Department of Mechanical Engineering | APSIT

yantriki

Volume 5 | 2021-22

Parshvanath Charitable Trust's

A. P. SHAH INSTITUTE OF TECHNOLOGY

(Approved by AICTE New Delhi & Govt. of Maharashtra, Affiliated to University of Mumbai)

(Religious Jain Minority)

Vision

"To be a nationally renowned Mechanical Engineering Department producing professionals, catering dynamic global industrial needs with sense of responsibility and social senitivity towards national growth."

Mission

M1 - To provide an academic foundation in Mechanical Engineering while imbibing professional studies with advance skills to fulfil ever changing global industrial needs.

M2 - To impart graduates with social values and ethics by providing opportunities to solve environmental and social problems.

M3 - To establish an environment that encourages and builds an ambience of learning and practical application of underlying principles at various level.

From the Principal's Desk ...

Dear Readers,

It gives me immense pleasure to present the fifth issue of Yantriki before you all. Nurturing creativity and inspiring innovation are two key elements of successful education and the Mechanical Department has been following this motto throghout its journey.

This magazine will be a vital part of this journey as it will serve as a platform for all the students as well as faculties to share their ideas , technical knowledge and opinions on various things happening at APSIT, Mechanical Department. The dept. has started various skill development courses for students to mold themselves according to the industrial requirements.

I would like to appreciate the Editorial and Design team of the magazine for putting their valuable efforts for the magazine development and also making it reader friendly. Also, my heartfelt congratulations to the HOD and faculty members of the Mechanical Department for their valuable and fruitful efforts towards nurturing students.

Dr. Uttam D. Kolekar
Principal APSIT

From the HOD's Desk . . .

Dear Readers,

I am pleased to share with you the fifth edition of 'Yantriki', a magazine from Mechanical despartment of APSIT. The title reflects basis of our department which is 'Mechanics'!

Events in Yantriki 5.0 is a look back through all the curricular as well as extra curricular activities organized by our department in academic year 2021-22. In this period, we've had many interactive seminars, tranining programmes, etc. All these activities were organized by student committees like MESA and ISHRAE of the Mechanical Department. Other articles included in the magazine have some amazing technological advancements taking place in field of science and technology.

I hope reading this magazine will be a wonderful experience. My profound thanks to the editorial and design team of the magazine for their continuous efforts and I wish them luck!

Prof. Dilip V. Kunte
HOD, Mechanical Engineering

MAGAZINE COMMITTEE

Sharvil Joglekar
Designer

Mukul Aigalikar
Editor

Atharva Linge
Editor

Yantriki 5.0 is the 5th edition of the official magazine of Mechanical Engineering Department at APSIT.

The magazine covers all the aspects of the department including industry collaborations, and the collegiate clubs such as ISHRAE, MESA, and MAC which offer student a chance to enhance their knowledge by participating in various extra curricular activities. Also do read the articles provided by the students of Mechanical Department which give a wonderful insight into modern world technology.

We hope you would like this edition of the magazine and enjoy

- Magazine Team

LIST OF EVENTS

Sr. No.	Event Name	Date	Organizing Committee
1	Webinar - Design of Air Conditioning Systems.	10th, 11th and 17th April 2021.	ISHRAE
2	Interview Training Session	13/04/2021	ISHRAE
3	ISHRAE Quiz Competition	26/06/2021	ISHRAE
4	Tech Talk - Sustainable HVAC Systems.	30/07/2021	ISHRAE
5	HVAC System Design Training - Heat Load	23/10/2021	ISHRAE
6	Virtual K-12 Activity	04/02/2021	ISHRAE
7	Virtual I.V. at Voltas Beko India	18/02/2022	ISHRAE
8	Offline K-12 Activity	25/02/2022	ISHRAE
9	I.V. at Advantek Air Systems Pvt. Ltd.	04/03/2022	ISHRAE
10	I.V. at Vector Projects Inc.	18/04/2022	ISHRAE
11	I.V. at Nehru Science Centre	20/04/2022	ISHRAE
12	Tech Talk - Career Opportunities in HVAC&R	21/04/2022	ISHRAE
13	I.V. at MRR Hospital, Thane.	22/04/2022	ISHRAE
14	Tech Talk - How to grow your career post COVID 19 andemic.	13/04/2022	MESA

DEPARTMENTAL TOPPERS

Sr. No.	Year / Div	Student Name
1	SE - A	Haresh Naikare
2	SE - B	Kaustubh Patil
3	TE - A	Sharvil Joglekar
4	TE - B	Krupa Bhanushali
5	BE - A	Akshay Kale
6	BE - B	Pratiksha Shivthare

MECHANICAL ENGINEERING STUDENTS ASSOCIATION (MESA)

Sharvil Joglekar
President

Mukul Aigalikar
Vice President

Suyash Hotkar
Secretary

Nimish P.
Treasurer

Durvesh Ponkshe
Technical Head

Om Shah
Editorial Head

Pratham Panchal
Publicity Head

Volunteers:

Atharva Linge	Publicity Team
Pranav Ghag	Technical Team
Atharva Kajale	Editorial Team
Pinank Parikh	Publicity Team

About MESA

Mechanical Engineering Students Association of APSIT aims to play a pivotal role in the development of students as engineers by organizing various extra-curricular activities. MESA is among the most active student bodies in the institute. Every Mechanical Engineering student beginning with the second year in the program at APSIT is a member of MESA. Mentored by experienced faculty members of the Mechanical Engineering department, students take upon many initiatives that prepare them to face the challenges of the future.

The main goal of MESA is to bring about technical development in students by organizing seminars, technical talks, workshops, industrial visits, etc. and some other activities to boost non-technical skills of the students such as communication skills, managerial abilities, presentation skills and team work.

MESA Team along with faculties and guest speaker Mr. Rajan Gaokar for an expert talk on 'How to grow your career post Covid-19'

INDIAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS (ISHRAE)

Harshi Timbadia
President

Kimaya Bait
Secretary

Pratiksha Shivthare
Treasurer

Rahul Sharma
Publicity Head

Sahil Ansari
Membership Head

Gauri Matkar
Documentation Head

About ISHRAE

ISHRAE was founded in 1981 at New Delhi by a group of eminent HVAC&R professionals. ISHRAE today has more than 28,780 HVAC&R sudent members and professionals.

ISHRAE operates from 4 chapters and sub chapters spread all over India with HQ in New Delhi. It is led by a team of elected officers who are members of the society, working on a voluntary basis and collectively called the Board of Governors.

The mission of ISHRAE is to promote the goals of society for the benefit of general public. Towards this objective, the chapters of the society participate and organize various activities to protect environment, improve air quality, help energy conservation, provide continuing education to members and others in HVAC&R and related industries by offering career guidance, certification programs, etc. to students at local colleges and tertiary institutions.

ISHRAE Team along with students from S.H.E.D. (Society for Human and Environmental Development) during an offline K-12 Activity.

MODIFIED AUTO CLUB (MAC)

Modifed Auto Club is a student engineering team founded in 2018 with the sole aim of making a difference in the world by formulating and manufacturing electric vehicles in various formats like E-bikes, solar cars and Electric Formula Student Vehicles.
We tend to propagate the power and benefits of green energy, and spread its awareness and work on improving the current technologies. This paired with the excellent facilities not only helps to achieve our goals but also provide industrial experience to budding engineers at the very roots of their academic endeavours.

Team List:

Bhavesh Shingare
Hardik Sharda
Mohit Pandey
Siddhesh Nikam
Shubham Singh
Soham Yerandkar
Manas Ambekar
Abhishek Kolekar
Shubham singh
Arik Mondal
Dhruv Joshi
Om Bheda
Srushti Punyarthi
Yash Pawar
Manthan Mhamunkar
Parth Padhiyar
Suyash Hotkar
Sainath Barbhai
Girish Dighe
Sujay Padte
Omkar Vilas Narkar
Sarthak Mahadik
Sahil Fazal
Abijith Pulickal
Sanjay Nambiar
Yugandhar Ghatge
Soham Khairnar
Harsh Vaya
Devendra Tak
Rushikesh Desai
Atharva Linge
Akash Pal
Hrutwik DTambe
Nimish P.
Suraj Jaiswar
Amay Ghag
Aman Pardeshi
Manas Kulkarni
Shreyya Nair
Krishnadas Ukkalkar
Durwas Khot
Gaurav Parmar
Atharva Koli

Achievements

R742 - Solar Car

ESVC - March 2019
Overall Runner-up, Best Cross pad & Endurance performance

IASC - June 19
Overall Winner, Best Innovation and Design Award & Endurance Winner

Falcon - Electric Bike

AEBC - Sept 2019
Overall Fourth

EBRC - January 2020
Overall winners & Best Innovation Award

Formula Student Car

Formula Bharat Virtuals - Dec 2020
Best Debut Team, Overall 7th rank

Formula Bharat Virtuals - Sept 2021
Overall 2nd Winner (Rev-it Event)

INDUSTRY PARTNERS

Dassault Systemes CLIC Program

Collaborative Learning and Innovation Centre (CLIC) offers various trainings on 3D Design and Simulation for Mechanical Engineering Students.

Autodesk Hub

APSIT is an Autodesk Authorised Training Centre (ATC) and Learning Partner. The courses offered are related to 3D Modeling anf Animation, CAD/CAM/CAE, Protyping and Simulation, Building Information Modeling (BIM), etc.

ANSYS Authorized Training Centre

ANSYS provides outstanding value, laying the foundation for educational and other opportunities that arise using best-in-class simulation tools. Its high performance bundles of simulation tech inculdes structural, thermal, fluid dynamics, electronic and multi physics solver, etc,

BMW Skill Next

Students will have hands-on experience on BMW Twin Power Turbo, Inline 4 Cylinder Diesel engine, Eight-speed steptronic automatic transmission installed in the campus.

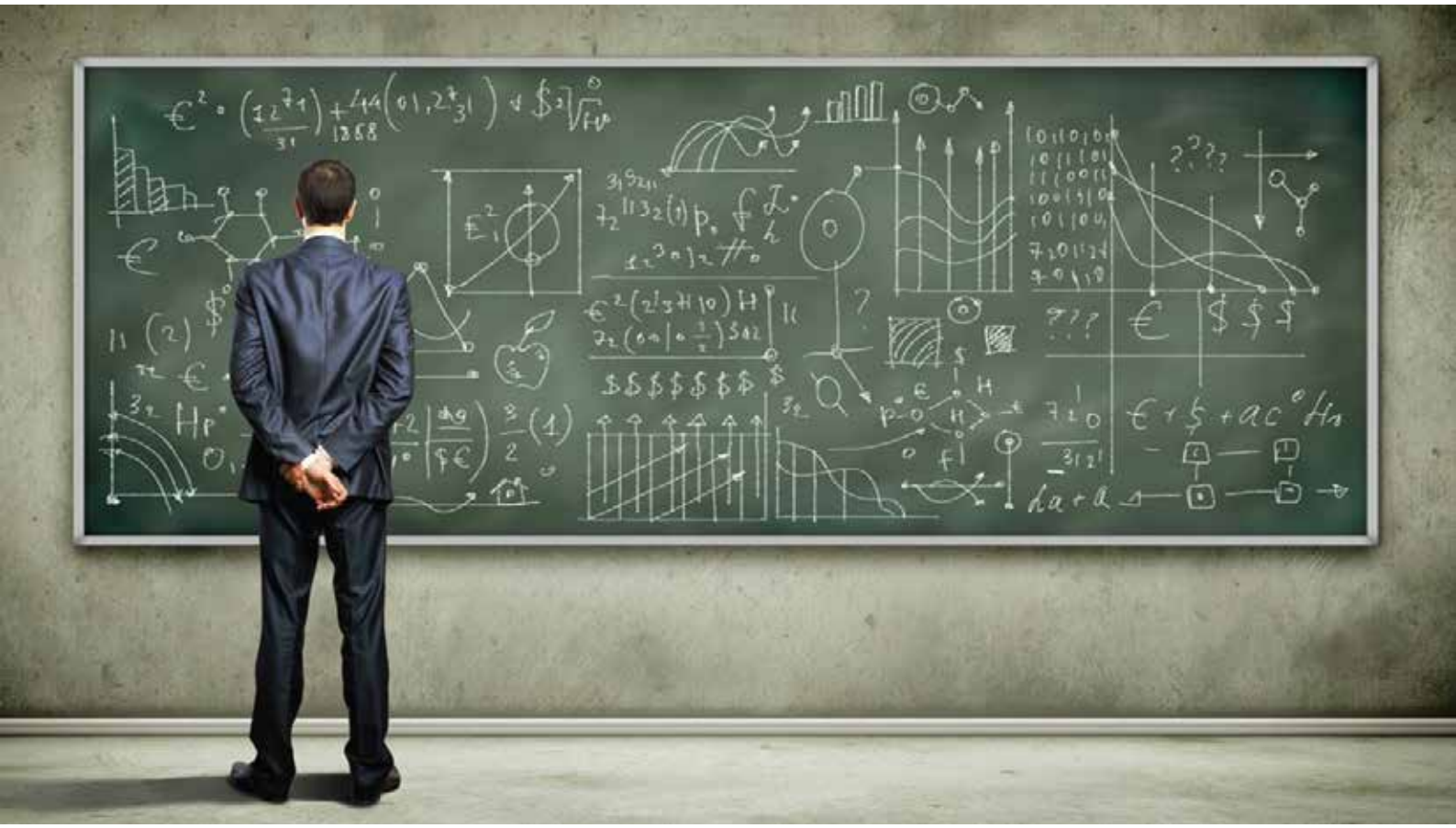
ICT Academy

The aim of India's higher education system is attaining sustainable development and achievening higher growth rates which could be enabled through creation, transmission and dessemination of knowledge. Higher education of all levels in country is witnessing a consistent growth pattern marked by setting up of new institutions and the improvement of existing ones.

Free GATE/GRE/CAT coaching

An initiative to prepare students for post graduation studies in India and abroad.

IMPORTANCE OF MATHEMATICS IN MECHANICAL ENGINEERING



When pursuing mechanical engineering courses, mathematics plays a major role in developing mathematical models, implementing solution algorithms for the models, and arriving at the solution. As a result, all mechanical engineering curricula require that students complete a significant number of mathematical courses before they start taking the engineering science and engineering courses. It is common knowledge that engineers must be proficient in many topics of mathematics such as linear algebra, numerical methods, and differential equations in order to tackle and solve real world engineering problems in their daily work.

In mechanical engineering there is vibrational mechanics which is the application of calculus for figuring out the velocity and acceleration of the vibrating object, while simultaneous linear and differential equations are used to find out the solution for the displacement of nodes in vibrations.

Engineering thermodynamics and heat transfer involve concepts on heat waves and gradients as explained by Laplacian operator, divergence and geometrical concepts for analyzing shape factors. Concept of logarithm is used for heat and temperature calculation, while ratios and proportion is used for ideal gas laws.

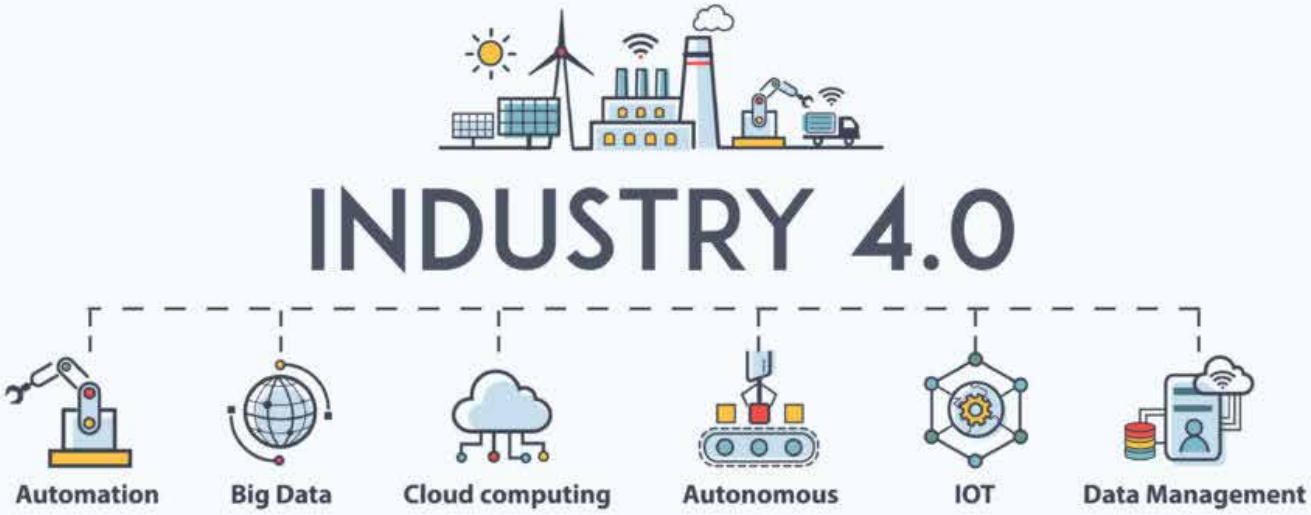
Now we come to the most important part - the fear of maths, which is faced by the majority of students. Be it Mechanical engineering or any other science field, there will always be a topic or subject in which there is either the use of maths or problem solving skills. So to all students reading this article, whether you have taken up mechanical engineering either by choice or by chance, you will have to face the fear of maths and problem solving in this course. What I would suggest, going by personal experience, is that we must first get our basics strong. This step is even more important than actually solving the given problem.

Once we get our basics right, then we require these 3 P's:
"**Practice, Prepare and Produce**"

Yes, Practice as much as you can. Because as the saying goes, "practice makes a man perfect". Prepare the topic well and Produce the desired results. In the end all I can say is that maths is not a subject which one can master in a day or two by reading. It is a subject that requires consistent effort. Practice everyday, think everyday, revise everyday and within 5–6 months, you will start loving maths to the core.

Good luck !!

Roshwin Rodrigues
B.E. Mechanical



We are experiencing the fourth industrial revolution, also known as Industry 4.0. It is characterised by the invention of the cyber physical process, which promises an increase in the level of automation, more efficiency and productivity across the value chain. The manufacturers have become more flexible, so they can now better meet client requirements through mass customization. A smart factory can achieve information transparency and make better decisions by collecting and combining data from the factory floor and enterprise operational data.

Driving forces of Industry 4.0:

1. Internet of Things (IoT)

The internet of things refers to physical objects that include sensors, software, an IP address, and other technologies that allow them to communicate and exchange data with other devices across a communication network or the internet. Due to this mechanisation and connectivity, a large amount of valuable data can be collected, analysed, and exchanged to make better decisions.

2. Additive manufacturing

The term additive manufacturing (AM) refers to the production process, which involves depositing layers of materials to create three-dimensional objects. Using computer aided design (CAD) or

3D object scanners, additive manufacturing allows for the creation of objects with precise geometric shapes. These are built layer by layer, as with a 3D printing process, which is in contrast to traditional manufacturing that often requires machining or other techniques to remove surplus material.

3. Cloud Computing.

With cloud computing, users have on-demand access to computer resources, especially data storage and computing power, without direct active management by them. Engineering, supply chain, production, sales and distribution, and service must all be connected and integrated for smart manufacturing to be fully achieved, which is possible by cloud computing. Also, it allows for more efficient and cost-effective processing of the generally vast amounts of data that must be stored and evaluated.

4. Stimulation

The word simulation is defined as the imitation of the operation of a real-world process or system over time. With this definition in mind, it is easy to understand why simulation is ubiquitous in engineering and industrial organisations; imitating a real-world process or system allows experts to study the process or system they are interested in within a controlled, repeatable environment.

Challenges in Industry 4.0:

1. Gap in Technical Skills
2. Cybersecurity
3. Data Handling
4. Digital Transformation Barriers.

Rishi Dhavale
B.E. Mechanical

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