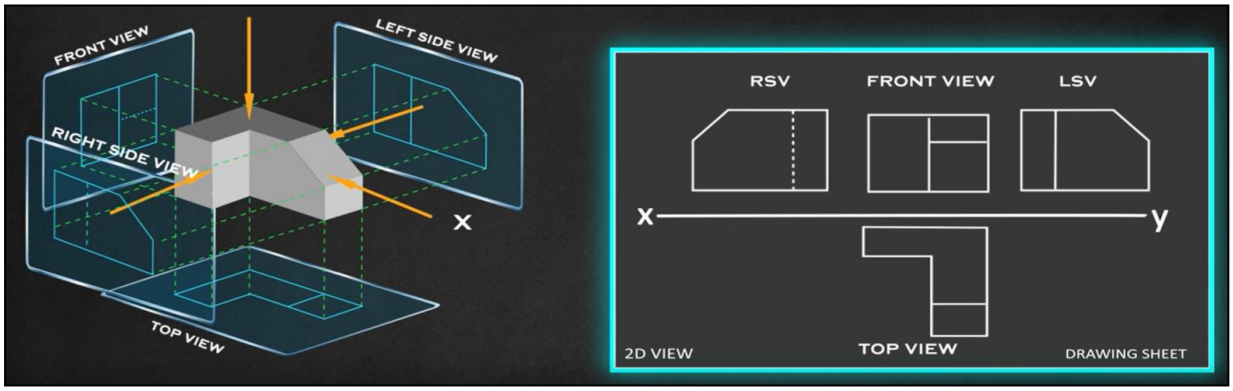
Innovative Teaching Methods

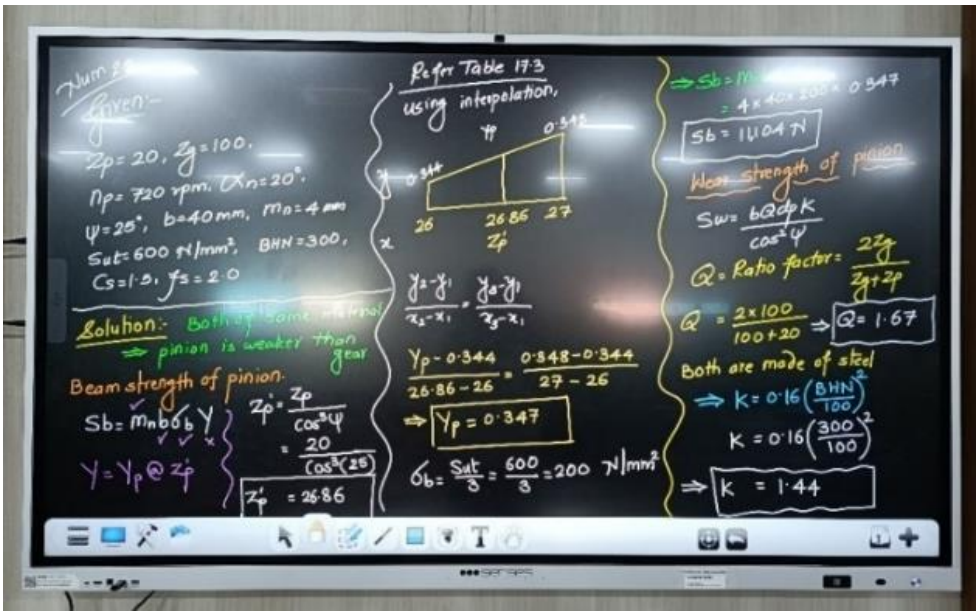
Contents

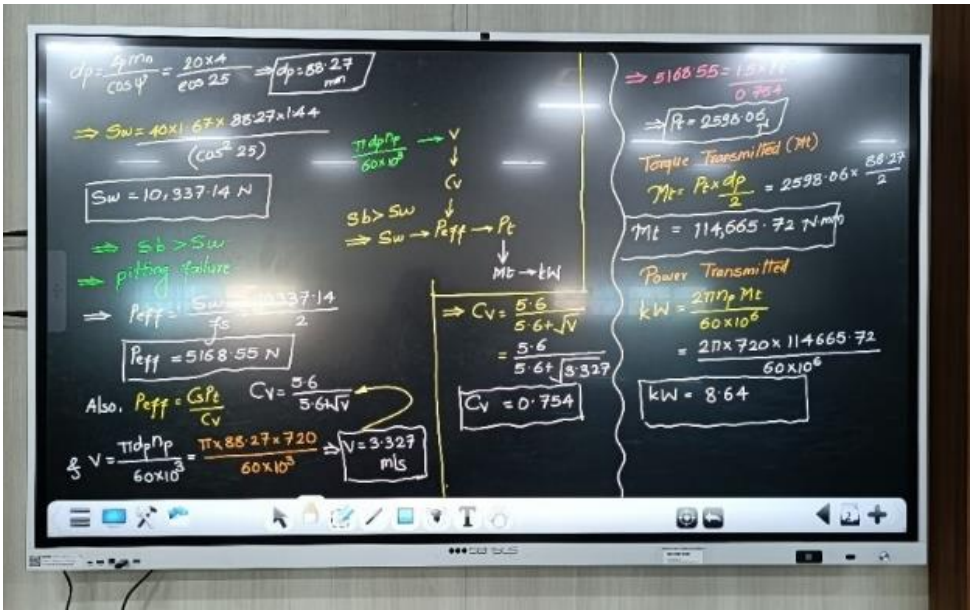
1. Use of Smart Classrooms

- For offline teaching learning process, all the classrooms in the department are equipped with 75" sized Senses™ smartboards. Faculty member make use of these smartboards with the help of Stylus provided to them. Larger size of boards ensures that it's writing is visible to every student. EasyNote software has been installed in all smartboards & is used by faculty to write the problem solutions & calculations.
- Smartboards are provided with internet connectivity, thereby enabling conduction of online expert sessions as well as YouTube video lecture. This is shown in following photos.
- Faculty members upload their course learning material, presentations prepared using ICT tools on MS-Teams.
- All the faculty members are provided with dedicated Desktop PC so that they can prepare course material. Faculty members also use the videos/animation related to respective subjects and show these videos to students in classroom to improve their understanding.
- Institute has MOU with ELEATION Ltd. Pune. Thereby, students learn about essential design softwares such as Hypermesh & Ansys through online video lectures as well.

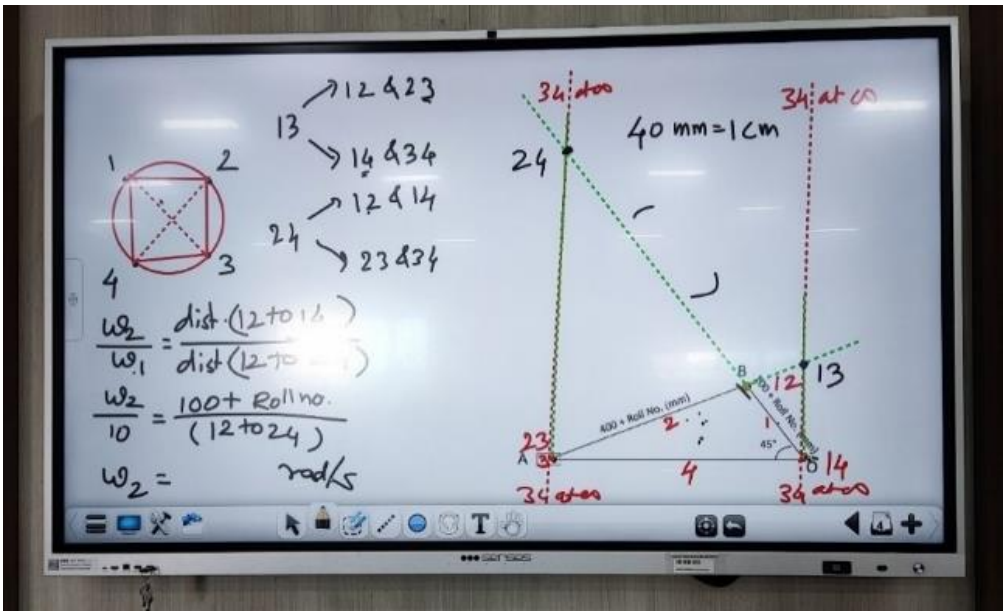


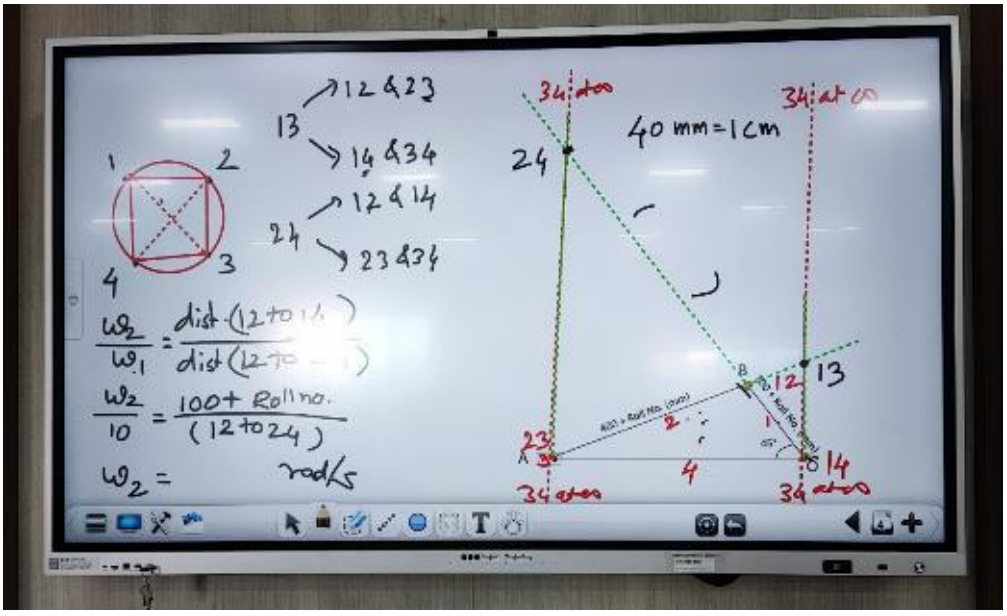
Use of Smartboard in classroom by faculty during teaching learning process



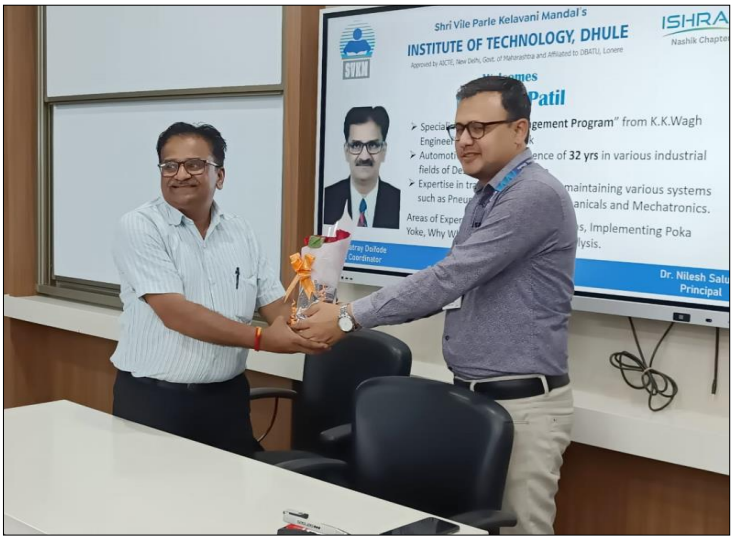


Use of EasiNote software in MD II Problem solving

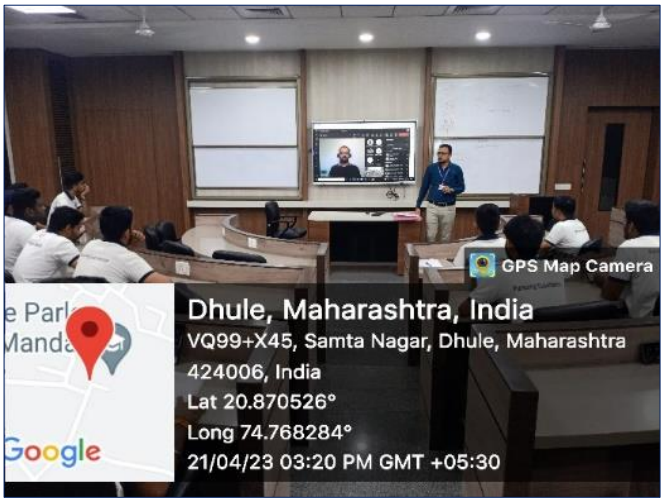


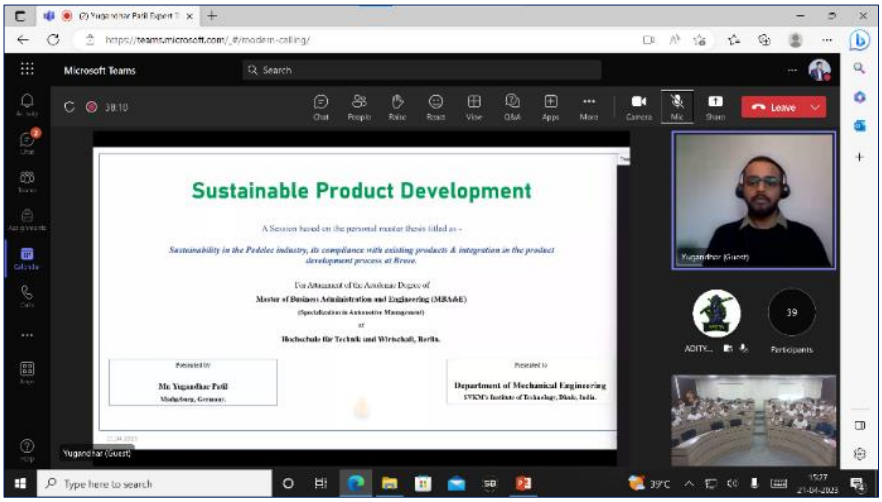


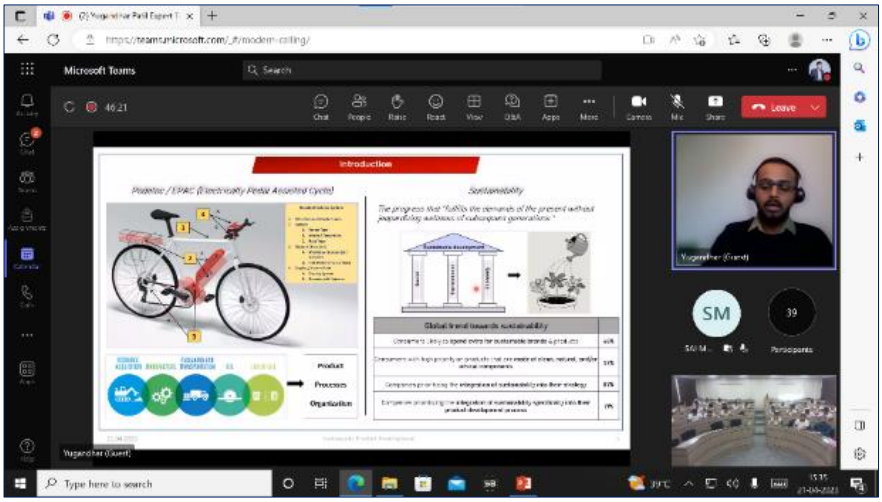
Solution of Numerical problem using Smartboard for Theory of Machines II



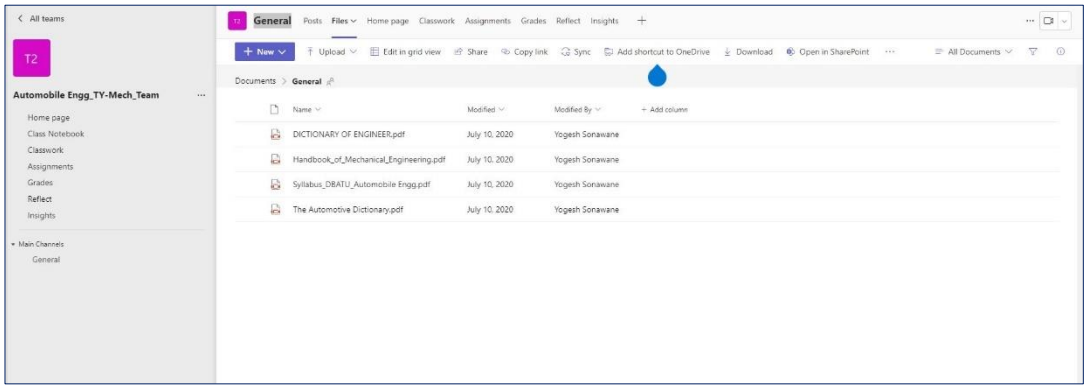
Use of Smartboard in classroom for expert session of Mr. Dilip Patil, 12/04/2023

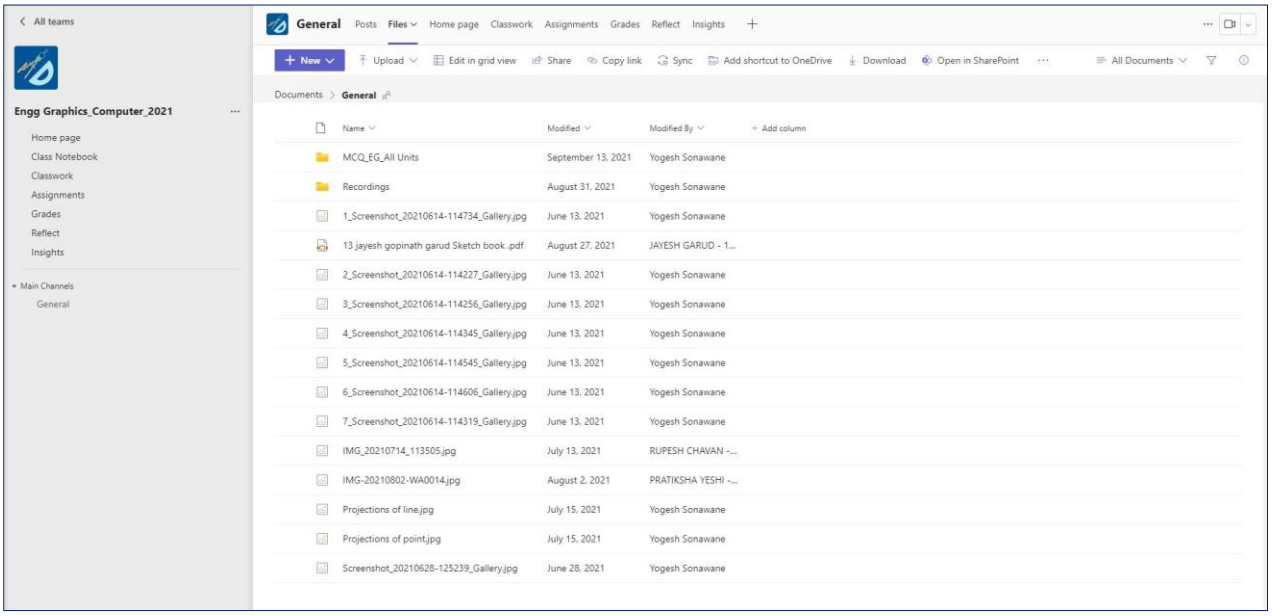


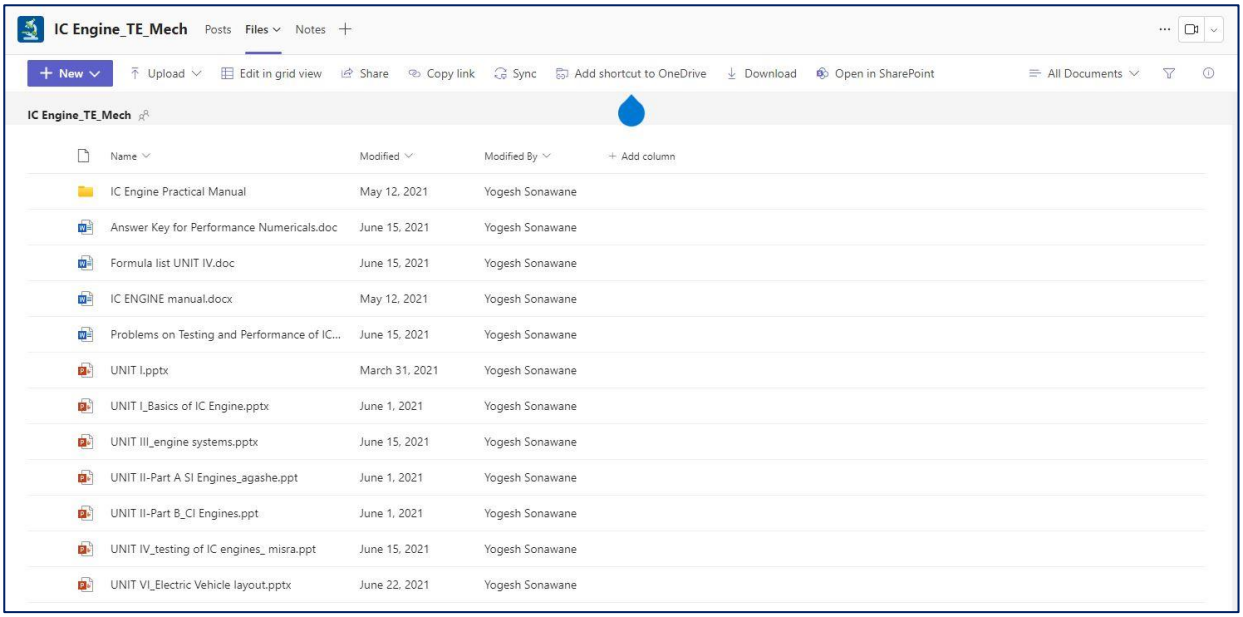




Use of Smartboard in classroom for Online expert session of Mr. Yugandhar Patil, Product Manager, PEM Fuel Cell Test Solutions, HORIBA FuelCon GmbH, Madgeburg Germany, 21/04/2023







Learning material uploaded by faculty Mr. Yogesh Sonawane on MS Teams for the subjects Automobile Engineering, Engineering Graphics & IC Engine

2. Use of Virtual Labs

- For Visualization and experimentation of the various conceptual courses, Virtual labs is very effective solution.
- Through virtual labs, simulation of practical session can be performed more than once, thereby helping the students with enhanced understanding.

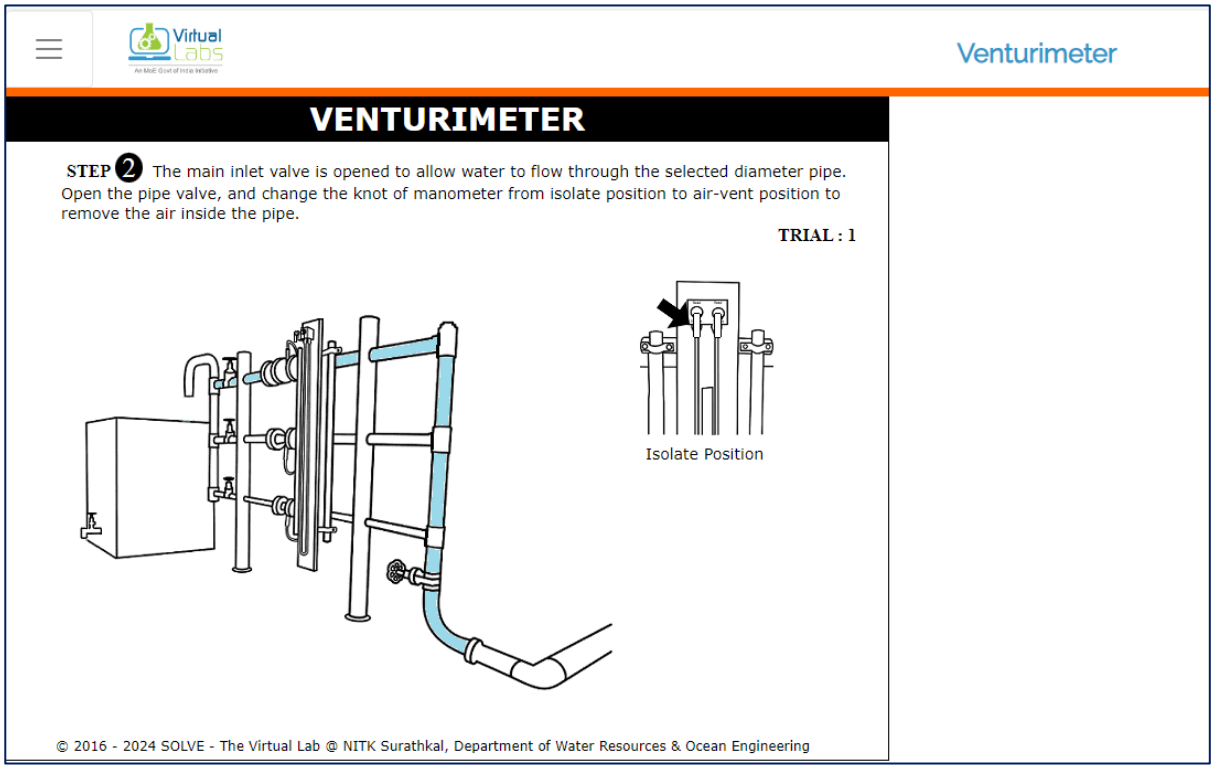
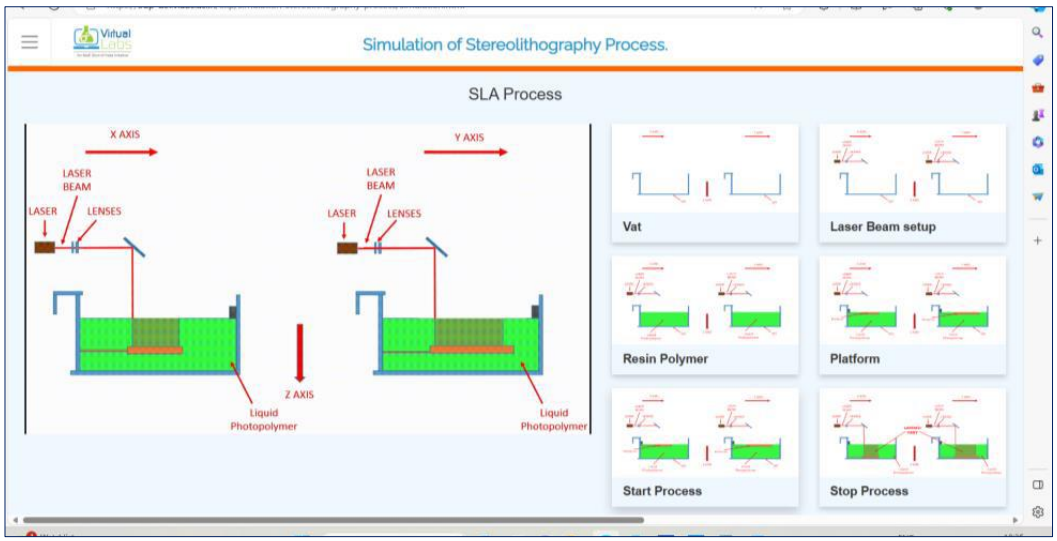
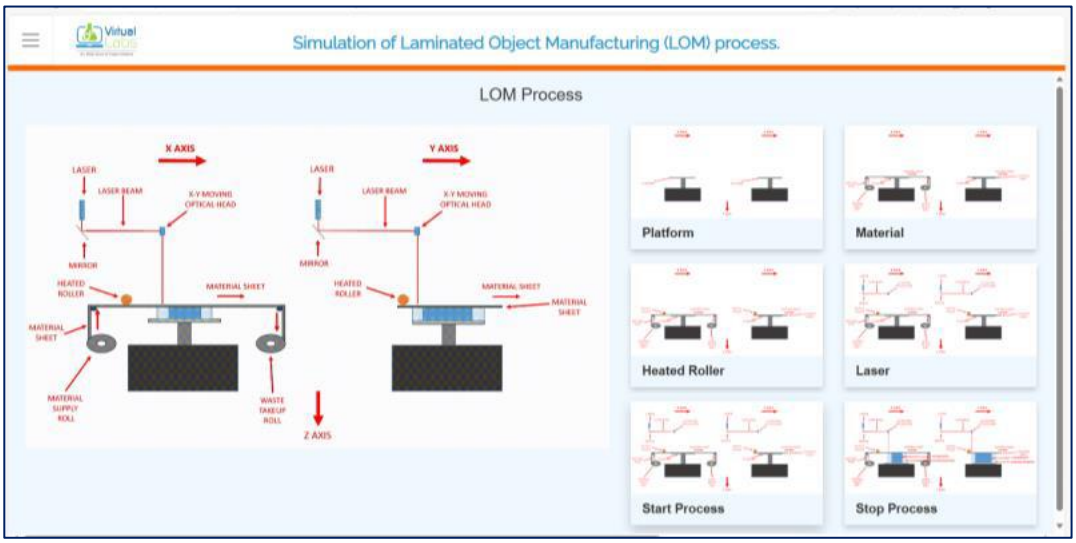
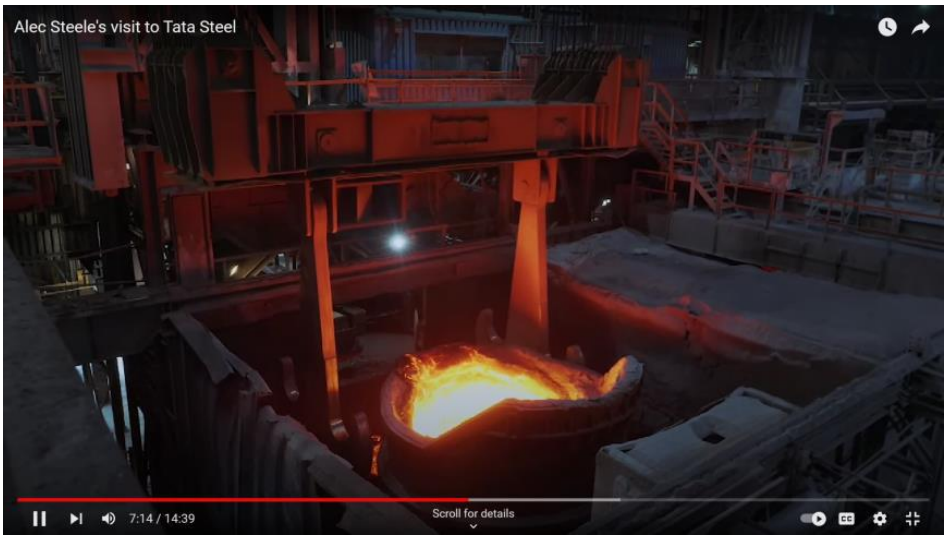


Illustration of virtual lab for fluid mechanics





Use of virtual labs by faculty Dr. Amol Badgujar for the subject MP-III



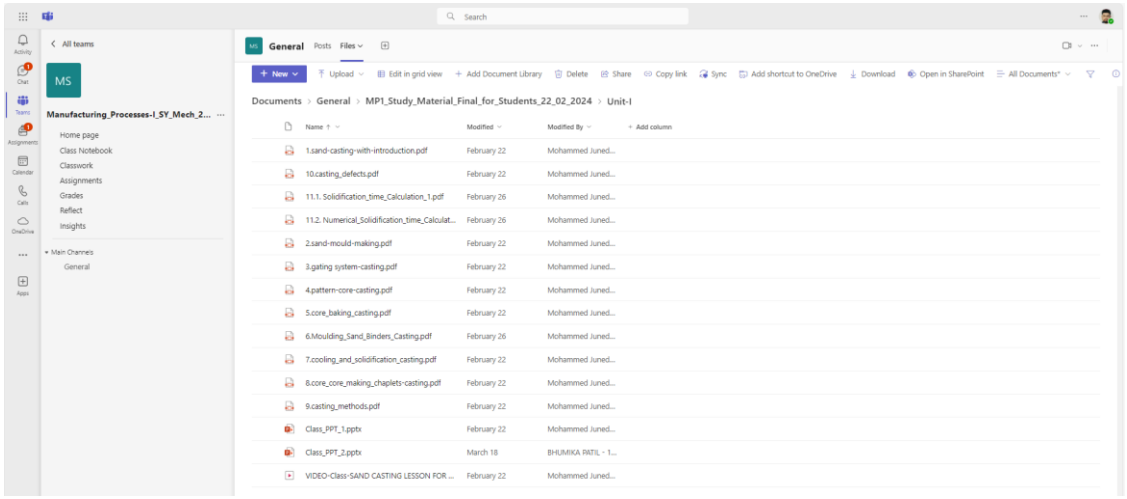
Virtual Industrial Visit of Tata Steel UK

Details of Virtual Labs conducted by faculty

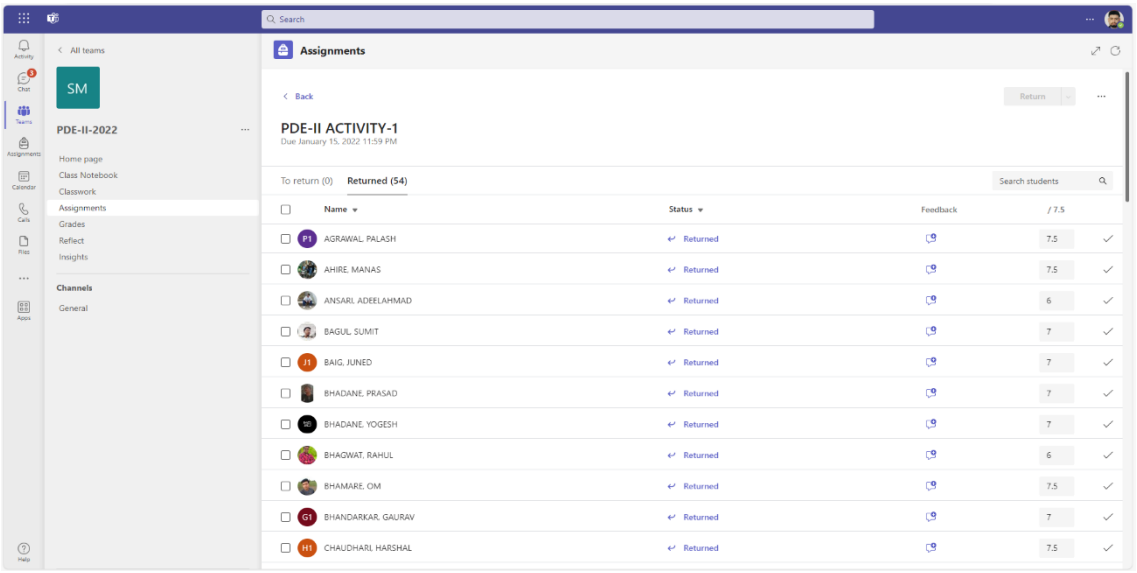
Sr. No.	Name of Course	Course Coordinator	Topic covered through Virtual Labs	Link to Virtual Lab
1	Manufacturing Process III	Dr. Amol Badgujar	1. Simulation of Stereolithography Process 2. Simulation of Fused Deposition Modelling (FDM) Process 3. Simulation of Selective Laser Sintering (Metal & Non-Metal) Process 4. Simulation of Laminated object manufacturing Process	https://3dp-dei.vlabs.ac.in/List%20of%20experiments.html
2	Manufacturing Process II Lab	Dr. Amol Badgujar	1. To study the characteristic features of EDM process 2. To study the effect of various experimental parameters such as electrical discharge current, discharge on-time, duty cycle and electrode polarity on the material removal rate (MRR) and tool wear rate (EWR) in machining of stainless-steel workpiece using copper tool.	http://vlabs.iitkgp.ac.in/psac/newlabs2020/vlabiitkgpMM/exp1/index.html
3	Fluid Mechanics	Mr. Satish Patil	1. Bernoulli's experiment 2. Venturimeter experiment 3. Orifice experiment 4. Reynold's experiment	https://eerc03-iiith.vlabs.ac.in/List%20of%20experiments.html
3	Heat Transfer	Dr. Hitesh Thakare	1. Heat Transfer by Natural Convection	https://vlab.amrita.edu/index.php?sub=1&brch=194

3. Use of Information and Communication Technology (ICT) tools

- MS Teams platform is used to facilitate faculties as well students in effective content sharing and delivery. During Covid – 19 lockdown, MS Teams package was used for delivering the online lectures, uploading course materials, managing assignments and collaborative learning. Hence hassle-free delivery of lecture has become possible.



MS Teams notes & PPT uploaded by faculty for the subject Manufacturing Processes – I of SY Mechanical



Learning Management System (LMS): Assignments and Examination conducted for students

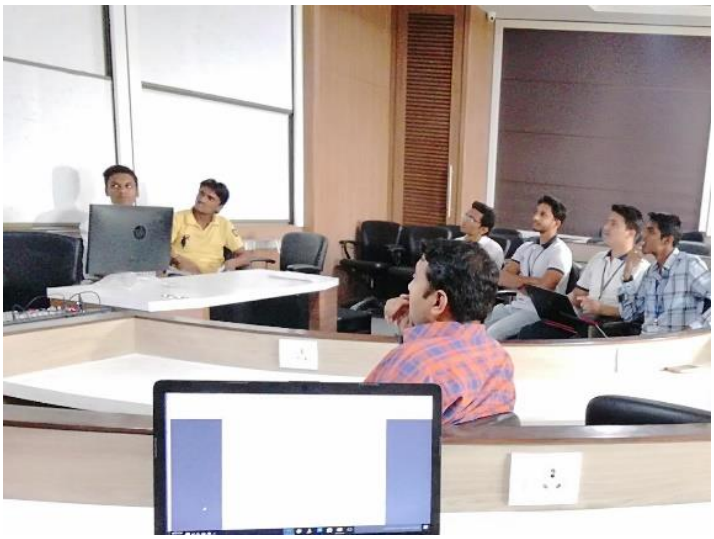
4. Project Based Learning (PBL) / Collaborative learning

- PBL is a dynamic and engaging approach to teaching through which students gain information and skills via long, real-world projects.
- PBL is about actively exploring real life problems and putting the concepts learned by the students to create something beneficial for the society.
- Problem-based learning (PBL) is a student-centered approach in which students learn about a subject/topic by working in groups in order to solve an open-ended problem.
- The problem becomes the source of challenge, motivates students to approach it to solve.
- PBL initiates with students working in small groups, inquiring in related aspects, identifying most important issues, and then finding solutions to the problem under the guidance of a teacher/facilitator.
- By focusing upon a realistic problem, students develop a deeper and multidimensional perspective and knowledge of the subject area.
- PBL helps to develop higher order thinking capability among the students.
- PBL also helps to inculcate essential societal and moral virtues among students such as ethics, communication, teamwork, project management, finance and lifelong learning.
- Students also get an opportunity to interact with industrial personnel and systems during such initiative.
- Students are encouraged by faculty to participate in various project competitions by creating prototype / conceptual solution for a real-world problem.
- This initiative also motivates the students to learn the tools beyond their curriculum whenever necessary.
- Details of this initiative are presented in the following Table.

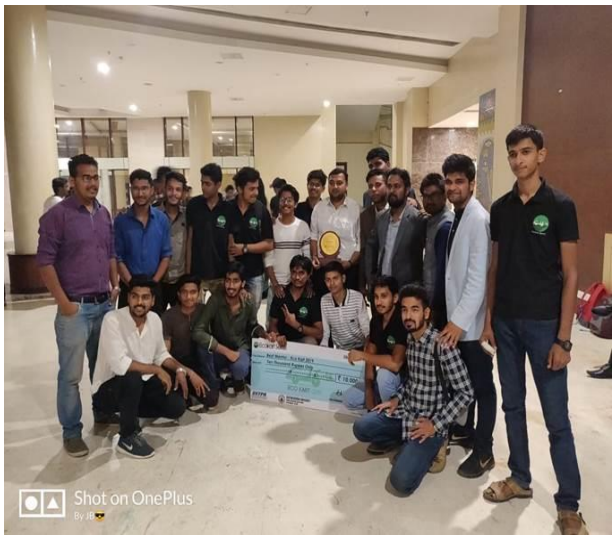
Summary of Project Based Learning (PBL) initiative and its salient outcomes

Sr. No	AY	Name of student(s)	Salient Outcome of PBL Initiative	Guide
1	2018 – 19	**Team S-Falcons** Mr. Rahul Sharma, Captain of **Team of 15 students**	• Qualified for Eco-Kart Series Dynamic Round after completing Virtual Round • Participation in Dynamic Round of ECO KART 2019, 06th – 08th April 2019, at Gautam Buddha University, Greater Noida. • **Awarded with Best Mentor** in Eco-Kart Dynamic Round • Nominated for safest kart and best innovations. • **Cash Prize of Rs. 10,000/-**	Mr. Yogesh Sonawane
2	2019 – 20	Mr. Rahul Sanjay Sharma	• Winner of Zonal round of DBATU Avishkar Project Competition 2019 • Winner of University Level DBATU Avishkar Project Competition, 03rd January 2020 • Selected for State Level round of Avishkar Project Competition 2019	Mr. Yogesh Sonawane
3	2019 – 20	**Team E-torc** Mr Vinay Kulkarni, Captain of **Team of 17 students**	• Participation in E-bike Racing Challenge, 13th to 16th January 2020, at O.P. Jindal University, Raigarh, Chhattisgarh. • **All India Rank 4th at National level** • **Awarded as the Best Team**	Mr. Mohd. Juneduddin
4	2019 – 20	**Team S-Falcons** Mr. Durgesh Borse, Captain of **Team of 18 students**	• Participation in Technocrats Electrical Go kart championship (TEGKC), 13th Jan to 15th February 2020, held at TIT & S, Bhopal, Madhya Pradesh • **All India Rank 2nd in the competition** • Overall Runner Up (Cash prize ₹ 60,000/-) • Best skid pad performer (Cash prize ₹ 6000/-) • **Total Prize ₹ 66,000/-**	Mr. Yogesh Sonawane & Mr. Bhushan Behede
5	2019-20	**Team M Mobulus** Mr. Bhojraj Jadhav, Captain of **Team of 07 Students**	• Participation in "Aero Design Challenge -2020" during 29th Feb – 3rd Mar 2020, held at SAE INDIA, Coimbtore, Tamilnadu. • **All India Rank (AIR) 10** Overall in the competition • **AIR 4 for Techanical Presentation** • **AIR 5 for Flight Round**	Mr. Satish Patil
6	2019 – 20	**Team S-Falcons** Mr. Samar Thorat, Captain of **Team of 22 students**	• Qualified for Dynamic Round after clearing Virtual Round of National Electric Kart Championship (NEKC) 2020, Season 3.0, 2nd to 5th Mar 2020, held at National Institute of Design, Bhopal and MSME Technology Centre, Bhopal. • **All India Rank 1st in the competition** • Skidpad Winner (Cash Prize ₹ 10,000/-), Autocross Winner (Cash Prize ₹ 10,000/-) • Drag Race Runner Up (Cash Prize ₹ 5000/-), Blind Test Runner Up (Cash Prize ₹ 5000/-)	Mr. Yogesh Sonawane Mr. Bhushan Behede

			• Best Standee (Cash Prize ₹ 5000/-) • **Total Prize ₹ 35,000/-**	
7	2021-22	**Team M Mobulus** Mr. Chinmay Chitte, Mr. Bhatu Patil, Mr. Dipak Patil, Mr. Aditya Gharde, Mr. Pratik Patil, Mr. Gaurav Salunke, Mr. Pratik Marathe, Mr. Chaitanya Badgujar	• Participation in 7th Aero Design Challenge • **All India Rank #2** in Best Aerodynamic Analysis (CFD) in Micro Class, SAEINDIA Southern Section,	Mr. Satish Patil
8	2021-22	Mr. Prasad Rajan Chulhai, Mr. Mansoori Sarfaraj Md. Aslam, Mr. Shaikh Md. Noman, Mr. Kolapkar Varad Laxman	• Participation in the DTE District Level Project Competition organized by Government Polytechnic Dhule and DTE RO Nashik, 11th March 2022. • Secured **District Level 1st Prize** for their Project Entitled *Investigation of Gross Calorific Value of Different Agroforestry Species of SVKM Dhule Campus*	Mr. Satish Patil
9	2022-23	Mr. Chinmay Chitte, Mr. Manas Ahire, Mr. Sumeet Pandey, Mr. Pankaj Jangid	• Participation in **State Level Project Competition - DIPEX 2023**, 7th – 9th April, 2023 at Sipna College of Engineering and Technology, Amravati. • Selected in Top 200 Project out of 1000 project enlisted for the competition.	Mr. Bhushan Behede
10	2022-23	Ms. Neha Patil, Mr. Prathamesh Deore, Mr. Siddesh Dalal	• Participation in 3rd International Conference on "Advancement in Materials Processing Technology", 13th – 14th July, 2023, NIT Jamshedpur. • Presented research paper entitled *Computational analysis of pin fin to study the effect of temperature and fin material*	Dr. Hitesh Thakare
11	2023-24	Ms. Neha Patil, Mr. Prathamesh Deore, Mr. Siddesh Dalal, Mr. Gaurav Salunke	• Participation in International Conference "Energy Materials and Rechargeable Batteries", 19th – 22nd December 2023, School of Sciences (Physics) & University Instrumentation Centre, Manav Rachna University, Faridabad, Haryana. • Presented paper entitled *Experimental & Computational Analysis of radiator for heat transfer performance using nanofluids: a comprehensive review*	Dr. Hitesh Thakare
12	2023-24	Ms. Aanchal Pardeshi, Mr. Saurabh Kadam, Mr. Aditya Gharde, Mr. Rushikesh Chavan	• Participation in International Conference "Energy Materials and Rechargeable Batteries", 19th – 22nd December 2023, School of Sciences (Physics) & University Instrumentation Centre, Manav Rachna University, Faridabad, Haryana. • Presented paper entitled *Numerical simulation of various channel modifications using nanofluids for heat transfer augmentation: a comprehensive review*	Dr. Hitesh Thakare
13	2023-24	Mr. Aditya Gharde, Mr. Jay Shinde, Mr. Vedant Tandale, Ms. Aanchal Pardeshi	• Participated in Live Industrial Energy Audit Project at Sanyo Special Steel Manufacturing India Ltd., Mumbai. 10th – 15th October 2023.	Dr. Hitesh Thakare
14	2023-24	Mr. Chaitanya Wankhede Mr. Harish Patil	• Participated in Energy Audit Project at ONGC PAL, Dahej, Gujarat. • Participated in Energy Audit Project at Century Enka, Pune.	Dr. Hitesh Thakare



Eco Kart 2019 - Virtual round via online conferencing at SVKM's IOT, Dhule



Eco Kart 2019 - Team S-Falcons with award and trophy, 06th – 08th April 2019

Best Mentor certificate for faculty Mr. Yogesh Sonawane during ECO KART Series 2019

Ecokart Series

CERTIFICATE
OF PARTICIPATION

PRESENTED TO
Akshay Newadkar
FROM
SVKM's IOT,Dhule

FOR PARTICIPATING IN THE DYNAMIC ROUND OF ECO KART 2019
This certifcate has been awarded to the aforementioned, for their contribution in their team which has participated in the Final Round (The Dynamic Round) of Eco Kart 2019, the fifth season of Eco Kart Series held in April 2019 at Gautam Buddha University, Greater Noida .

Mr. Akhil Jain
Co- Founder
Eco Kart Series

Mr. Ankit Kumar
Founder - President
Eco Kart Series

ECO KART SERIES
Issue Date and Stamp
06 APR 2019

To Validate this Certificate go to : www.ecokart.in/certificates/2019/dynamic/20192050196 .pdf

Eco Kart 2019 - Members of Team S-Falcons at GBU, Greater Noida

Eco Kart 2019 - Supporting staff of SVKM's IOT Dhule

Team E-torc awarded as the Best Team in EBRC- E bike racing challenge organized by AMT MotoCorp during 13 Jan to 16 Jan 2020, held at O.P. Jindal University, Raigarh, Chhattisgarh

Dr. Babasaheb Ambedkar Technological University Lonere, Raigad
State Technical University, Maharashtra Act No. XXIX of 2014
डॉ. बाबासाहेब आंबेडकर तंत्रशास्त्र विद्यापीठ लोणेरे, रायगड
Avishkar 2019

Award of Excellence

RAHUL SANJAY SHARMA

This is to certify that you are selected first/second in Discipline ET and Category UG at University level round of Avishkar 2019 held at Dr. Babasaheb Ambedkar Technological University Lonere, Raigad on 03.1 20

Dr. M. Sadaiah
Registrar

Team MARS

Sanjay Khobragade
Prof. in Charge

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University of Mumbai

Avishkar 2019-20
14th Maharashtra State
Inter-University Research Convention
January 28-31, 2020

Certificate of Participation

This is to certify that **Mr. Sharma Rahul Sanjay** of **Dr. Babasaheb Ambedkar Technological University, Lonere, Dist.-Raigad** has participated and presented a research project titled **Design and manufacturing of novel E-Vehicles** in **Engineering and Technology** category and **UG** level at the 14th Maharashtra State Inter-University Avishkar Research Convention: 2019-20 organized by University of Mumbai on January 28-31, 2020.

Kalina, Mumbai
January 31, 2020

Prof. Suhas Pednekar
Vice-Chancellor,
University of Mumbai

Prof. Ravindra Kulkarni
Pro Vice-Chancellor,
University of Mumbai

Dr. Ajay Deshmukh
Registrar,
University of Mumbai

Dr. Sunil Patil
Director,
Department of Students' Development,
University of Mumbai and
Organizing Secretary

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Mr. Rahul Sharma – Runner Up at University Level of DBATU Avishkar Project Competition & Selected for State Level, 03rd January 2020

Technocrats Electrical Go kart championship (TEGKC), 13th January to 15th February 2020, held at TIT & S, Bhopal, Madhya Pradesh

National Electric Kart Championship (NEKC) 2020, Season 3.0, 2nd to 5th Mar 2020, held at National Institute of Design, Bhopal and MSME Technology Centre, Bhopal.



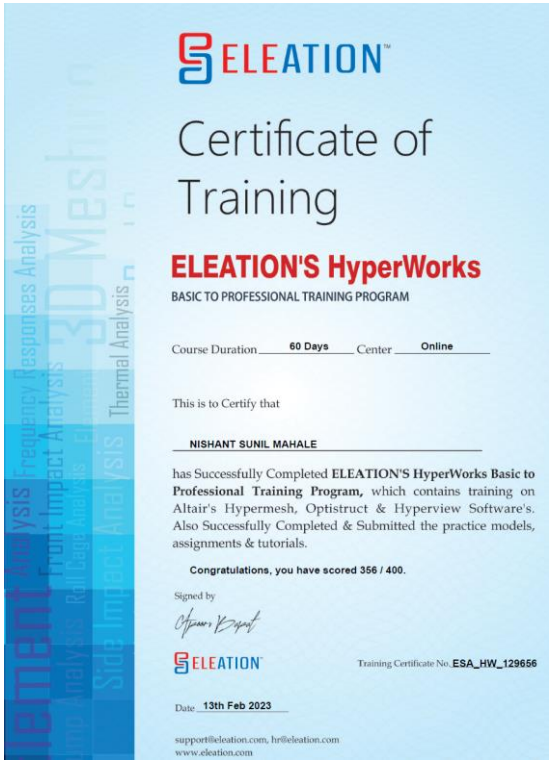

All India Rank #2 in 7th Aero Design Challenge in Best Aerodynamic Analysis (CFD) in Micro Class, SAEINDIA Southern Section


District Level 1st Prize in DTE District Level Project Competition organized by Government Polytechnic Dhule and DTE RO Nashik, 11th March 2022

5. Self-Learning

- Students are motivated by faculty to learn courses by self-study through diverse platforms such as SWAYAM, NPTEL, Spoken Tutorial, Coursera etc.
- Such courses help the student to learn at their own pace as well submit the assignments on timely basis.

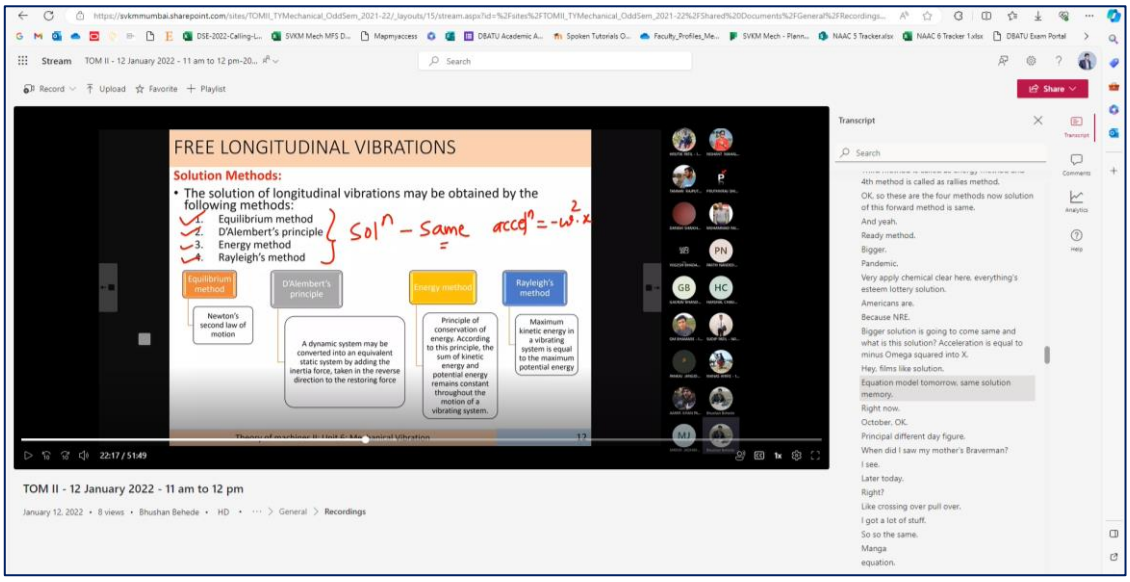
Elite Certificate awarded to Mr. Bhanudas Kapadne for NPTEL Course

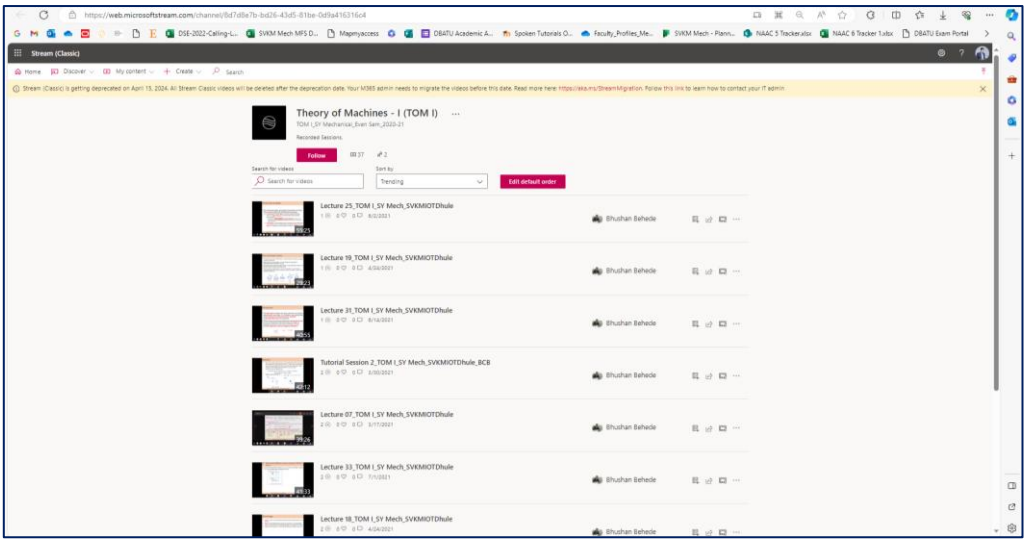


Certificate awarded to Mr. Nishant Mahale for ELEATION's Hyperworks Course

6. Video lectures developed by faculty

- Faculty have developed video lectures for various topics / subjects as per the requirement from the students.
- These videos can also include practical sessions.
- Such video lectures help the students to revise the course content after the college hours / during preparation of oral / practical or university exams.
- Preparation of such lectures also poses constructive challenge to the faculty to encourage them to learn additional teaching tools.





Snapshot of online learning material developed by faculty Mr. Bhushan Behede for Theory of Machines, assigned by DBATU

(https://web.microsoftstream.com/channel/8d7d8e7b-bd26-43d5-81be-0d9a416316c4)

Summary of Video Lectures developed by the faculty

Sr. No.	Name of Faculty	Subject for which video lectures have been prepared	Video Lectures available through platform
1	Mr. Bhushan Behede	• Theory of Machine I • Theory of Machine II • Machine Design & CAD • Manufacturing Processes II	(https://web.microsoftstream.com/channel/8d7d8e7b-bd26-43d5-81be-0d9a416316c4)
2	Dr. Hitesh Thakare	• Heat Transfer • Heat Transfer Lab • Machine Design II	YouTube Channel (1398) Dr. Hitesh Thakare - YouTube

7. Industrial Visits

- To obtain the understanding of real-life industrial system is an essential aspect of teaching learning process. This helps the students to understand minute aspects and parameters affecting the functioning and operation of industrial systems.
- Such visits also help the student to recognize practical challenges in industry through real-time interaction with industrial personnel.
- Technical education inputs can go close to reality if students get opportunity to work in actual real-life situations such as industry or field.
- Industry visit is a very valuable input in the whole academic activities of teaching learning process. For this method to be used fruitfully, teacher or institute has to have good relationship with industries. It gives a real-world experience to students.
- When it comes to appreciation of complexity of engineering/ field situation for developing better understanding and to relate inputs in classroom or laboratory, industry and field visits can be very helpful. This experience also helps to develop motivation, appreciation and soft skills amongst students.

Visit to Hydraulics & Pneumatics Laboratory at NMIMS, Shirpur

Details of industrial visits organized by the department

Sr. No.	Date of visit	Name of Industry Visited	Coordinator	Target subject / Topic (If any)	No. of Students visited
1	16/04/2024	Vasudhara Milk Processing Plant, MIDC Dhule	Mr. Dattatray Doifode Dr. Hitesh Thakare	Refrigeration and Air Conditioning	43
2	09/03/2024	Sahyadri Farms, Nashik	Mr. Dattatray Doifode	Refrigeration and Air Conditioning	12
3	02/12/2023	Burhani Ice Factory, Dhule	Mr. Dattatray Doifode	Refrigeration and Air Conditioning	16
4	02/12/2023	Shivshambhu Milk Chilling Plant, Dhule	Mr. Dattatray Doifode	Refrigeration and Air Conditioning	16
5	30/10/2023	Field visit for a cargo truck, SVKM Campus	Mr. Yogesh Sonawane	Automobile Engineering	54
6	25/05/2023	Vaitarana Hydroelectric Power Plant, Vaitarana, Nashik	Mr. Yogesh Sonawane, Mr. Bhushan Behede Mr. Dhiraj Bhandarkar Mr. Satish Patil	Renewable Energy Sources	80
7	25/05/2023	School of Artillery, Deolali, Nashik		I C Engine	80
8	24/02/2023	ORCHID Cooling & Cleaning Pvt. Ltd., MIDC Ambad, Nashik	Mr. Dattatray Doifode	Refrigeration and Air Conditioning	09
9	13/12/2022	Jain Irrigation Systems Ltd. Jalgaon	Mr. Yogesh Sonawane Dr. Modassir Hussain Mr. Bhushan Behede	Solar Energy	82
10	30/11/2022	Hydraulics & Pneumatics Lab, NMIMS, Shirpur.	Dr. Modassir Hussain	Mechatronics	08
11	10/06/2022	ST Workshop, MIDC Awadhan, Dhule	Mr. Yogesh Sonawane Mr. Dhiraj Bhandarkar Mr. Bhushan Behede	I C Engine	45
12	07/06/2022	Nitiraj Industries Pvt. Ltd., MIDC Dhule	Mr. Dhiraj Bhandarkar Dr. Amol Badgujar	Metrology & Quality Control Lab Manufacturing Processes II	46
13	25/05/2022	Air Conditioning plant of SVKM's IOT Dhule	Mr. Dattatray Doifode Mr. Bhushan Behede	Applied Thermodynamics	41
14	25/05/2022	Rooftop Solar PV Plant of SVKM's IOT Dhule	Mr. Bhushan Behede Mr. Dattatray Doifode	Solar Energy	41
15	10/01/2022	Maharashtra Oil Extraction Ltd. MIDC Awadhan, Dhule	Mr. Dattatray Doifode Dr. Hitesh Thakare	Applied Thermodynamics	45
16	18/12/2021	Hydraulics & Pneumatics Lab NMIMS, Shirpur.	Mr. Mohd. Juneduddin	Product Design Engineering	30
17	06/09/2019	Eklahare Thermal Power Plant, Nashik	Mr. Dattatray Doifode	Applied Thermodynamics – I	31

Industrial Visit at Thermal Power Station, Eklahare, Nashik, 06/09/2019

Industrial Visit at Maharashtra Oil Extraction Pvt. Ltd., MIDC Dhule. 10/01/2022

Industrial visit to Jain Irrigation Systems Ltd. Jalgaon. 13/12/2022

Industrial visit to Vasudhara Milk Processing Plant (Amul), MIDC Dhule. 16/04/2024

8. Open Ended Assignments

- Course coordinator design open ended assignments such that thinking process of the students is challenged and they are required to think out of the box.
- Such assignment questions can have different answers for every student.
- Students may need to seek new data / observations in order to complete the assignment.
- This assignment is also a mandatory part of internal assessment of the students.

Open Ended Assignment
Subject: Fluid Mechanics (BTMC303)

Question for Open Ended Assignment

1. **Utilize any online tool available for the calculation for Specific speed for pump for varying flow rate along with rotational speed of pump and discharge of pump.**

Specific Speed is a number characterizing the type of impeller in pump in a unique and coherent manner. Specific speed is determined independent of the pump size and can be useful when comparing different pump designs.

- Specific Speed identifies the geometrically similarity of pumps

Specific speed can be expressed as

$$N_s = n\, q^{1/2} / h^{3/4} \qquad (1)$$

Where,

N_s = *specific speed*
n = *pump shaft rotational speed (rpm)*
q = *flow rate (m^3/h, l/s, l/min, m^3/min, US gpm, British gpm) at Best Efficiency Point (BEP)*
h = *head rise (m, ft)*

Typical values for specific speed - N_s - for different designs in US units *(US gpm, ft)*

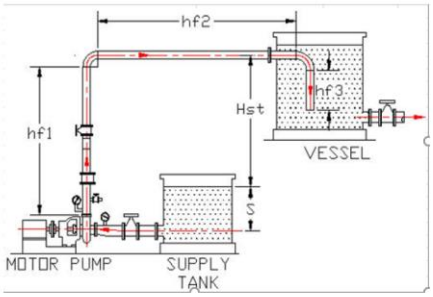


Figure 1 Process pump and piping.

Open Ended Assignment of Fluid Mechanics

SVKM's Institute of Technology, Dhule
Department of Mechanical Engineering
Open Ended Assignment

Subject & Code – Energy Conservation and Management (BTMOE605C)
Sem.: 6 **AY –** 2022 – 23 **Faculty –** Dr Hitesh Thakare **Date:** 29.05.2023

Q. No.	Problem Statement	BL	Marks
4.1	Steam pipeline 100 mm diameter is not insulated for 100-meter length supplying steam at 10 kg/cm^2 to the equipment. Find out the fuel savings if it is properly insulated with 65 mm insulating material. Assumptions: **Boiler efficiency – 80% + (Student roll no./10)** E.g., Roll No. 36 → Boiler efficiency = 80% + 36/10 = 83.6% **Fuel Oil cost – (Rs. 15,000 + Student Roll No. x 10) /tonne,** E.g., Roll No. 22 → Fuel Oil Cost = 15,000 + 22 x 10 = 15,220/ tonne Surface temperature without insulation – 170°C, Surface temperature after insulation – 65°C, Ambient temperature – 25°C.	L3 Apply	5
5.1	Students of TY Mechanical of SVKM's IOT Dhule surveyed the department for improvement in lighting system & observed that there are FTL T12 Tube lights installed. Provide the techno-economic analysis of lighting system energy conservation in the following format if these FTL T12 are replaced with LEDs. Also, search the internet to explain technical details of FTL T12 and LED.	L3 Apply	5

Parameter	Value	Unit
Existing Fittings		
No. of FTL T12 lamps installed		No.
Wattage of these lamps		W
Wattage Consumed		
No. of lamps x Wattage		kW
Average operating hours per day		Hrs/day
Total energy consumed by operating the lights		kWh/day
No. of operating days / year		
Average energy consumption by operating the lights		kWh/year
Proposed Option		
Replacement of all ___ No. of ____ W FTL T12 with 28 W LED Lamps		Nos.
Total energy consumed by operating with LED		kW
Average operating hours per day		Hrs/day
Total energy consumed by operating the lights		kWh/day
Average energy consumption by operating the lights		kWh/year
Savings		
Total energy reduction per annum		kWh/year
Annual Monetary Savings @ Rs. 10/kWh		
Investment Required @ _____ Rs. /Lamp		Rs.
Simple Payback Period		Years
		Months
		Days

Location for Question 5.1

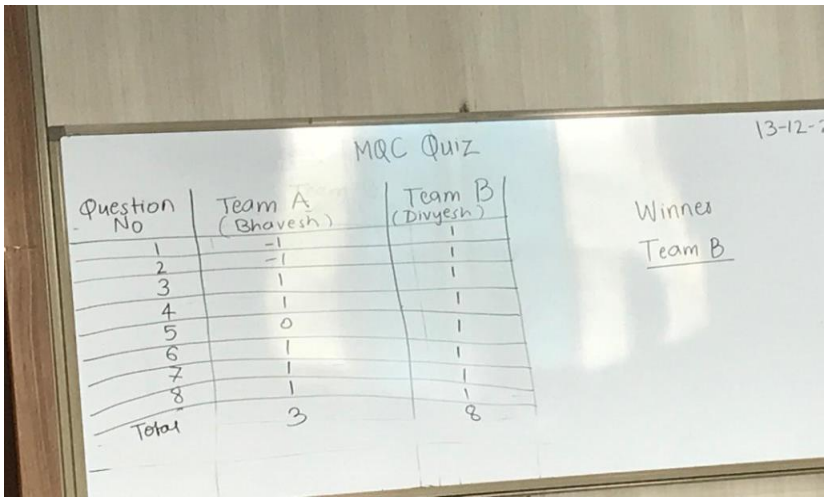
Roll No. 1 – 10	Classroom No. 310	Roll No. 21 – 30	CAD Lab
Roll No. 11 – 20	Classroom No. 311	Roll No. 31 – 42	Heat Transfer Lab

Course Coordinator **Module Coordinator** **Program Coordinator**

Snapshot of Open-Ended Assignment for ECM

9. Conduction of Quiz

- This method helps the student to identify and apply the content from his learning instantaneously in a short span of time.
- This is useful in situations when a key piece of data is needed to solve the problem & provide the solution.
- Quiz conduction helps to revise various important concepts of a monotonous subject.
- Properly designed and conducted games incorporate several principles of learning such as reinforcement, recognition and rewards for positive learning, feedback for improvement, purposeful and joyful learning without anxiety and learning to win.
- The games create a sense of responsibility for self-learning and feedback for improvement.
- Different teams of students ask questions to the other team and whichever team has answered highest number of questions, wins in the end.



Quiz activity conducted by Dr. Amol Badgujar for Metrology and Quality Control

10. Paper publication through student projects

- Best Projects are identified considering novelty of ideas/innovation, societal needs of the project, IPR/ Copyright/ Publication / Conference Presentation / Competition performance and appreciation letter is provided to such students. The department encourages students to participate in various Project Competitions and supports them for travel and registrations.
- The achievements of students based on their academic projects are as summarized in the following table.

Sr. No.	Name of Students	Title of the Project	Achievements / Accomplishments
1	Patil Neha Dileep Deore Prathamesh Dasharath Dalal Siddesh Nitin Salunke Gaurav Pravin	CFD Analysis of Automotive Radiator	Presented a Paper Titled "Computational Simulation of Radiator for Heat Transfer Performance Using Nanofluids: a review" at International Conference on Energy Materials and Rechargeable Batteries 2023, organized by Manav Rachna University Faridabad on December 19-22,2023
2	Aanchal Satish Kadam Saurabh Vijay Aditya Gharde Rushikesh Chavan	Numerical simulation of various channel modifications using nanofluids for heat transfer augmentation	Presented a Paper Titled "Numerical simulation of various channel modifications using nanofluids for heat transfer augmentation: a review" at International Conference on Energy Materials and Rechargeable Batteries 2023, organized by Manav Rachna University Faridabad on December 19-22,2023
3	Hatim Lokhandwala Vishv Sonar Faiz Nuruddin Shaikh Salunke Akshay Jitendra	Effect of 3D Printing parameters on Mechanical Properties of 3D Printed POM	Participated in Institute level Avishkar 2023-24 (Research Competition) held at SVKM's Institute of Technology, Dhule on November 3, 2023.
4	Patil Harish Rajesh Gunvant Dinkar Patil Mahale Akshay Rajendra Sonar Kiran Sanjay	Indoor Farming Hydroponic Plant Grow Chamber	Participated in Zonal level Avishkar 2023-24 (Research Competition) held at Shri Sant Gadge Baba College Of Engineering And Technology, Bhusawal on 26 November, 2023.
5	Deepak Panjwani Vedant Tandale Rushikesh Pawar Pratik Marathe	Dome Shaped Solar Water Desalination System	Participated in Institute level Avishkar 2023-24 (Research Competition) held at SVKM's Institute of Technology, Dhule on November 3, 2023.
6	Tushar Jaware Pathan Aleem Khan Arif Khan Shimpi Devraj Ganesh Tamboli Azhan Ajaz	Design and Fabrication of Solar Based Water Purifier	Participated in Institute level Avishkar 2023-24 (Research Competition) held at SVKM's Institute of Technology, Dhule on November 3, 2023.
7	Dalal Siddesh Nitin Patil Neha Dileep	CFD Analysis of various fin configurations	Presented a Paper Titled "Computational analysis of pin fin to study the effect of

	Deore Prathmesh Dasharath		temperature and fin material" at International Conference on Advancement in Materials Processing Technology (AMPT) 2023, organized by National Institute of Technology Jamshedpur on July 13-14,2023
8	Bhatu Santosh Patil Anushree Sanjay Patil Dipak Ukha Patil Yogesh Bhausaheb Bhadane	IoT Based Energy Management System	Participated in Institute level Avishkar 2022 (Research Competition) held at SVKM's Institute of Technology, Dhule on November 19, 2022.
9	Bhavesh Kishor Deore Kunal Ravindra Karankal Rohit Sudhakar Patil Pranav Kishor Gujar	Design Fabrication CFD Analysis and Experimental Analysis of Different Fin Configuration	Presented a Paper Titled "Computational analysis of various fin configurations – a comprehensive assessment" at International Conference on Advancement in Materials Processing Technology (AMPT) 2023, organized by National Institute of Technology Jamshedpur on July 13-14,2023.
10	Tejas Shrikant Wani Mayureshwar Hitendra More Jay Vilas Chaudhari Nishant Sunil Mahale	Energy Audit of Educational Institute and Process Industry	Presented a Paper Titled "Energy Performance Assessment of Industries and Building: A Review of State of The Art " at International Conference on Advancement in Materials Processing Technology (AMPT) 2023, organized by National Institute of Technology Jamshedpur on July 13-14,2023.
11	Chinmay Satish Chitte Sumeet Anand Pandey Manas Pravin Ahire Pankaj Mahesh Jangid	Design and Fabrication of Experimental Set-up of Desiccant Rotor Dehumidifier	Participated in State-level Project Exhibition cum Competition (DIPEX 2023) held at Sipna College of Engineering and Technology, Amaravati, Maharashtra on April 7-9, 2023.
12	Kais Shaikh Aabid Husain Quazi Aamir Khan Ajit Patil	Design and Fabrication of Sieving Machine for Agricultural Purpose	Participated in Institute level Avishkar 2022 (Research Competition) held at SVKM's Institute of Technology, Dhule on November 19, 2022.
13	Gaurav Sanjay Bhandarkar Roshan Kishor Otari Sumit Rajesh Bagul Rahul Rajendra Patil	Design and fabrication of Leaf Collector	Participated in Institute level Avishkar 2022 (Research Competition) held at SVKM's Institute of Technology, Dhule on November 19, 2022.
14	Yogesh Bhikan Mali Sanoop Nagpure Tanmay Rajput Prathamesh Sonawane	Fabrication of Chainless Self Charging E-bicycle	Participated in Institute level Avishkar 2022 (Research Competition) held at SVKM's Institute of Technology, Dhule on November 19, 2022.
15	Patil Hrutik Pramod Patil Sudip Sunil Patil Pradyumna Vilasrao Bhamare Om Madhukar	Development of Metal Oxide based thin film solar cell	Participated in Institute level Avishkar 2022 (Research Competition) held at SVKM's Institute of Technology, Dhule on November 19, 2022.

16	Mansoori Sarfraz Muhammad Islam Kolapkar Varad Laxman Prasad Rajan Chulhai Shaikh Mohammad Noman Shaikh Mahemood	Investigation of Gross Calorific Value of different Agroforestry Species of SVKM'S Dhule Campus	Received First Prize in District Level Project Competition Organized by SVKM's Institute of Technology in association with DTE Regional Office Nashik and Government Polytechnic Dhule on 11th March 2022.
17	Gaurav Patil, Khushal Chaudhari Mayur Shinde Kamlesh Thakare	Development of Aluminosilicate Zeolite based Desiccants for Rotary Dehumidifiers	Paper titled "Synthesis of Aluminosilicate Zeolite Based Desiccants for Rotary Dehumidifier" presented at National Conference on Innovation in Science, Engineering, and Management 2022, organized by G. H. Raisoni Institute of Business Management, Jalgaon On April 30, 2022
18	Dipali Varade Ruchita Ahire Harshada Jagtap Om Ahirrao	Development of Anticorrosive Coating for Ice Can	Paper titled "Calculations and Analysis of Corrosion Rate and Different Types of Coatings" presented at National Conference on Innovation in Science, Engineering, and Management 2022, organized by G. H. Raisoni Institute of Business Management, Jalgaon On April 30, 2022
19	Shubham Pramod Bhokardole, Patil Pushkar Sajan,	Rocker Bogie Tank Mechanism.	Presented and published research paper in "International Conference on Recent Advances in Engineering Science & Technology (ICRAEST-2021, Organized by Godavari College of Engineering & Polytechnic, Jalgaon on July 16, 2021.
20	Shoaibuddin Alimoddin Kazi, Aatif Rafik Pinjari, Shah Shahnawaz Mukhtar, Shaikh Taukeer Shaikh Farooque, Ansari Md Anas Akhtar Husain,	Solar Water Purification System	Published Paper titled "Design and Analysis of Solar Water Purification System" in "International Research Journal of Engineering and Technology (IRJET)" (ISSN: 2395-0056)-Volume-8, Issue-8

स्वातंत्र्याचा अमृत महोत्सव

DISTRICT LEVEL PROJECT COMPETITION

CERTIFICATE

This Certificate is presented to

Prasad Rajan Chulhai

From SVKM's Institute of Technology, Dhule

for Winner/~~Runner-up/Second Runner-up/Participation.~~

in "District Level Project Competition"

In Association with DTE, Regional Office Nashik & Shikshan Maharshi Dadasaheb Rawal, Government Polytechnic, Dhule On 11th March 2022 ,

Organized by Shri Vile Parle Kelavani Mandal's Institute of Technology, Dhule.

Dr. Hitesh Thakare, Coordinator, SVKM's Institute of Technology, Dhule
Dr. P.G. Gadhari, HOD, Mechanical Engg, S.M.D.R. Government Polytechnic, Dhule
Dr. R.G.Wadekar, Principal, S.M.D.R. Government Polytechnic, Dhule
Dr. Nilesh Salunke, Principal, SVKM's Institute of Technology, Dhule

स्वातंत्र्याचा अमृत महोत्सव

DISTRICT LEVEL PROJECT COMPETITION

CERTIFICATE

This Certificate is presented to

Mansoori Sarfraj MD Islam

From SVKM's Institute of Technology, Dhule

for Winner/~~Runner-up/Second Runner-up/Participation~~

in "District Level Project Competition"

In Association with DTE, Regional Office Nashik & Shikshan Maharshi Dadasaheb Rawal, Government Polytechnic, Dhule On 11th March 2022 ,

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Dr. R.G.Wadekar, Principal, S.M.D.R. Government Polytechnic, Dhule
Dr. Nilesh Salunke, Principal, SVKM's Institute of Technology, Dhule

Final year student project group as Winner of in DTE District Level Project Competition

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Organized

1st National Conference on Innovation in Science, Engineering and Management (NC-ISEM-2K22)

PARTICIPATION CERTIFICATE

This is to certify that Mr/Ms/Dr. **Ruchita Satish Ahire, Harshada Shamkant Jagtap, Om Machindra Ahirrao, Dipali Bharatarinath Varade** has participated/presented a paper entitled **CALCULATIONS AND ANALYSIS OF CORROSION RATE AND DIFFERENT TYPES OF COATINGS** in 1st National Conference on Innovation in Science, Engineering and Management 2K22. Paper awarded with --

Prof Saurabh Gupta, Co-ordinator
Prof Bipasa Patra, Co-ordinator
Dr. Jyoti Jakhete, Co-ordinator
Dr. Pranav Charkha, Dean Academics, GHRIBM,Jalgaon
Dr. Preeti Agarwal, Director, GHRIBM,Jalgaon

Student's participation in National Conference at GHRIBM Jalgaon

Ref. No. AMPT2023/14

CERTIFICATE

This is to certify that Mr/Miss/Mrs Dr Hitesh R. Thakare, Jay Chaudhari, Mayureshwar More, Nishant Mahale, Tejas Wani

From **SVKM's IOT Dhule, Maharashtra**

has given presentation successfully on **Energy Performance Assessment of Industries and Building: A Review of State of The Art**

AMPT 2023

In International Conference

Advancement in Materials Processing Technology (AMPT) 2023

during 13th – 14th july 2023

organized by

Department of Metallurgical and Materials Engineering

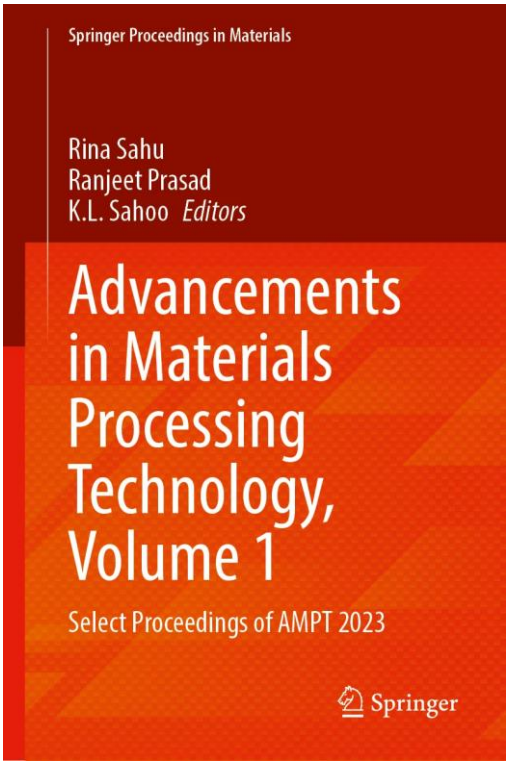
NATIONAL INSTITUTE OF TECHNOLOGY JAMSHEDPUR

Dr Ranjit Prasad
Chairperson

Dr Rina Sahu
Convener

Dr Ram Krishna
Organizing Secretary

Student's participation in International Conference at NIT Jamshedpur



Author Proof

Computational Analysis of Various Fin Configurations—A Comprehensive Assessment

Hitesh R. Thakare, Nilesh P. Salunke, Bhavesh Deore, Kunal Karankal, Pranav Gujar, and Rohit Patil

1 Introduction

1.1 Importance of Fins as Extended Surfaces for Heat Transfer

It is well known from the science of heat transfer that fins are helpful to enhance the effective area available for heat interaction and thereby improve the heat transfer coefficient as well as heat transfer rate. Fins are mainly beneficial because they do not require any active source of energy to establish the fluid motion. This mechanism particularly addresses the needs of devices which are located outside such as high-power LED street lamps as well as thin client computers [1]. However, observation of temperature distribution profile of a fin indicates exponential decrement of temperature towards the fin tip, which results in reduced temperature differential between fin and surrounding fluid, thus ultimately reducing the heat transfer rate. Due to high applicability of fins in enhancement of gas side heat transfer coefficient, there has been immense interest in the research pertaining to fin performance improvement. Some notable works which involve study of input power required for array of LEDs [2], fins spacing for large fin arrays [3], providing holes in the fin base of a fin array [4], to name a few.

H. R. Thakare (✉) · N. P. Salunke · B. Deore · K. Karankal · P. Gujar · R. Patil
Department of Mechanical Engineering, SVKM's Institute of Technology, Dhule, Maharashtra 424001, India
e-mail: thakare.hitesh@gmail.com

R. Sahu et al. (eds.), *Advancements in Materials Processing Technology, Volume 1*,
Springer Proceedings in Materials 48, https://doi.org/10.1007/978-981-97-4958-4_12

Book chapter published by students in Springer (Scopus Indexed) as part of their project work

INTERNATIONAL CONFERENCE ON ENERGY MATERIALS AND RECHARGEABLE BATTERIES (ICEMRB)-2023
(DECEMBER 19-22, 2023)

CERTIFICATE OF PRESENTATION

Reference Number: RR 23107 Date: 22/12/2023

This is to certify that Prof./Dr/Mr/Ms. Sanchal Pardeshi from Dept. of Mechanical Eng. SVKM's Institute of Technology, Maharashtra has presented (oral/poster) his/her research work entitled "Numerical Simulation of various channel modifications using nanofluids for heat transfer augmentation: - review." at International Conference on Energy Materials and Rechargeable Batteries organized by the Department of Sciences (Physics) & University Instrumentation Center (UIC), Manav Rachna University (MRU), Faridabad, Haryana, India.

We wish him/her a great success.

Dr. Jitendra Pal Singh, Convener - ICEMRB2023 | Prof. (Dr.) Meena Kapahi, Dean-School of Sciences | Prof. (Dr.) Goldie Gabrani, ED & Dean Research-MRU | Prof. (Dr.) I. K. Bhat, Vice Chancellor-MRU

INTERNATIONAL CONFERENCE ON ENERGY MATERIALS AND RECHARGEABLE BATTERIES (ICEMRB)-2023
(DECEMBER 19-22, 2023)

CERTIFICATE OF PRESENTATION

Reference Number: RR23105 Date: 22/12/2023

This is to certify that Prof./Dr/Mr/Ms. Prathamesh Deore from Dept. of mechanical Eng., SVKM's Institute of Technology, Maharashtra has presented (oral/poster) his/her research work entitled "Computational Simulation of radiator for heat transfer performance using nanofluids: a - - - review" at International Conference on Energy Materials and Rechargeable Batteries organized by the Department of Sciences (Physics) & University Instrumentation Center (UIC), Manav Rachna University (MRU), Faridabad, Haryana, India.

We wish him/her a great success.

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Student's participation in International Conference at Manav Rachna University, Haryana

AICTE SPONSORED CONFERENCE

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February 26th & 27th 2021, Friday & Saturday

IC-AMCE - 2021

Certificate of APPRECIATION

This is to certify that Dr./Mr./Ms. Yashovardhan V. Badgujar has presented / published a SLP length paper with the title Design and Fabrication of Smart Irrigation System Using Solar Energy in the International Conference on Advances In Mechanical & Civil Engineering (IC-AMCE-2021) organized during February, 26th & 27th, 2021 at Thakur College of Engineering and Technology, Kandivali (E), Mumbai.

(Dr. B. K. Mishra)
Principal & Programme Chair

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THAKUR COLLEGE OF ENGINEERING & TECHNOLOGY
Autonomous College Affiliated to University of Mumbai
Approved by All India Council for Technical Education(AICTE) and Government of Maharashtra

Participation of students in International Conference at TCET Mumbai.

11. Hands on Workshops by faculty for students

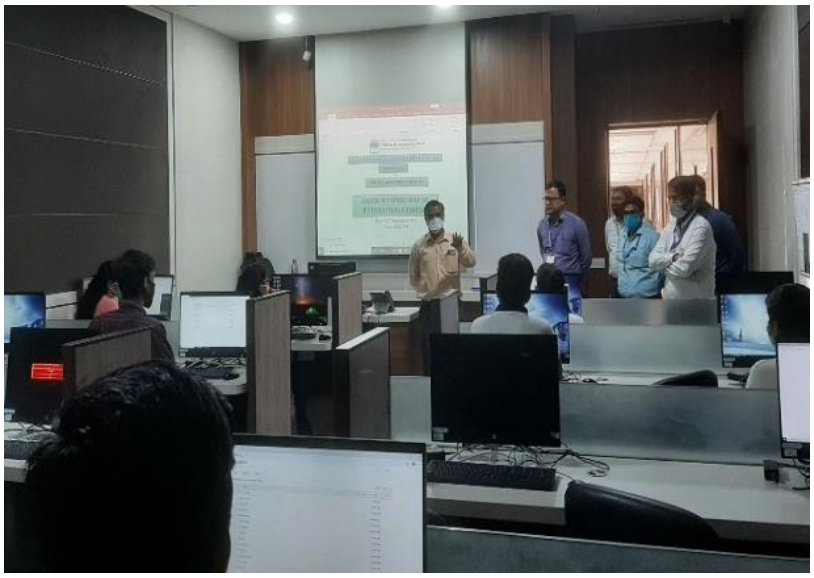
- Faculty members organize and conduct workshops for students, focusing on latest technology/software which are useful in industrial environment.
- This helps the students to improve their practical, technical and psychomotor skills as well as gain practical knowledge in latest technology/software apart from their curriculum through hands-on approach.
- Such workshops are conducted by faculty members free of cost and participation is open to all the students.
- Such workshops are also helpful for the students to secure placements in reputed industries.
- Faculty members take efforts to provide exposure to students to latest useful software of industrial importance.
- Department has received 35 student licenses from Altair Hyperworks. Our faculty Mr. Bhushan Behede has conducted hands on sessions for the final year students for the duration of 35 hours.
- Important details regarding this initiative are summarized in following Table 5.5.6.1.

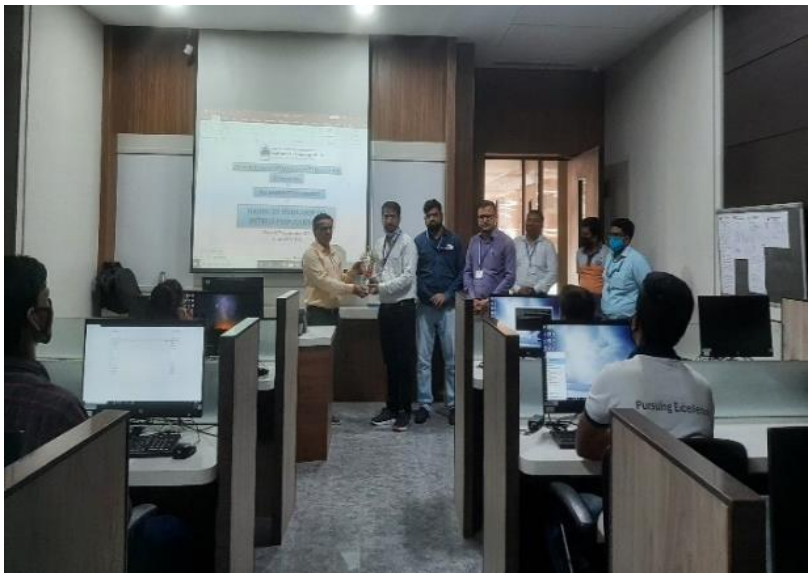
Table 5.5.6.1 Summary of Hands-on Workshops organized by faculty on latest technology

Sr. No.	AY	Name of Workshop	Guiding faculty	No. of students participated	Salient benefits
1	2023-24	Hands-on Workshop on Hypermesh	Mr. Bhushan Behede	30	• 17 students completed Altair One Certification Course • 01 student, Mr. Prathamesh Deore, shortlisted by Altair for Project and subsequent internship. • 03 Students placed in Analyzer CAE Solutions Pvt. Ltd, Pune. 1. Vivek Pawar 2. Prathamesh Deore 3. Siddesh Dalal
2	2023-24	Hands on Sessions on CFD using Ansys	Mr. Mohd. Juneduddin	61	• 01 Project group in AY 2023 – 24 carried out CFD Analysis of Nanofluids. • 02 project groups in AY 2024-25 are carrying out project on CFD Analysis.
3	2022-23	Hands-on Workshop on Hypermesh	Mr. Bhushan Behede	20	06 students placed in ADV Technophiles Private Limited, Pune. 1) Mayureshwar More 2) Nishant Mahale 3) Bhavesh Deore 4) Gaurav Bhandarkar 5) Pranav Gujar 6) Manas Ahire 01 student placed in Analyzer CAE Solutions Pvt.

					Ltd, Pune. – Tejas Wani
4	2022-23	Hands-on Sessions on FEA using Ansys	Mr. Dhiraj Bhandarkar	41	03 students secured Internship with Stipend at Engineering Technique Pvt. Ltd., Ahmedabad. 1. Saurabh Kadam 2. Charudatta Vibhandik 3. Kiran Sonar These students received placement in the same organization.
5	2022-23	Hands-on Workshop on Python Programming	Dr. Amol Badgujar	26	04 Students placed in Careerlabs 1. Dipak Patil 2. Sumit Bagul 3. Bhatu Patil 4. Sumeet Pandey 01 student enrolled for CDAC, Pune - Ankit Patil 01 student enrolled for Master of Science in Business Analytics, UK. – Sudip Patil
6	2021-22	Hands-on Workshop on Python Programming	Mr. Mahesh Dalwani	42	Student placed in Sankey Solution – Ruchita Ahire Students placed in Qualitykiosk 1. Kamlesh Thakare 2. Sushil Patil 3. Nikhil Chaudhari 4. Nilesh Patil 5. Dhiraj Gharate 6. Gaurav Patil Students placed in Wipro 1. Mayur Kothawade 2. Sudeep Bedmutha 3. Kuldeep Sonawane 4. Pratik Deore 5. Chirag Hire 6. Shubham Sharma 7. Mayur Shinde Students placed in Infosys 1. Pranil Sonje 2. Sudeep Bedmutha 3. Kuldeep Sonawane 4. Parth Punjabi 5. Chirag Hire 6. Shubham Sharma 7. Gaurav Patil Students placed in TCS 1. Rohit Mahajan 2. Akshay Patil 3. Shaikh Sohail Ahmed Kaleem Ahmed 4. Shubham Sharma Student placed in Cognizant - Shubham Bhokardole Student placed in ActionHX Solutions, Pune- Rohit Pawar Student placed in vTech Solutions – Parth Punjabi
7	2019-20	Hands on Training Course on	Mr. Mohd. Juneduddin Mr. Rahul	62	• Student participation in E-bike Racing Challenge. TEGKC, NEKC, E – Torc competitions.

		CAD CAM CAE CNC – Design parts in NX 12.0	Ramaswamy & Team		• Placement in Track Components Ltd. Pune – Chavan Bhushan Nandkishor. • Placement in Magna Automotive India – Vipul Bhamare. • Placement in Supernova Water jet Cutting System, Ambad – Mayuresh Patil • Entrepreneurship – Jayesh Mahajan
8	2021-22	Hands on workshop 3D Printing	Mr. Swapnil Potdar	73	Awareness about additive manufacturing technology





Hands-on Workshop on Python Programming by Mr. Mahesh Dalwani,

20th – 30th October 2021

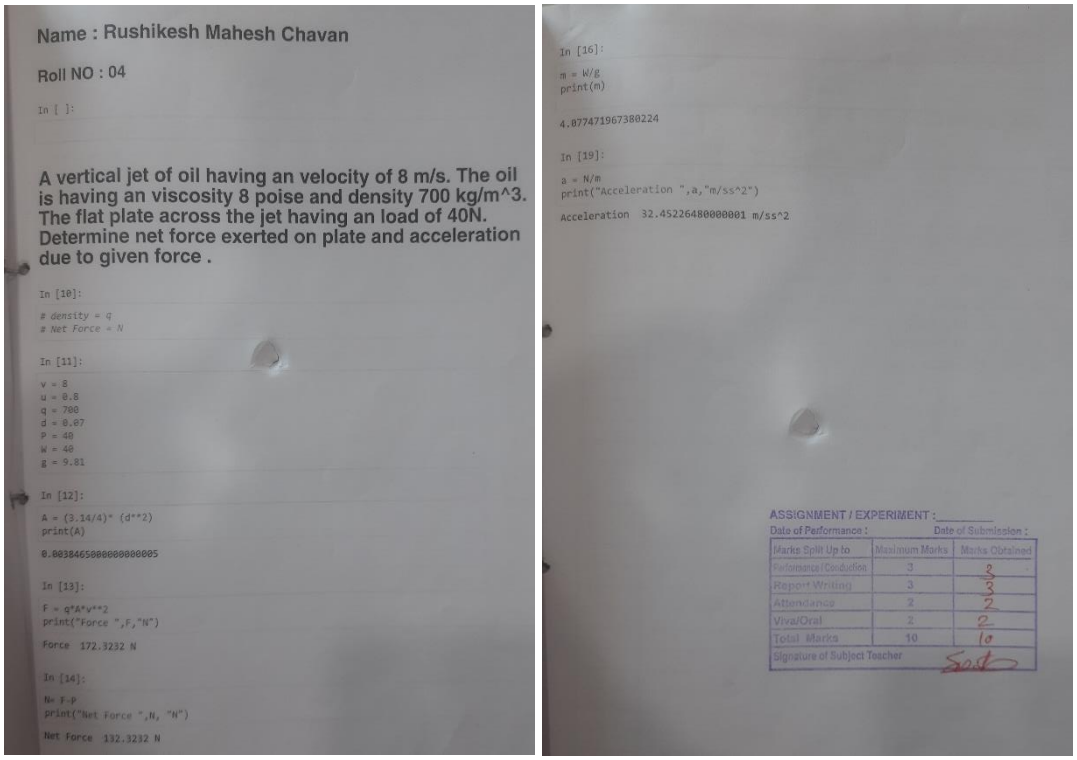
One day 3D printing workshop on 30th December 2021

12. Offering content beyond syllabus through laboratory practical sessions

- Faculty members regularly discuss in PAQIC meetings about possible improvements in the delivery of content beyond syllabus on the basis of
    - Gaps in the syllabus
    - Their educational experience
    - Resources available in the institute
    - Industrial importance of the content
- Faculty members conduct laboratory practical sessions as a part of content beyond syllabus.
- This initiative helps the students to learn application of their technical knowledge through demonstration and experiential learning.
- Summary details of this initiative are presented in Table as follows.

Summary of laboratory sessions conducted by faculty as content beyond syllabus

S.N.	AY	Name of Laboratory	Faculty	No. of students	Salient outcomes
1	2021-22	Fluid Machinery (SY Mech.)	Mr. Satish Patil	30	• Real life demonstration of fluid machinery principles • Problem solution using Python programs
2	2021-22	Python Programming Numerical Methods in Engineering (SY Mech.)	Mr. Mohd. Juneduddin	12	• Improved understanding of programming concepts in the students
3	2022-23	Fluid Machinery (SY Mech.)	Mr. Satish Patil	22	• Real life demonstration of fluid machinery principles • Problem solution using Python programs
4	2022-23	Python Programming Numerical Methods in Engineering (SY Mech.)	Mr. Mohd. Juneduddin	44	• Improved understanding of programming concepts in the students
5	2022-23	Finite Element Analysis Lab (TY Mech.)	Mr. Dhiraj Bhandarkar	41	• Hands on practice of structural analysis problems • Helpful to students in placement process.
6	2022-23	Energy Conservation and Management Lab (TY Mech.)	Dr. Hitesh Thakare	41	• Practical understanding of energy audit practices • 04 students completed 01 Live industrial project on Energy Audit at Sanyo Special Steel Manufacturing India Ltd., Mumbai. 10th – 15th October 2023. • 02 students participated in 01 Live industrial project on Energy Audit at ONGC Petroleum Additives Ltd., Dahej, Gujarat, 05th February 2024 onwards.
7	2023-24	CAD CAM Lab (Final Year Mech.)	Mr. Dhiraj Bhandarkar	41	• Hands on practice of structural analysis problems • Helpful to students in placement process.
8	2023-24	Fluid Machinery (SY Mech.)	Mr. Satish Patil	67	• Real life demonstration of fluid machinery principles • Problem solution using Python programs
9	2023-24	Computational Fluid Dynamics Lab (TY Mech.)	Mr. Mohd. Juneduddin	61	• Hands on practice of thermos-fluid analysis problems. • Projects undertaken by students in the domain of CFD analysis
10	2023-24	Energy Conservation and Management Lab (TY Mech.)	Dr. Hitesh Thakare	61	• Practical understanding of energy audit practices



Name : Rushikesh Mahesh Chavan

Roll NO : 04

A vertical jet of oil having an velocity of 8 m/s. The oil is having an viscosity 8 poise and density 700 kg/m^3. The flat plate across the jet having an load of 40N. Determine net force exerted on plate and acceleration due to given force .

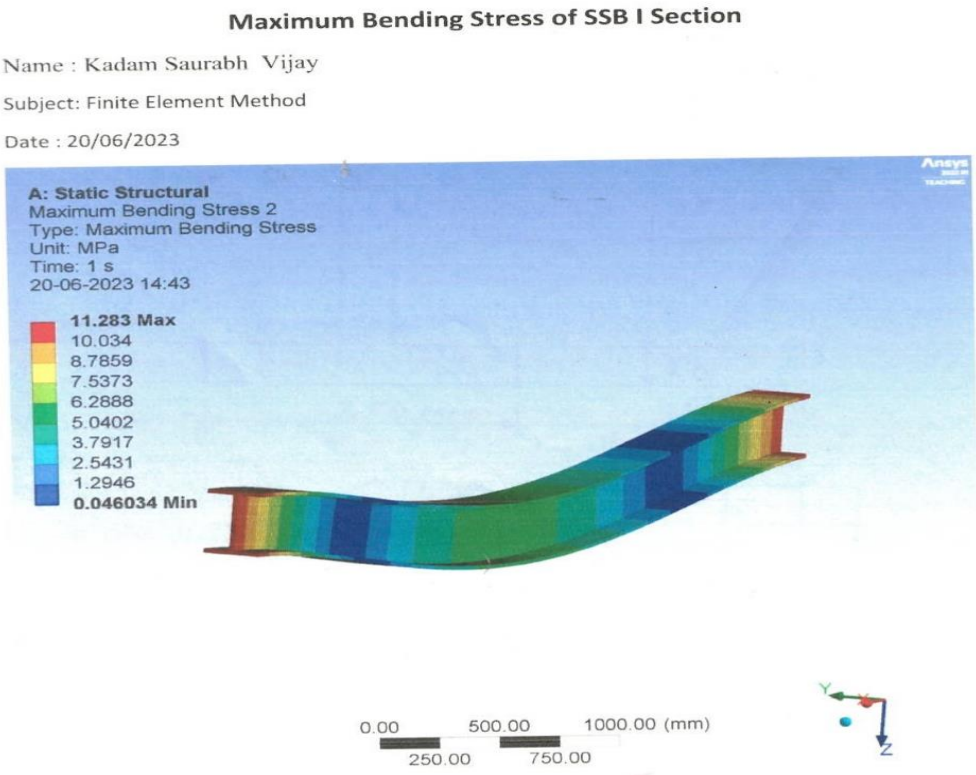
```
In [10]:
# density = q
# Net Force = N

In [11]:
v = 8
u = 0.8
q = 700
d = 0.07
P = 40
W = 40
g = 9.81

In [12]:
A = (3.14/4)* (d**2)
print(A)

0.0038465000000000005

In [13]:
F = q*A*v**2
print("Force ",F,"N")

Force  172.3232 N

In [14]:
N= F-P
print("Net Force ",N, "N")

Net Force  132.3232 N

In [16]:
m = W/g
print(m)

4.077471967380224

In [19]:
a = N/m
print("Acceleration ",a,"m/ss^2")

Acceleration  32.45226480000001 m/ss^2
```

ASSIGNMENT / EXPERIMENT :

Date of Performance : Date of Submission :

Marks Split Up to	Maximum Marks	Marks Obtained
Performance / Conduction	3	3
Report Writing	3	3
Attendance	2	2
Viva/Oral	2	2
Total Marks	10	10
Signature of Subject Teacher		

Python program developed by students for Fluid Machinery practical session



Snapshot of analysis carried out by students in Finite Element Analysis (FEA) Laboratory sessions

ARS

A.R.S. ENERGY AUDITORS

BEE Accredited & Empanelled Energy Auditor Firm, MEDA Class-A Energy Auditor Head
Office Address: A/1, A/101, Pramodini Palace CHS Ltd., Near Air India Colony, Virar (East), Maharashtra, India. Pin Code: - 401 305. Ph. No.: - +91 7507184478.
E-Mail IDs: - sachin.ameya@gmail.com, arskcal@gmail.com
Web- www.arsenergyauditors.com

Ref. 2023-24/1112 **Date: - 06-11-2023**

Certificate for Conducting Energy Audit

To Whomsoever It May Concern

We hereby take this opportunity to express our sincere thanks to **Mr. Aditya Gharde**, Final Year Student, Department of Mechanical Engineering, SVKM's Institute of Technology, Dhule, for his participation to conduct Energy Audit at **Sanyo Special Steel Manufacturing Pvt. Ltd., Khopoli, Maharashtra.**

This energy audit was carried out by him between **10th October to 15th October 2023**. The plant has annual energy consumption of 383,623,515.11 kWh electricity and 3,299,162.23 kCal thermal. The energy audit includes measurements, analysis and reporting of energy conservation measures for Furnace, flue gas analysis, electrical motors. The observations recorded and calculations carried out by **Mr. Aditya Gharde** have been checked, discussed and found appropriate. Based upon recommendations suggested by him, proposal for implementation of various improvements is being assessed and will be further investigated in the imminent future.

We observed him to be sincere, diligent and keen to learn during this energy audit assignment.

We extend our best wishes for his future.

This certificate is being issued to him for his reference and record.

Authorized Signatory

Signature & Seal,

A.R.S. ENERGY AUDITORS VIRAR

SACHIN S. DESHPANDE (AEA0261) B.E.E. GOV. OF INDIA ACCREDITED ENERGY AUDITOR

Mr. Sachin S. Deshpande.
BEE - Empanelled Accredited Energy Auditor, AEA-0261
A.R.S. Energy Auditors, Mumbai. (EmAEA-060)Mob. No. : +917507184478.
E-Mail ID: sachin.ameya@gmail.com arskcal@gmail.com

ECO ENERGY SOLUTION

ECO ENERGY SOLUTION
Energy Audit, PAT Consultancy, Implementation Assistance, Renewable Energy (Saving Heat & Power)

Ref. No: EES/SVKM/2023-24/003 Date: 02.02.2024

To,
Dr. Hitesh Thakare,
SVKM Institute of Technology,
Dhule, Maharashtra

Dear Sir,

With reference to our telephonic conversation, I am writing to you to invite the last year students of Mechanical Engineering of SVKM's Institute of Technology, Dhule, to be involved in the Energy Audit Various Projects, which is being undertaken by Eco Energy Solution, 49/2, Samrat Nagar, Isanpur, Ahmedabad-382443, Gujarat.

We believe that project would be a practical hands on learning experience for your students, as it would allow them to apply their theoretical knowledge in the field of energy auditing. The students will be required to report on site for a duration of about 03 weeks. This will involve gathering data on the site's energy consumption, identifying areas where energy can be saved, and developing a plan to implement energy efficiency measures.

The students who participate in the project/s will be supervised by experienced energy auditor Mr. Pramod Daspute from Eco Energy Solution. They will learn how to conduct energy audits, identify energy savings opportunities, and develop energy efficiency plans.

Tentative Start & End Date – 05/02/2024 onwards 4 months.
No. of Students to be involved – 02

Travel expense to audit site, stay arrangement will be done by Eco Energy Solution, If student do any expense for above EES will reimburse same with submission of necessary bills/documents.

EES is bound with any client with signed Non Discloser Agreements (NDA), If require student can mention experience as EES Client, data/information sharing of any client will be treat as violence of this offer letter. In this scenario students are liable for same applicable terms of liability from client to EES.

EES has to report as Trainee Engineer of EES and required HR/Admin process needs to be follow as per client needs.

Regards

Yours Faithfully

KRUNAL B SHAH – PARTNER
M-9429519778
ECO ENERGY SOLUTION
Date: 02.02.2024

Email: kcalkwh@ecoenergysolution.in , ho@ecoenergysolution.in
Branch Office Address: 702, Purva, Kores Nakshatra, Thane (W), Mumbai, Maharashtra, 400606
Registered Office Address: 49/2, Samrat Nagar, Isanpur, Ahmedabad, Gujarat-382443, M-94295 19778

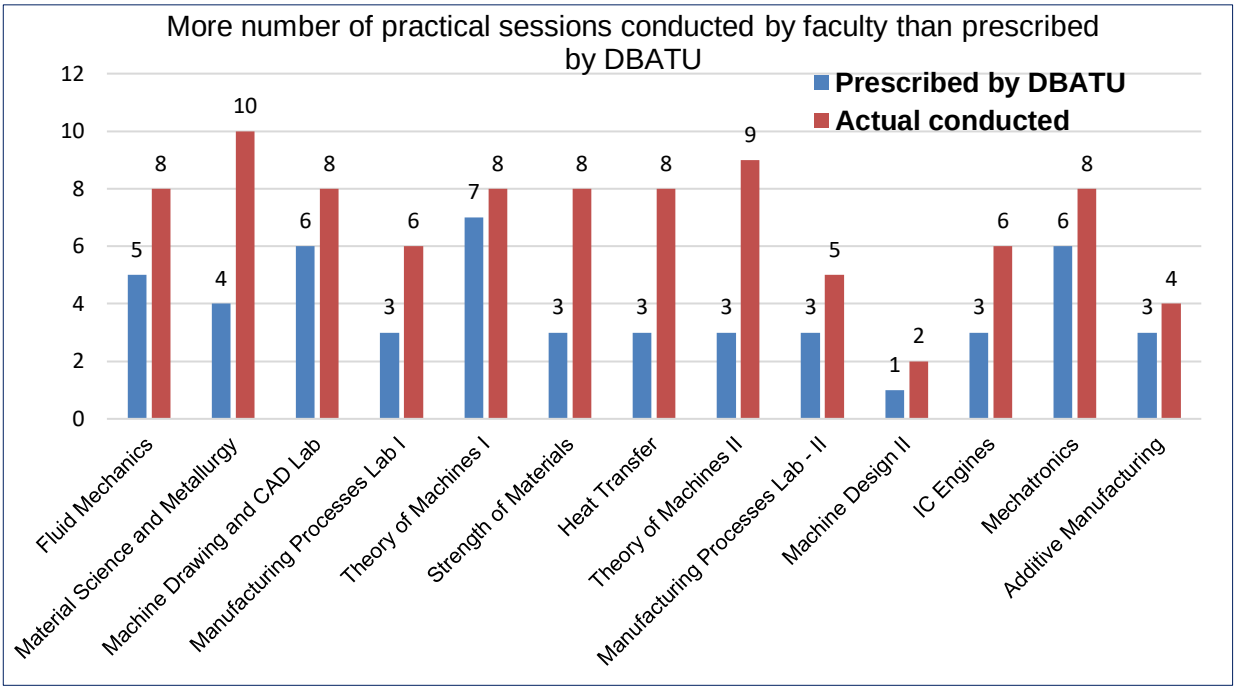
Participation of students in live industrial project on energy audit

13. Conducting additional practical sessions than prescribed in the syllabus

- Sometimes the DBATU syllabus prescribes specified number of practical sessions to be completed by faculty. However, to improve the student's understanding, faculty conducts more practical sessions than that prescribed by DBATU.

Summary of more than prescribed practical sessions conducted

Sr. No.	Semester	Subject	Prescribed no. of practical by DBATU	Actual practical conducted
1	3	Fluid Mechanics	5	8
2	3	Material Science and Metallurgy	4	10
3	3	Machine Drawing and CAD Lab	6	8
4	4	Manufacturing Processes Lab I	3	6
5	4	Theory of Machines I	7	8
6	4	Strength of Materials	3	8
7	5	Heat Transfer	3	8
8	5	Theory of Machines II	3	9
9	6	Manufacturing Processes Lab - II	3	5
10	6	Machine Design II	1	2
11	6	IC Engines	3	6
12	7	Mechatronics	6	8
13	7	Additive Manufacturing	3	4



Visual of additional practical sessions conducted than prescribed by University