 years of BTech)
4. **Bachelor of Mechanical Engineering with Multidisciplinary Minor** (4 years of BTech)
5. **Bachelor of Mechanical Engineering with Honors and Multidisciplinary Minor** (4 years of BTech)
6. **Bachelor of Mechanical Engineering-Honors with Research and Multidisciplinary Minor** (4 years of BTech)
7. **Bachelor of Mechanical Engineering with Double Minor** (4 years of BTech)

Key Features of Regulation R23:

- Flexibility to switch between disciplines of study.
- Opportunities for students to select courses across all disciplines based on their interests.
- Multiple entry and exit points throughout the program.
- Students have the freedom to transfer between institutions.
- Mandatory One-Semester Internship/On-the-Job Training (OJT).
- Integration of Vocational and Skill Enhancement Courses (VSEC), Indian Knowledge System (IKS), and Community Engagement Projects (CEP)/Field Projects (FP) in the major discipline.
- Credits awarded for Co-curricular and Extra-Curricular Activities.
- Credits for Ability Enhancement Courses (AEC) and Value Education Courses (VEC).
- Interdisciplinary and Multidisciplinary education through Single and Double Minors and Open Electives (OE).

The Department of Mechanical Engineering adopted a credit scheme under R23, totaling 176 credits, including 14 credits dedicated to multidisciplinary minor courses. This academic year saw the coexistence of three regulations: R18, R22, and R23, with R22 applicable to the second year and R18 governing the third and final years of the engineering program.

Department Activities - Faculties

MOUs signed with Industries

- A MOU is signed between Godrej and Boyce Manufacturing and SPCE on 8/8/2023. This MOU was intended for SPCE Racing team to get partial manufacturing assistance/expertise from Godrej manufacturing facilities located at Vikroli, Mumbai.
- To start a center of excellence at SPCE in domain of HVAC, A MOU is signed between blue Star and SPCE on 8/12/2023. This MOU was intended to train students and others for available HVAC systems and to support the refrigeration and air conditioning laboratory.

Workshop Participation

- Prof. R S Maurya attended a National-level workshop on 'MATLAB- Data Analysis and Visualization' from 5th to 7th January 2024.
- Prof. Buktar attended a one-day workshop on Research Symposium on 14/01/2023. He also participated in "Simulation and Digital Twin for Manufacturing and Service Industries" held from 15th to 20th November 2023. He spoke on the topics of driving digital transformations with augmented reality and using augmented reality in education.
- Prof. S B Rane attended a national-level webinar on 'Lean Six Sigma Overview' organized by the IIIE Student Chapter, MED on 30th October 2023.
- Prof. D N Jadhav participated in a workshop on ATAL FDP on 'Semiconductors in Design and Development of Micro-Electromechanical Systems' from 8th to 13th January 2024.

Workshops Organized

- Prof Kiran S Bhole organized a SERB-sponsored 2-day workshop on the 'Investigation of Fractal Growth on Curved Surfaces in Hele Shaw Flow' on 2nd and 3rd March 2024.
- Prof S B Rane organized the Cornell Maha-60 program (orientation program) under the guidance of the Government of Maharashtra with the assistance of Cornell University, New York, USA, at Sardar Patel College of Engineering, Mumbai on 5th December 2023.

Department Activities - Faculties

Guest Lectures

- Prof. Rajesh Buktar delivered guest lectures on Augmented Reality, Digital Twin in Smart Manufacturing, Innovative Teaching Learning Methods using AR, and the role of IoT, AR, and VR in digital marketing.
- Prof. Rane conducted the Alumni Speak Program under the theme 'My Success Story of Vedang Patel' and the Handover-Takeover Ceremony on 17th October 2023 at the SPJIMR Auditorium. Additionally, he organized an event titled "Business Skills Needed to Thrive in the 21st Century: How to Become an Opportunity Magnet?" by Shekhar Srinivasan on 28th August 2023.
- Prof. S B Rane conducted sessions on Problem Solving Skills in the Orientation Program from 7th August to 18th August 2023 at D Y Patil University.

FDP Attended & Conducted

- Prof. R S Maurya attended a 1-week Faculty Development Program (FDP) on 'OBE and Application of Generative AI in Teaching and Research' from 6th to 13th March 2024 at GC Kottayam.
- Prof. Rajesh Buktar attended the AICTE ATAL FDP on Generative AI: Concerns and Solutions at Bharatiya Vidya Bhavan's Sardar Patel Institute of Technology from 01/01/2024 to 06/01/2024.
- Prof. Buktar attended an industry-oriented faculty development program on Machine Learning, Deep Learning & Raspberry PI integration for real-world solutions from 31st July to 5th August 2023.
- Prof Kiran Bhole served as the coordinator of the ATAL FDP on 'Semiconductors in Design and Development of Micro-Electromechanical Systems' held from 8th to 13th January 2024.
- Prof S B Rane was a guest speaker in a one-week FDP on 'Recent Advances in Mechanical Engineering' at DY Patil Institute of Technology, Pune.
- Prof. Megha S Nagrale attended the AICTE ATAL FDP on Generative AI: Concerns and Solutions at Bharatiya Vidya Bhavan's Sardar Patel Institute of Technology from 01/01/2024 to 06/01/2024.
- She also attended the AICTE ATAL FDP on Semiconductors in Design and Development of Micro-Electromechanical Systems at Sardar Patel College of Engineering from 08/01/2024 to 13/01/2024.
- Prof. Sachin Vankar attended AICTE ATAL FDP on 'Generative AI: Concerns and Solutions' at SARDAR PATEL INSTITUTE OF TECHNOLOGY from 01/01/2024 to 06/01/2024.
- Prof. Haseen M. Shaikh attended ATAL FDP on 'Semiconductors in Design and Development of Micro-Electromechanical Systems' from January 8th to 13th, 2024.
- Prof. Sharad R. Valvi participated in the ATAL FDP on 'Semiconductors in Design and Development of Micro-Electromechanical Systems' from January 8th to 13th, 2024.

Department Activities - Faculties

- Prof. Deepak Singh attended the ATAL FDP on 'Semiconductors in Design and Development of Micro-Electromechanical Systems' from January 8th to 13th, 2024.
- In the capacity of co-convener, Prof. B.N. Bhasme oversaw the "Semiconductors in Design and Development of Micro-Electromechanical Systems" ATAL Faculty Development Programme (FDP). The dates of the event were January 8–13, 2024.

Conferences Participation

- Prof. R S Maurya participated in the ASME Conference on 'Artificial Intelligence in Mechanical Engineering' held at IIT Mumbai on 26th August 2023.
- Prof. Megha Nagrale participated in the "Advances in Industrial and Manufacturing Operations: Applications and Practices (AIMOAP-23)" organized by the Department of Mechanical Engineering, National Institute of Technology Kurukshetra during December 15-19, 2023.
- Prof. Kiran S Bhole & Prof. BN Bhasme attended the ASME Conference on 'Artificial Intelligence in Mechanical Engineering' at IIT Mumbai on 26th August 2023.
- Prof. SB Rane attended the PBOS meeting at SBM Polytechnic on 29th August 2023 and participated in the PJMT Distinguished Lecture held on 28th December 2023 at ViMEET.
- Prof. Kunal Y. Bhavsar attended ASHRAE's Chapter Regional Conference in Colombo, Sri Lanka, from October 5th to 8th, 2023. Additionally, he attended the full-day 'YouthCon' event at Novotel Hotel, Mumbai, organized by ASHRAE Mumbai Chapter on December 16th, 2023. Prof. Bhavsar attended a Distinguished Lecture session on "ASHRAE Standard 90" by Mr. Chandrasekar from Singapore at Belimo Training Centre, Rabale, on January 5th, 2024.
- Prof. Bhavsar attended the Pune Air Conditioning and Refrigeration Conference in Pune, organized by ASHRAE Pune Chapter, on February 10th, 2024,
- Prof. Bhavsar hosted ASHRAE Mumbai Chapter's Distinguished Lecture on 'Terminal Units' by Mr. V. Krishnan in SPCE 114 on December 2nd, 2023, with more than 20 SPCE ASHRAE student members attending the session. It was also attended by ASHRAE Mumbai President Mr. Sanjay Verma, Secretary Mr. Goutham Pitchikala, Immediate Past President Ms. Nivedita Jadhav, Vice President Mr. Parth Thakkar, and CTTC Chair Mr. Kartik K.
- Prof. Bhavsar also hosted ASHRAE Mumbai Chapter's Expert Lecture on 'Cold Chain Refrigeration' by Mr. Anand N. in SPCE 114 on March 9th, 2024, where more than 15 SPCE ASHRAE student members attended the session. It was also attended by ASHRAE Mumbai President Mr. Sanjay Verma and Secretary Mr. Goutham Pitchikala.

*Department Activities - Faculties***Research Work Publications**

- Prof. Maurya successfully published a paper titled "Thermal Characterization of a Phase Change Interface under Directional Exponential Heating" at the 27th national and 5th international ISHMT-ASTFE (IHMTTC 2023) held at IIT Patna.
- Prof. Rajesh Buktar has published the following papers :
 - * Merging Legacy Equipment with Industrial Internet of Things to Improve Productivity of Auto Component Manufacturing Enterprises - An Industry 4.0 Initiative, presented at the Third International Conference on Intelligent Robotics, Mechatronics, and Automation Systems (2023).
 - * Recent Trends of IoT Integration in Indian Auto Component Manufacturing Enterprises, published in the Proceedings of the International Conference on Advanced Materials and Technologies for Industry 4.0 (ICAMT 4.0).
 - * Implementation of Industry 4.0 and Smart Manufacturing in Indian Manufacturing Industries Using Simulation Approach” presented at Intelligent Robotics, Mechatronics, and Automation Systems (IRMAS 2023).
 - * Implementation of Digital Manufacturing Practices in Manufacturing Industry Using Simulation Approach in Alliance with Industry 4.0, presented at the 2nd International Conference on Innovations in Mechanical and Civil Engineering, International Medical Aesthetic Conference and Exhibition 2023.
- Prof. DN Jadhav has successfully published a paper titled "Design and Analysis of Hydrogen Storage Pressure Vessel Using Composite Material" authored by Bhooshan V. Kamble, Nilesh R. Raykar, and Dattatray N. Jadhav in AIP Conf. Proc. on 21st March 2024; Volume 2985 (1), Page 020002. The paper's DOI is <https://doi.org/10.1063/5.0205014>.
- Prof. Kiran S Bhole has authored and published several articles, including:
 - * A Generic Digital Twin Application Framework for Emerging Trends in Industrial Process Heaters.
 - * Design Methodology for Development of Experimental Setup for Fabrication of Controlled Micro and Meso Fractals.
 - * Computational Analysis of a New Airfoil for Micro-capacity Wind Turbine.
 - * Computer-aided Approach for Case-specific Design of Fixture for Slot Milling Process.
 - * Efficacious Elimination of Salts from a Convuluted Ethylene Glycol-Water Solution Employing Nanofiltration Membranes.
 - * Machine Learning Approach to Predict Viscous Fingering in Hele-Shaw Cells.
 - * Synthesis of Sodium Chloro Fluoride System for Generating Micro Fractal Type Structures for Microfluidic Applications.

Department Activities - Faculties

- Prof. Rane has co-authored following research articles -
 - * A Generic Digital Twin Application Framework for Emerging Trends in Industrial Process Heaters published in Procedia CIRP, Volume 119, 2023, Pages 1128-1133.
 - * Comparison on conventional and digital technology assisted design methodologies of process heater radiant section published in the International Journal on Interactive Design and Manufacturing (IJIDeM).
 - * An application of IIoT framework in system design, performance monitoring and control for industrial process heater published in the International Journal on Interactive Design and Manufacturing (IJIDeM).
 - * Optimization of a shift in the natural frequency of a nitinol-reinforced composite beam published in the International Journal of Interactive Design and Manufacturing.
 - * Modeling barriers to adoption of digitization in supply chains using FTOPSIS and its impact on sustainability TBL published in Benchmarking: An International Journal.
 - * A machine learning approach for investigation of the natural frequency of a nitinol-reinforced composite beam published in Engineering Research Express.
 - * Strategies for development of smart and green products using Blockchain-IoT integrated architecture published in Operations Management Research.
 - * Integration of Lean Six Sigma with Internet of Things (IoT) for productivity improvement: a case study of contactor manufacturing industry published in the International Journal of System Assurance Engineering and Management.
 - * Additionally, Prof. Rane reviewed two papers in International Journals published by Emerald publications between 2023-2024. He also reviewed a paper in the International Journal of Technology Analysis & Strategic Management in 2024.
- Prof. Megha S Nagrale 's research publications include:
 - * Solar Float Design and Simulation Using LDPE Material, published in Eur. Chem. Bull. 2023, 12(issue 7), 3934-3942.
 - * Design and Development of Automated Solar PV Module Cleaning Robot. published in Eur. Chem. Bull. 2023, 12(issue 6), 2965-2983.
 - * Design of Solar Mount using High Density Polyethylene, published in Eur. Chem. Bull. 2023, 12(issue 7), 3943-3954.
 - * Numerical Analysis of Solar Floats Made of LDPE for Upwind Condition, published in Eur. Chem. Bull. 2023, 12(issue 6), 2984-2988.
 - * Effect of cutting parameters on various output responses for cryo-treated INCONEL X750 alloy, published in Int J Interact Des Manuf (2023). "Comparison of time required for solar PV plant cleaning with robotic and manual technique" published in AIP Conference Proceedings (Vol. 2985, No. 1) in March 2024.

Department Activities - Faculties

- Prof. P.K. Muley guided the research paper "Design, Manufacturing, and Testing of a Portable Cooling Jacket" presented at the 8th National and 2nd International Conference on Refrigeration and Air Conditioning (NCRAC 2024) held at IIT Madras from 13th to 15th March 2024. The paper was co-authored by students Madan Narayan and Shashank Phulmali.
- Prof. Sachin Vankar published a journal paper on 'Automated Coffee Making and Bottle Filling System using S7-1200 PLC and Ladder Logic Programing' published at Int. Journal of Materials, Mechanics and Manufacturing (2023).
- Prof. Deepak Singh published a paper titled "Comprehensive Analysis of a High-Temperature Solar-Powered Trigenation System: An Energy, Exergy, and Exergo-Environmental (3E) Assessment" in the Proceedings of the IMechE Part C: Journal of Mechanical Engineering Science. The paper's DOI is 10.1177/09544062241237417

*Department Activities - Faculties***Patents Filed & Awarded**

- Prof. Buktar has been granted a patent for “A Conceptual Framework of End-to-End IoT Implementation in Auto Component Manufacturing Enterprises” (Patent No - 202321059197).
- Prof. Kiran Bhole submitted 2 patent applications.
- Prof SB Rane was awarded a patent on 3rd November 2023 for an invention titled 'A System and a Method for Performing Forging Operations.'
- Prof. Megha S Nagrale was granted a patent on "IOT BASED SMART PILL DISPENSING DEVICE" with Design No. 389399-001.

Research Funding and Consultancy Services

- Prof. Kiran S Bhole received research funding as follows:
 - * ₹112L from DST under FIST to improve S&T Infrastructure in the college on 30th October 2023.
 - * ₹250,000, a second grant from SERB project approved for 'Investigation of Fractal Growth on Curved Surfaces in Hele-Shaw Flow'.
 - * A collaborative research grant of ₹43.4 lakhs with GEC Karad, was received from DST.
 - * A collaborative research grant of ₹45.3 lakhs with Fr. Agnel COE, Vashi, received from DST.
 - * A DST research fund of ₹7.50lakh for work on 'Programme on Innovation, Design, and Entrepreneurship (IDE) to Foster Make-in-India Initiative, received.
- Prof. Megha Nagrale received research funds including:
 - * DST's grant of **₹43.4 Lakhs** on AMT Proposal Technology Development for Controlled Fabrication of 2D and 3D Net-Shaped Microstructures using Lifting Plate Hele Shaw Cell in December 2023.
 - * DST-Training Programme on Innovation & Entrepreneurship scheme of the Department of Science and Technology, **₹7.5 Lakhs** in January 2024.
- Prof. Bhasme's project, "Laboratory Refrigeration Unit with Transparent Evaporator, Real-Time Data Monitoring, and IoT Integration," was awarded an ASHRAE equipment grant of ₹ **2,47,034** (about \$2,980).
- Prof. B.N Bhasme undertook a consultancy work for design of shell and tube heat exchanger for 30kW heat load for 'Deekarban Technologies Pvt. Ltd., Navi Mumbai. Total consultancy amount was ₹25000/-+ GST.

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*Department Activities - Faculties***Arranging industrial Visits**

- Prof. PK Muley organized an industry visit for B.Tech. (Mechanical Engineering) Semester VIII students to MAHAGENCO, Gas Turbine Power Station (GTPS), Uran on 02/05/2023.
- On May 27, 2023, Prof. Kunal Bhavsar planned a visit to Belimo Automation India Pvt. Ltd. by the ASHRAE Student Chapter. Students saw an entire air conditioning plant equipped with an energy monitoring system during their visit.

Other Achievements & Social Outreach Activities

- Prof. RS Maurya provided guidance and supervision to the SPCE WAVE Team 'Wave Aeromastros,' enabling them to participate and secure the 2nd rank in the Best Technical Presentation at the 'SAEISS Drone Development Challenge 2023' held from 21st to 23rd July 2023.
- Prof. Megha Nagrale coordinated various MESA activities:
 - * Blood donation camp under MESA on 10/10/2023.
 - * Student study tour to Chandigarh-Kullu-Manali-Amritsar from 29/1/2024 to 06/2/2024.
 - * IV of TYBTech students to TIFR, Mumbai on 28/2/2024.
 - * Industrial Visit to PARLE Factory at Khopoli on 02.12.2023 for 45 students. Mindfulness Awareness Session conducted on 14.10.2023 in association with Vipassana Research Institute Borivali.
 - * Expert talk on "How to achieve your career goals" by Dr. Ganesh Soni, a Quality Control Manager at Hexagon Group on 24 April 2023.
- Prof. Kiran Bhole successfully guided PhD scholar Ms. Chetna Sharma, who was awarded a PhD degree from Mumbai University on 25th September 2023.
- Prof. Rane has been serving as the Chairman of the Indian Institution of Industrial Engineering Mumbai Chapter since 2022, he also won the Platinum award for SPCE in the National Six Sigma Competition 2023 for the work presented by him and his team.
- Prof. S B Rane was nominated as a Governing Council Member for SSGBCET, Bhusawal for the year 2023-2024 and he also acted as a Subject Expert at MHS Sabusiddik COE on 5th July 2023.
- Prof. Kunal Bhavsar is a Board of Governors (BOG) Member and Student Activities Chair at ASHRAE Mumbai Chapter for Society Year 2023-24.
- Prof. Sharad R Valvi performed state-level administrative work for CET CELL, Maharashtra, for postgraduate admissions for the academic year 2023-24. He also performed duties for the NEET examination for the academic year 2023-24 and acted as an observer in the NVS Recruitment Exam 2022.
- Prof. Shaikh performed state-level administrative work for CET CELL, Maharashtra, for postgraduate admissions for the academic year 2023-24. He also performed duties for the NEET examination for the academic year 2023-24 and acted as an observer in the NVS Recruitment Exam 2023.
- Prof. Deepak Singh completed a certification course on "Python for Mechanical Engineers" organized by Fr. C. Rodrigues Institute of Technology, Vashi.

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Student Academic Performance and Other Activities**Student Strength**

The following table indicates the strength of eligible students in the first, second, third and final year of the mechanical engineering during 2023-24.

Sr. No.	Class Name	Student Strength
1	First Year Mechanical Engineering	67
2	Second Year Mechanical Engineering	73
3	Third Year Mechanical Engineering	64
4	Final Year Mechanical Engineering	74

Academic Performance

The academic year 2023-24, has been a great year of academic excellence in different year of engineering except the second year of engineering where more attention is needed to identify the reasons and take corrective steps

Sr. No.	Class Name	% of Passing (Term 1)	% of Passing (Term 1)
1	Second Year Mechanical Engineering	49.32	72.60
2	Third Year Mechanical Engineering	74.60	92.06
3	Final Year Mechanical Engineering	95.95	98.65

Industrial Internship

A large number of students participated in voluntary exposure to several mechanical industries in the form of industrial internship. Major industries offering internships are ...

1. Thyssenkrupp Industries India Pvt. Ltd
2. WR Carriage Repair Workshop
3. Mazagon Dock Shipbuilders Ltd.
4. Delval Flow Controls Pvt. Ltd
5. Kruger Ventilation Industries
6. Schneider Electric
7. Tata Power Ltd
8. Godrej Group
9. Sound Castings Pvt. Ltd. US
10. Auto Hangar Indian Pvt. Ltd
11. Kirloskar Oil Engines Limited
12. Kalyani Transmission Tech. Pvt. Ltd
13. KPM Desing Service Ltd

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Student Academic Performance and Other Activities**Campus Placements**

56 mechanical engineering students of the final year got campus placement in different companies with the highest salary package of 11.5 lakhs. The major recruiters during 2023-24 are...

1. Schneider Electric
2. ICICI Bank
3. Technip Energies
4. Larsen and Toubro Limited
5. Hindustan Unilever Limited
6. Blue Star Ltd.
7. Mahanagar Gas Ltd.
8. Bajaj Electrical Ltd.
9. Thyssenkrup
10. Siemens India
11. Kent
12. Toyo Engineerings
13. Sciative Solutions
14. Zeeco India
15. Indus Towers
16. ITD Cementation
17. Indra Water

Higher Studies

More than five students went for MS program in several foreign university. Following students of the final year mechanical engineering appeared for the GATE -2024 and qualified successfully.

	Name	Reg. Number	GATE Score	Stream	AIR
1	Ahmed Fawwaz Umar	M2010005	675	XE	166
2	Ayush Jain	M2010008	461	ME	3936
3	Siddharth Brahmanekar	M2010012	343	ME	8506
4	Atharva Vijay Nene	M2010038	498	ME	3159
5	Vivek Santosh Khandebharad	M2010071	559 / (576)	ME/(XE)	2094/(438)
6	Madan Lekshmi Narayanan	M2120005	383	ME	6425

Student Co-curricular Activities**Co-curricular Activities**

Students showed their involvement in several co-curricular activities through different platforms available at the institute and the department. Apart from active participation in the student council, the mechanical student displayed extra-ordinary involvement in the following clubs and chapters.

- **SPCE RACING CLUB**

Racing team of SPCE participated in Formula Bharat-2024 in the month of January 2024 at Coimbatore. The team got RANK-1 in the business planning presentation, Rank-4 in the cost presentation, and Rank-9 in the overall category.

- **SPCE WAVE CLUB**

SPCE WAVE Team '**Wave Aeromastros**' participated in 'SAEISS Drone Development Challenge 2023' held from 21st to 23rd July 2023 at Coimbatore, and secured the 2nd rank in the Best Technical Presentation

- **SPCE ROBOCON**

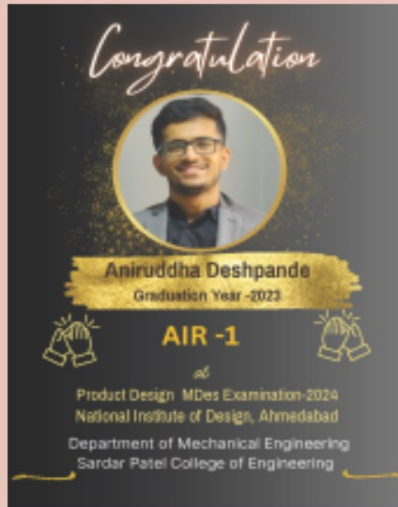
Team SPCE ROBOCON participated in the national level robotic competition DD ROBOCON hosted by IIT Delhi. The team scored 100/100 in stage 1, 99/100 in stage 2 and finally won the Best Technical Report award in the event held on 17-18 June 2023 at New Delhi.

- **SPCE MESA**

- * A blood donation camp organized on 10/10/2023 where more than 100 blood donors participated in the noble social activities.
- * A 9 days educational tour was organized from 29/1/2024 to 06/2/2024 to north India (Chandigarh -Kullu-Manali-Amritsar). A group of about 100 students participated in the activity.
- * One day industrial visit to 'Tata Institute of Fundamental Research, Mumbai' on 28/2/2024 was organized where most of the Third Year Mechanical students participated.
- * Industrial Visit to PARLE Factory at Khopoli on 02.12.2023 for 45 students.
- * Mindfulness Awareness Session conducted on 14.10.2023 in association with Vipassana Research Institute, Borivali.
- * Expert talk on "How to achieve your career goals" by Dr. Ganesh Soni, a Quality Control Manager at Hexagon Group on 24 April 2023.

Student's Other Activities**Other Achievements**

- Mr Tejas M Vaishnav and Mr Kaif H Badshah, of final year mechanical engineering, were nominated for 'Bank of Baroda Achiever Awards' for AY 2023-24. The award comprises of a cash prize of Rs 31000/- and a certificate of honour.
- Mr. Aniruddha Deshpande, who graduated in the year 2023, got ALL INDIA RANK-1 in a prestigious Product Design MDes. Examination-2024. The entrance examination is conducted by National Institute of Design, Ahmedabad.
- A journal paper on 'Automated Coffee Making and Bottle Filling System using S7-1200 PLC and Ladder Logic Programing' published at Int. Journal of Materials, Mechanics and Manufacturing (2023). It is authored by students – Dhaval Prabhudesai, Anuruddha Nangare and Suyash Mahale. The work was supervised by Prof. Sachin Vankar and Dr. S B Rane.
- A research paper titled "Design, Manufacturing, and Testing of a Portable Cooling Jacket" presented at the 8th National and 2nd International Conference on Refrigeration and Air Conditioning (NCRAC 2024) held at IIT Madras from 13th to 15th March 2024. The paper was authored by students Madan Narayan and Shashank Phulmali under supervision of Prof. P K Muley.
- An industrial visit to 'Belimo Automation India Private Ltd.' on May 27, 2023 was arranged by Dr. B N Bhasme under ASHRAE Student Chapter. Students saw an entire air conditioning plant equipped with an energy monitoring system during their visit.
- An industry visit for B.Tech. (Mechanical Engineering) Semester VIII students to MAHAGENCO, Gas Turbine Power Station (GTPS), Uran was organized by Prof. P K Muley on 02/05/2023.

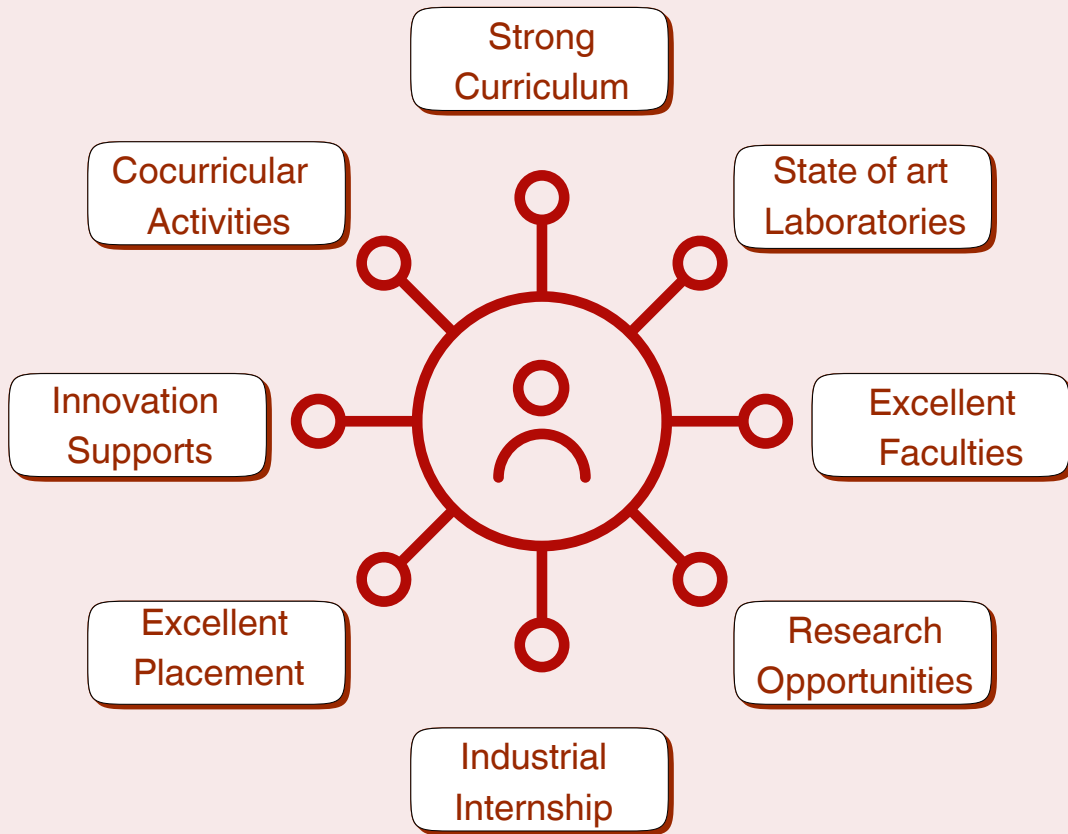
Photo Gallery



SPCE-MED STUDENTS CLUB

2023-24





आ नो भद्राः क्रतवो यन्तु विश्वतः ।

Let noble thoughts come to me from all directions.

Source - Rigveda 1.89.1

Annual Report 2023-24

Department of Mechanical Engineering, SPCE