

YANTRIKI

(2020-2021)



Department of Mechanical Engineering

S. B. Jain Institute of Technology, Management & Research, Nagpur



Message from Principal

I am proud to announce the release of 'Yantriki' magazine's issue. Technical as well as management Education is the backbone of every nation and is the stepping stone for a country to move into the niche of a developed nation. At S.B Jain Institute of Technology, Management & Research (SBJITMR) Nagpur, We have a tradition of nurturing value based education & developing capabilities to challenge the state of art technologies.

SBJITMR lets you empower yourself with sound knowledge, wisdom, experience and training both at the academic level of Engineering and in the highly competitive global industrial market. The infrastructure facilities and state-of-the-art equipment's combined with a galaxy of competent, talented and dedicated faculty contribute to an enjoyable and an easy learning experience. This we do by inspiring you to involve into a whole lot of innovative & creative projects being pursued by the inspired student community under the guidance of their faculty mentors.

We wish the best for all our students, and the members of the institution who reiterate their aims at providing the best in academic and extra-curricular fields.

Dr. S. L. Badjate



Message by Head of Department

I am honored to welcome you to this year's edition of our Mechanical Department Magazine. It is with immense pride that I present the collective accomplishments, innovations, and achievements of our exceptional students, faculty, and staff.

The field of mechanical engineering has always been a dynamic and ever-evolving one, and this magazine stands as a testament to our department's commitment to excellence and progress. Within these pages, you will find a treasure trove of knowledge, showcasing research breakthroughs, insightful articles, and creative endeavors that highlight the multifaceted nature of our discipline.

Thank you for your unwavering support, and I eagerly anticipate the continued growth and success of our Mechanical Department in the years to come.

Mr. Amit Tajne

Vision - Mission

Vision

Emerge as an excellent center for Mechanical Engineering education.

Mission

- ~ To ensure quality teaching-learning process and infrastructure for developing competent professionals
- ~ To impart skills for teamwork, leadership, communication and inculcate ethical values.
- ~ To establish the linkages with industry so as to understand contemporary practices in the field of Mechanical Engineering.

Program Educational Objectives(PEO's)

- ~ Demonstrate excellence in profession or pursue higher education
- ~ Develop skills to excel in innovation through out-of-the-box thinking to create advanced Mechanical Systems.
- ~ Apply skill to enhance participation in professional and social activities, contributing to society.

Magazine committee

Yantriki-2020-21

Faculty Coordinator/ Chief Editor:
Prof. Sarvesh Biyani

Editor:
Mr. Deepak Singh

Student Coordinator
Ms. Mrunali Chandekar

Department of Mechanical Engineering

F A C U L T Y



**Department of Mechanical
Engineering**

Technical Articles

Advancements in Sustainable Manufacturing: Green Technologies in the Mechanical Industry

Sustainability has become a central focus across industries worldwide, and the field of mechanical engineering is no exception. As we face increasing environmental challenges, the need for sustainable practices in manufacturing and design has never been more critical. This article explores the latest advancements in green technologies within the mechanical industry, highlighting their potential to revolutionize the way we approach manufacturing processes.

Additive Manufacturing (3D Printing): One of the most exciting developments in the mechanical industry is the widespread adoption of additive manufacturing, commonly known as 3D printing. This technology not only reduces material waste but also offers new design possibilities. **Sustainable Materials:** Choosing sustainable materials is crucial in reducing the carbon footprint of mechanical products. Advances in material science have led to the development of eco-friendly alternatives to traditional materials.

The mechanical industry is undergoing a significant transformation towards sustainability. By embracing green technologies and adopting environmentally responsible practices, mechanical engineers are playing a crucial role in addressing global environmental challenges. As we move forward, it is imperative that the industry continues to innovate and prioritize sustainable manufacturing methods, ultimately creating a more sustainable and prosperous future for all.

The Evolution and Impact of Refrigeration on Modern Society

Refrigeration, a technological marvel that revolutionized the preservation and storage of perishable goods, has had a profound impact on modern society. This essay explores the history of refrigeration, its technological advancements, and its far-reaching consequences on various aspects of daily life, including food preservation, healthcare, and the global economy. The invention of the vapor compression refrigeration cycle by Willis Carrier in 1902 marked a turning point in the efficiency and accessibility of refrigeration technology. Over the years, continuous innovations have led to the development of more energy-efficient and environmentally friendly refrigerants, addressing concerns about the environmental impact of early refrigerants like chlorofluorocarbons (CFCs). Refrigeration has transformed the way societies handle food. It enables the preservation of perishable items, extending their shelf life and reducing waste. The cold chain logistics made possible by refrigeration has facilitated the global distribution of fresh produce, allowing consumers to access a diverse range of foods throughout the year. Additionally, refrigeration has played a pivotal role in reducing foodborne illnesses by inhibiting the growth of harmful microorganisms.

In the medical field, refrigeration has been instrumental in preserving and storing vaccines, blood, and medications. Maintaining the integrity of these biological materials is critical for public health, and refrigeration ensures that these products remain effective and safe for use. Refrigeration has had a profound impact on the global economy. The ability to transport perishable goods over long distances has facilitated international trade and contributed to the development of the food industry. Cold storage facilities and refrigerated transport have become integral components of supply chains, enabling businesses to meet the demands of a globalized market. The evolution of refrigeration has been a remarkable journey, transforming the way societies store, transport, and consume perishable goods. From its humble beginnings to its current role in shaping global commerce and public health, refrigeration stands as a testament to human ingenuity. As we navigate the challenges of sustainability, the ongoing advancements in refrigeration technology continue to play a crucial role in shaping the future of our interconnected and refrigerated world.

How COVID-19 Changed Factories

COVID-19 affected a lot of things, including how things are made in factories. This essay talks about what happened, how factories dealt with it, and what might change in the future.

Problems at the Start:

No Parts and Materials: Because of the virus, factories couldn't get all the things they needed to make stuff. This made it hard to keep making products.

People Missing from Work: Some workers couldn't come to work because of the virus. Factories had to close sometimes, and this made it even more difficult to make things.

People Buying Less Stuff: With the virus, people started buying different things or stopped buying as much. Some factories had too much of what they made, and others didn't have enough.

What Factories Did:

Using Computers More: To keep working, factories used computers and technology more. This helped them know what was happening even if people couldn't be at the factory.

Finding New Ways to Get Parts: Factories started getting parts from different places or keeping more parts in case something went wrong. This way, they were better prepared.

Making Changes Quickly: Factories learned to change what they were making faster. This meant they could make things that were needed more during the pandemic.

What Might Happen Later:

Making Things Closer to Home: Factories might start making things closer to where they sell them. This way, if there's a problem far away, it won't affect them as much.

Taking Care of the Earth: Factories might think more about being kind to the Earth. This means using fewer things that harm the environment and trying to be more responsible.

Getting Ready for Problems: Factories might be better prepared for future problems. They might use more technology, train workers better, and be ready to change quickly if something unexpected happens.

COVID-19 changed how factories work, but they learned to adapt. They used more technology, found new ways to get parts, and made changes faster. In the future, factories might make things closer to home, be more Earth-friendly, and be ready for any problems that come their way. Even though it was tough, factories learned important lessons during the pandemic.

Advancements in HVAC Technology



Heating, Ventilation, and Air Conditioning (HVAC) systems play a pivotal role in maintaining indoor comfort and air quality in buildings. With growing concerns about energy conservation and environmental sustainability, the HVAC industry is undergoing significant advancements aimed at enhancing energy efficiency, reducing environmental impact, and improving indoor air quality.



Variable Refrigerant Flow (VRF) technology has gained popularity due to its ability to provide efficient and precise heating and cooling control in different zones of a building. The integration of smart technologies, such as IoT sensors and machine learning algorithms, has revolutionized HVAC control systems. Energy Recovery Ventilation (ERV) systems are designed to exchange indoor and outdoor air while minimizing energy loss. These systems capture and transfer heat and moisture from the exhaust air to the incoming fresh air, pre-conditioning the incoming air and reducing the load on the heating and cooling systems.



Heat pumps have become more efficient and versatile, making them a greener alternative for both heating and cooling. Advances in compressor technology, refrigerants, and system design have significantly improved the Coefficient of Performance (COP) of heat pumps.



The HVAC industry is evolving rapidly to address the pressing challenges of energy efficiency and environmental sustainability. Advancements in HVAC technology are not only enhancing energy efficiency but also improving indoor air quality and providing greater control and convenience to users.

Mr. Kartik Pathak

Students Achievements

Sr. No	Name of Student	Name of Event/ activity	Organizing Institute (agency)	Position/ Rank in the Event
1	Rohit Nagrale	Techfest social media marketing	IIT Bombay	Runner Up



Students Publications

Sr. No.	Name of the Author(s)	Title of the Paper	Name of the Journal
1	Dheeraj H. Bonde, Nitin K. Panche, Hrishikesh S. Meshram, Vrushabh W. Dhongade, Atul V. Dharmik, Jayesh D. Parate, Mangesh G. Pardhi	Fabrication and Performance Analysis of a Device to Transform Vibration Energy on an Automobile	Lecture notes in Mechanical Engineering, Springer
2	Chinmay M. Salkar, Gaurao J. Tapare, Hrishikesh S. Meshram, Mayank A. Murkute, Chetan R. Zingre, Hansraj A. Mohod	Field Data Analysis Using Work Measurement Techniques in a Packaging Industry	Lecture notes in Mechanical Engineering, Springer

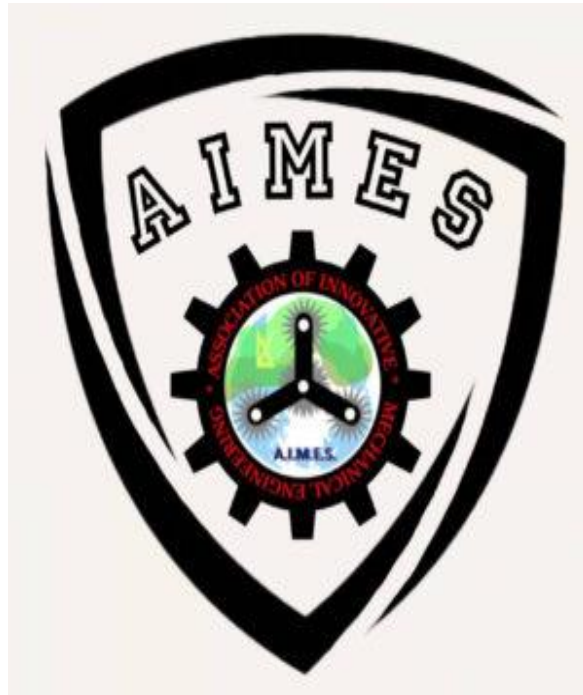


Faculty Publications

Sr. No.	Name of Faculty	Title of Publication	Name of Publisher
1	Dr.Mayak Choubey	A review on various methods to improve process capabilities of electrical discharge machining process	Material Today: Proceedings, Elsevier
2	Mr.Vikrant Katekar	Utilization of LSTM neural network for water production forecasting of a stepped solar still with a corrugated absorber plate	Process Safety and Environmental Protection, Elsevier
3	Mr.Vikrant Katekar	Techno-economic review of solar distillation systems: A closer look at the recent developments for commercialisation	Journal of Cleaner Production, Elsevier
4	Mr.Vikrant Katekar	Assessment and Way Forward for Bangladesh on SDG-7: Affordable and Clean Energy	INTERNATIONAL ENERGY JOURNAL:
5	Mr.Yogesh Joshi	Performance investigation of vapor compression refrigeration system using R134a and R600a refrigerants and Al ₂ O ₃ nanoparticle-based suspension	Material Today: Proceedings
6	Mr.Yogesh Joshi	Experimental investigation of vapor compression refrigeration system with Al ₂ O ₃ nanoparticle using varying mass charges of tetrafluoroethane and iso-butane refrigerants	Material Today: Proceedings



AIMES



A.I.M.E.S. denotes the Association of Innovative Mechanical Engineering Students which means that the students used their mechanical strength and brain for innovation by working smart as per the technology.

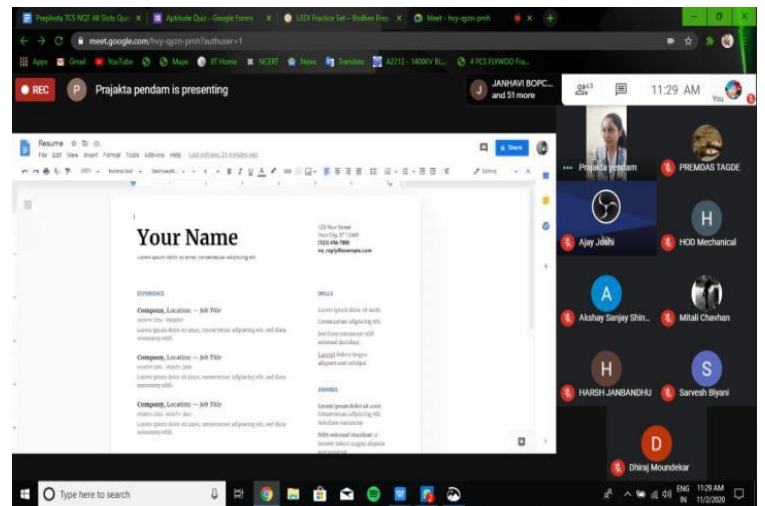
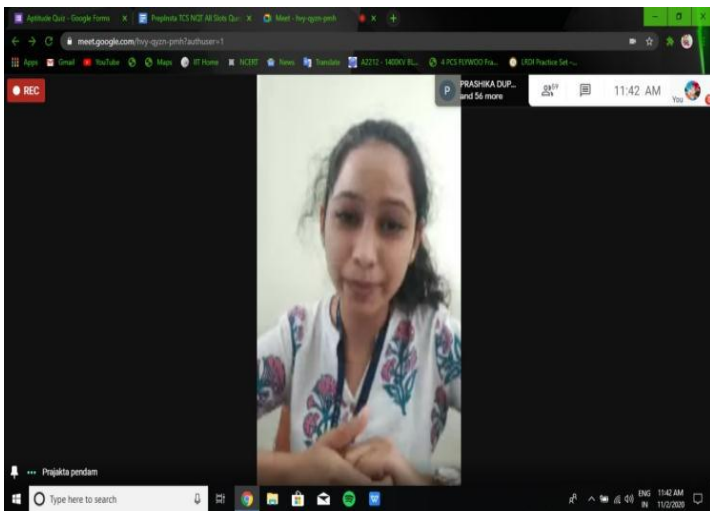
The motto of Student Forum is to worked with the strengths of students and to overcome their weaknesses as well as for the development of new lead skills in all aspects of life.



AIMES ACTIVITIES

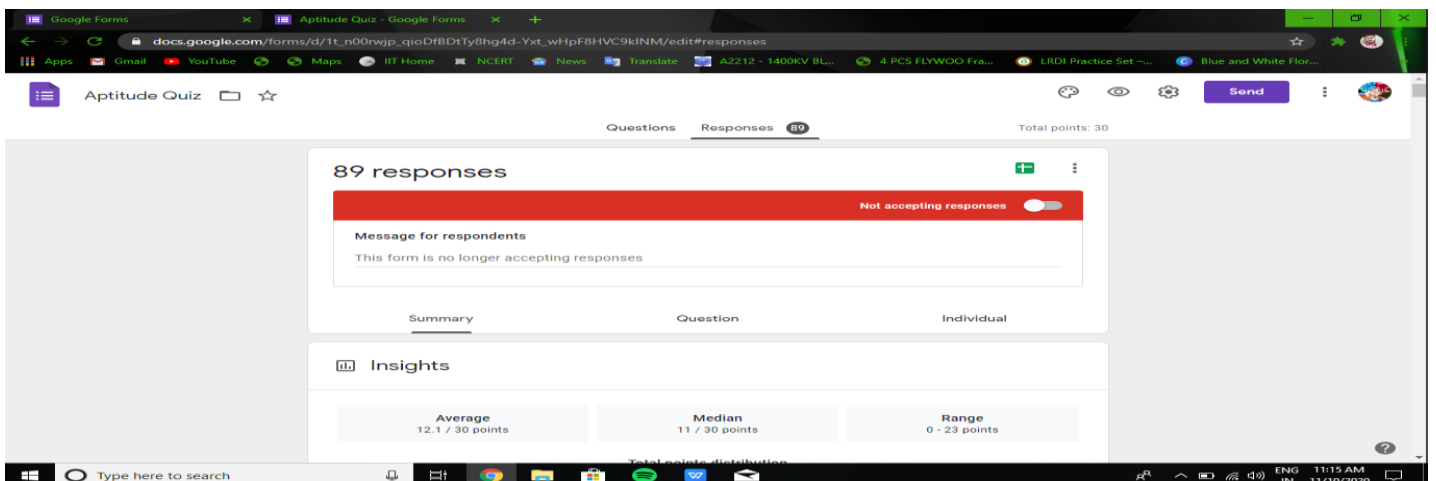
Video Resume Making Session

Department of Mechanical Engineering, S.B. Jain Institute of Technology Management and Research, organized a session on Video Resume Making, dated 2/11/2020 via Google meet. 60 students were present during the session. Session was conducted by Prof Prajakta Pendam, Department of First Year.



Aptitude Quiz/Test

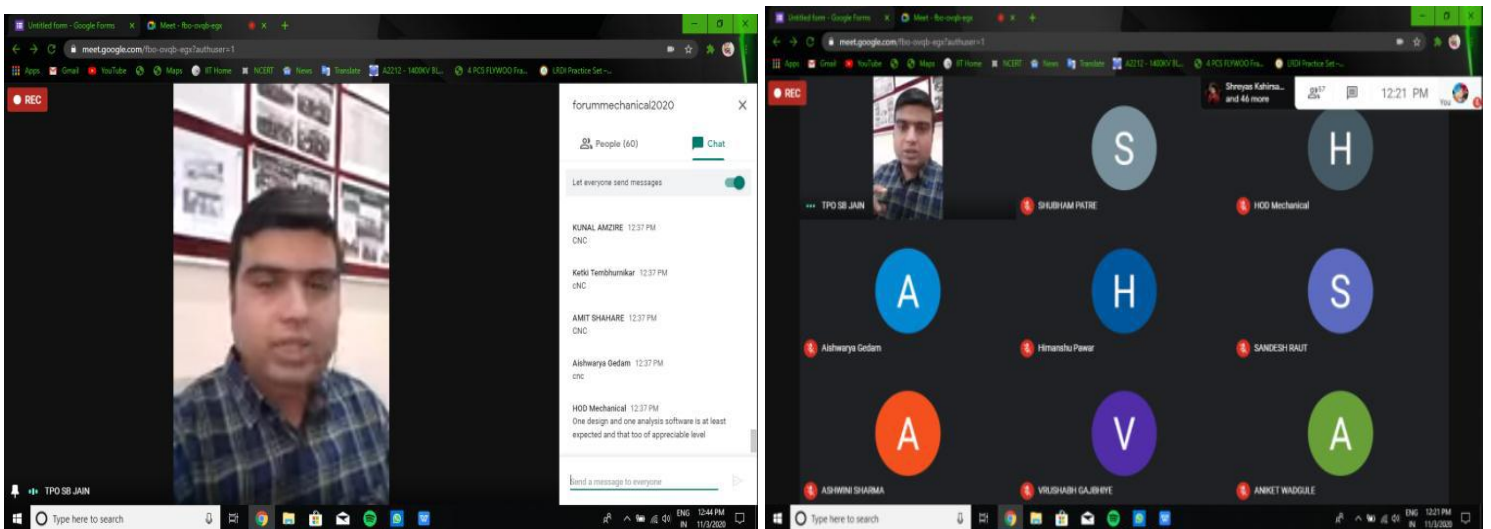
Department of Mechanical Engineering, S.B. Jain Institute of Technology Management and Research, Organized an Aptitude test on 2/11/2020 via Google form. The test consisted of MCQs on English, Reasoning and quantitative areas. 89 Students participated in the event.



AIMES ACTIVITIES

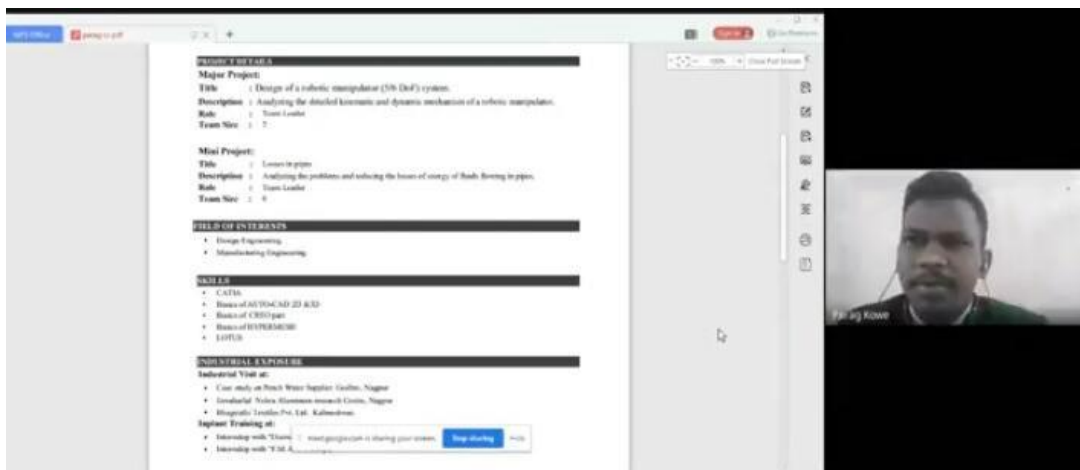
Session on Placement Guidance

Department of Mechanical Engineering, S.B. Jain Institute of Technology Management and Research, organized a session on Recruitment Process, dated 3/11/2020 via Google meet. 55 Students were present during the session. Session was conducted by Prof. Madhav Deshpande, Training and Placement Officer, SBJITMR.



Mock Interview

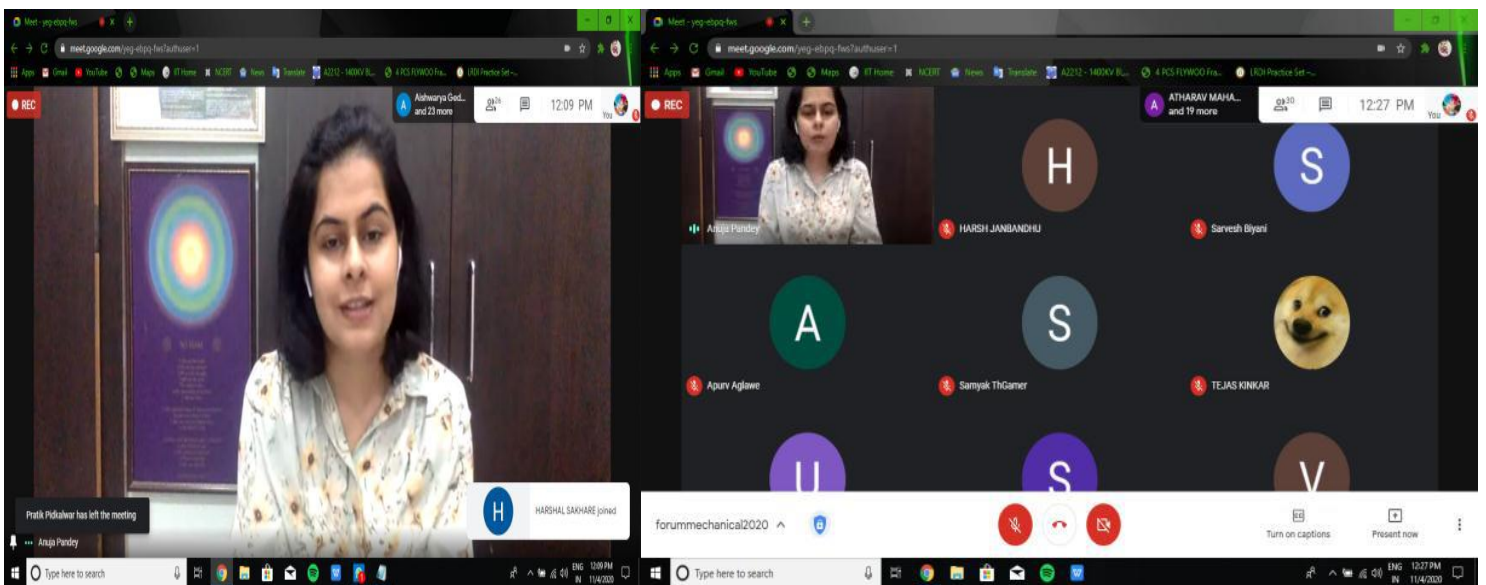
Department of Mechanical Engineering, SBJITMR, organized Mock Interviews on 3/11/2020 via Google Meet. The activity was conducted for 10 students selected from the previously taken aptitude test. Three jury members (two technical and one HR) conducted the interviews.



AIMES ACTIVITIES

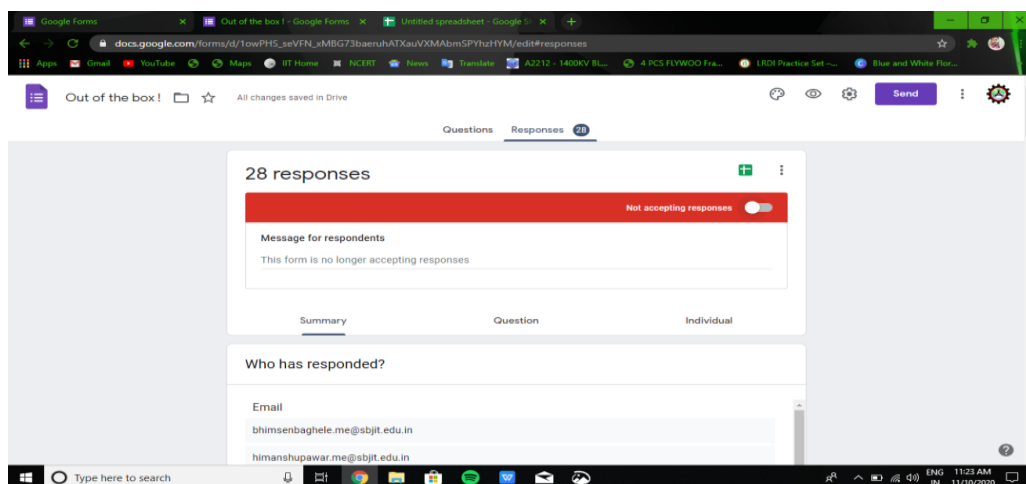
Stress Management Session

Department of Mechanical Engineering, S.B. Jain Institute of Technology Management and Research, organized Stress Management Session on 4/11/2020 via Google meet. 30 Students were present during the session. Session was conducted by Ms. Anuja Pandey, Pranic Healing Instructor



Out of the box thinking

Department of Mechanical Engineering, S.B. Jain Institute of Technology Management and Research, organized Out of box thinking event on 4/11/2020 via Google form, 28 Students participated. Students were given a real-life case study and were asked to give solutions for the same.



ISHRAE



SBJITMR formed the ISHRAE student chapter with the following -

- To help student, Interact with industry professionals and Industrial visit.
- To make students aware the recent development in HVAC Industry, cutting edge technology information and opportunities of Edge over others in placement / higher studies.
- To provide students a platform for National Quiz Participation, Publications and Design Contest.
- Advancement of the Arts and Sciences of Heating, Ventilation, Air Conditioning and Refrigeration Engineering and Related Services.
- Rendition of career guidance and financial assistance to students of the said sciences.
- Encouragement of scientific research.

PAST ISHRAE ACTIVITIES



SAE



SAEINDIA is India's leading resource for mobility technology. As an individual member driven society of mobility practitioners the mobility of SAEINDIA wrests with its members who are individuals from the mobility community, which includes Engineers Executives from Industry, Government Officials, Academics and Students. SAEINDIA is an affiliate society of SAE International registered in India as an Indian non profit engineering and scientific society dedicated to the advancement of mobility industry in India.

SAEINDIA Collegiate clubs provide many benefits to their members and are assets to the engineering colleges where they are located. Collegiate clubs provide students with tangible contact with their future profession – engineering – and, in so doing, further the objectives of engineering education. SAEINDIA Collegiate Club is to increase the benefits of SAEINDIA student membership through special activities that includes affiliation with the sections.

The students themselves through the elected officers administer college club affairs. Officers are counseled by the SAEINDIA faculty Adviser and Vice Chair – Student activities , the collegiate club functions according to its Constitution and such general rules as may be outlined by the SAEINDIA Engineering Education Board, SAEINDIA Students Activities Committee and the SAEINDIA Board of Directors.

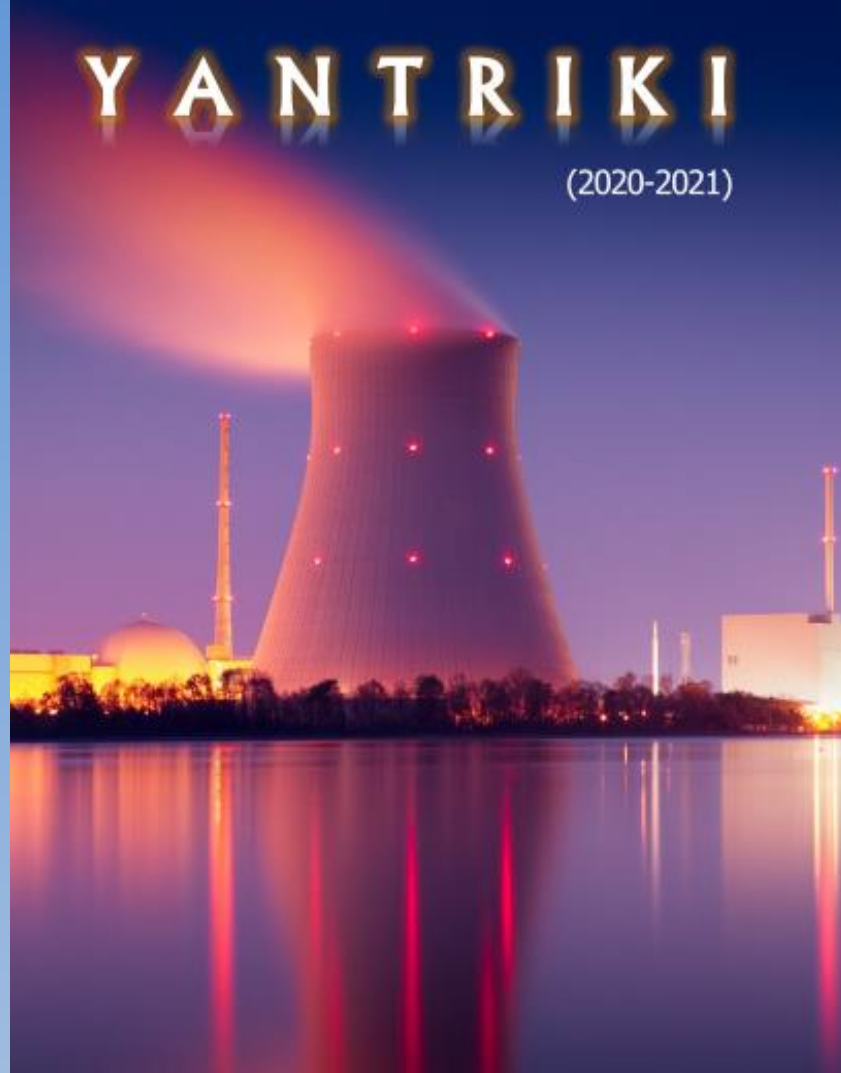
PAST SAE ACTIVITIES



Placements

Sr. No.	Name of the Student	Name of the Employer
1	Aditya Mishra	ASP OL Media Pvt. Ltd.
2	Aishwarya Gedam	Tudip Technologies Pvt. Ltd
3	Ajay Yadav	VINTRUS
4	Akhilesh Yadav	Accurate Engineering Quality
5	Amar Meshram	Elan Overseas Education Pvt. Ltd
6	Ameya Mandaokar	TATA Technologies
7	Amol Mauje	Express HR Solutions
8	Amol Sengar	Capgemini
9	Ankush Katarpawar	Shopcardd
10	Ankush Kshirsagar	Emonics Technologies Pvt. Ltd
11	Anmol Mahajan	Buzo Media Services
12	Anurag Sarode	Infocept
13	Apurv Aglawe	Infosys
14	Archesh Dharmik	Climber Knowledge & Careers Pvt. Ltd.
15	Ashu Koche	CONNEQT
16	Bhushan Borkar	Police Constable
17	Chetan Dhakate	Indicus Software Pvt. Ltd.
18	Deepak Kumar	Dhwani Polyprints Pvt. Ltd.
19	Gopi Zode	IAI Industries Ltd.
20	Himanshu Pawar	Perficient India Pvt. Ltd.
21	Himanshu Waghmare	Infosys
22	Ketki Tembhumkar	TCS ELXSI
23	Lokesh Puri	The Thinker
24	Mahesh Thakre	Mirketa Software Pvt. Ltd.
25	Mandar Kale	Veer Furnitech
26	Mohit Randive	Cognizant
27	Mrunal Lade	Climber Knowledge & Careers Pvt. Ltd.
28	Parag Kowe	TATA Consultancy Services Limited
29	Parth Sharma	Evonith Value Steel Ltd.
30	Pranay Satpute	Outworks Solutions Pvt. Ltd
31	Rakesh Sewatkar	Tissa Technology
32	Raunak Wasnik	ASP OL Media Pvt. Ltd.
33	Rushikesh Alone	Softshell Systems Pvt. Ltd
34	Sanket Kale	L&T Technology Services
35	Sagar Chhapparghare	Hexaware
36	Sahil Uikey	Amazon
37	Saurabh Ghubade	ASP OL Media Pvt. Ltd.
38	Saurabh Mahant	TATA Consultancy Services Limited
39	Shadab Sheikh	Edupolis Technologies Pvt. Ltd.
40	Shantanu Barde	Accenture
41	Shivam Kale	Amphenol
42	Shivam Tiwari	BYJUS
43	Shubham Khorgade	Accenture
44	Suraj Madankar	Aptiv Components Pvt. Ltd.
45	Suyash Warhekar	ASP OL Media Pvt. Ltd.
46	Uday Walke	Tudip Technologies Pvt. Ltd
47	Ujjwal Nimbalkar	Neilsoft
48	Utkarsh Ghodmare	Accenture
49	Vaibhav Rande	TATA Consultancy Services Limited
50	Vrushabh Patange	Techtur Structures Pvt. Ltd





॥ विद्या धनम् सर्वधनः प्रधानम् ॥

Department of Mechanical Engineering

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