ANNUAL REPORT

(2021 - 2022)

Department of Mechanical Engineering

Dr. Babasaheb Ambedkar Technological University

Lonere - 402 103, Dist- Raigad, Maharashtra (India)

CONTENTS

Dr. Neeraj Agrawal
Professor and Head, Department of Mechanical Engineering

1. MESSAGE FROM THE HEAD OF THE DEPARTMENT

STRIVE THE PERFECTION AND REACH TOWARDS THE EXCELLENCE

With the great happiness and pleasure, I herewith present the annual report card of the Department of Mechanical Engineering for the year 2020-21. The Department constantly strives towards excellence and has done the significant progress at all levels; academics, research, innovations and co-curricular activities. The Department strives with the vision to bring the research and innovations even at UG level and motivate the UG students for higher education. The academic spectrum and content delivery adopted by the Department is in-lined with the needs of the industry and profession.

To prepare the true professionals who can take the challenges of life and keep tune with the fast-changing world and Technologies, Department ensures and care the overall development of the students. Students are nurtured, trained and infused with latest Technologies through the well-equipped laboratories and good academic ambience such as design work, project work, industrial training, professional society activities and team work. Department maintain and exhibits research culture through meaningful research and innovation carryout by the Faculty member by involving not only Ph.D./M.Tech students but also B.Tech students.

Students are exposed and prepare for today's job market through expert lectures, visiting technical exhibitions, hands-on experience, model preparation, software learning etc. in addition to regular and rigorous class room teaching by the dedicated and experienced faculty. Students are also encouraged and assisted by the Department to take part in the national level events to enhance their vision. Department has successfully carried out teaching learning process in the most challenging time, COVID 19, through online classes. I take this opportunity to thank all of my learned colleagues and students for their untiring and wholehearted support to maintain the academic standards with the vision to make the Department a centre of excellence in coming years. My best wishes to all the students in their future endeavour.

Dr. Neeraj Agrawal
Head, Department of Mechanical Engineering

2. VISION AND MISSION STATEMENTS OF THE DEPARTMENT

Vision:

The vision of the department is to achieve excellence in teaching, learning, research and transfer of technology and overall development of students

Mission:

Imparting quality education, looking after holistic development of students and conducting need based research and extension.

3. ABOUT THE DEPARTMENT

Established in the year 1992, the Department of Mechanical Engineering offers various academic programs, like B. Tech. (Mechanical Engineering), M. Tech. (Manufacturing Engineering), M. Tech. (Thermal & Fluids Engineering) and Ph.D. The department takes pride in its highly qualified and motivated faculty members most of whom are PhDs from IITs. The alumni of the Department have made a mark in industry and profession. Over the years, the department has maintained good academic and research culture. As a result, the faculty members in the department have published more than 600 papers in peer-reviewed international journals and conferences so far. Further, some of the laboratories have developed innovative products which are being patented for commercial usage. The Department has strong linkages with institutes like IIT Bombay and BARC. In addition, the Department has also conducted several continuing education programs (CEPs) and STTPs for the benefit of faculty and industry personnel.

4. PROGRAM EDUCATIONAL OBJECTIVES (PEOs) & PROGRAM OUTCOMES (POs)

Program Educational Objectives (PEOs)

PEO1	Graduates should excel in engineering positions in industry and other organizations that emphasize design and implementation of engineering systems and devices.
PEO2	Graduates should excel in best post-graduate engineering institutes, reaching advanced degrees in engineering and related discipline.
PEO3	Within several years from graduation, alumni should have established a successful career in an engineering-related multidisciplinary field, leading or participating effectively in interdisciplinary engineering projects, as well as continuously adapting to changing technologies.
PEO4	Graduates are expected to continue personal development through professional study and self-learning.
PEO5	Graduates are expected to be good citizens and cultured human beings, with full appreciation of the importance of professional, ethical and societal responsibilities.

Program Outcomes (POs)

PO1	Apply knowledge of mathematics, science and engineering to analyze, design and evaluate mechanical components and systems using state -of-the-art IT tools.
PO2	Analyze problems of mechanical engineering including thermal, manufacturing and industrial systems to formulate design requirements.
PO3	Design, implement, and evaluate mechanical systems and processes considering public health, safety, cultural, societal and environmental issues.
PO4	Design and conduct experiments using domain knowledge and analyze data to arrive at valid conclusions.

PO5	Apply current techniques, skills, knowledge and computer-based methods & tools to develop mechanical systems.
PO6	Analyze the local and global impact of modern technologies on individual organizations, society and culture.
PO7	Apply knowledge of contemporary issues to investigate and solve problems with a concern for sustainability and eco-friendly environment.
PO8	Exhibit responsibility in professional, ethical, legal, security and social issues.
PO9	Function effectively in teams, in diverse and multidisciplinary areas to accomplish common goals.
PO10	Communicate effectively in diverse groups and exhibit leadership qualities.
PO11	Apply management principles to manage projects in multidisciplinary environment.
PO12	Pursue life-long learning as a means to enhance knowledge and skills.

5. OVERVIEW OF ACADEMIC PROGRAMS

Academic Program		Duration	Intake
B. Tech	Mechanical Engineering	Four Years	54
M. Tech	Manufacturing Engineering	Two Years	16
M. Tech	Thermal Engineering	Two Years	16
Ph. D.	Mechanical Engineering	----	---

5.1 UG Students Statistical Information

Year	Category Wise Distribution								Total		
	Open	OBC	VJNT	SC	ST	SBC	J&K	TFWS	M	F	T
First	15	14	04	05	00	00	00	00	37	1	38
Second	31	18	04	10	02	00	00	00	59	06	65
Third	32	16	10	10	02	01	00	00	63	08	71
Four	24	30	08	12	03	02	00	00	65	14	79

5.2 Result Analysis

B. Tech Pass Out Students' Data (CGPA)	
Pointer	**No. of Students**
8.0-10.0	67
6.8-8	12
<6.8	NIL
Fail	NIL
Total	**79**

5.3 Campus Placements (NA)

Following students from the department have got campus placement during academic year 2021-22 from Training and Placement Cell, DBATU.

Sr. No.	Name of Student	Name of the Company	CTC offered
1	Gaurav Rajendra Khirdikar	Wipro	4.00LPA
2	Nayan Madhav Sarode	TCS	3.5 LPA
3	Shivam Sanjay Kadukar	TCS	3.5LPA
4	Sanket Sanjay Parthe	M&M	6.5 LPA

6. FACULTY AND STAFF

Dr. Neeraj Agrawal

Post: Professor and Head of Department

Education: B. Tech (Mechanical Engg.)
M. Tech. (HVAC&R, Mechanical Engg.)
Ph.D. (Mechanical Engg.)

Dr. V.G. Sargade

Post: Professor

Education: B. Tech. (Mechanical Engg.)

M. Tech. (Mechanical Engg.)

Ph. D. (Mechanical Engg.)

Dr. M. S. Tandale

Post: Professor

Education: B.E. —-– (Mechanical Engg.)

M.Tech. (Mechanical Engg.)

Ph.D. (Mechanical Engg)

Dr. M. Sadaiah

Post: Professor

Education: B.Tech (Mechanical Engg)

M.E(Production Engg

Ph.D. (Manufacturing Engg.)

Dr. R. P. Kate

Post: Professor

Education: B. E. (Mechanical Engg.)

M. Tech. (Energy Systems Engg.)

Ph.D. (Mechanical Engg.)

Dr. H. N. Warhatkar

Post: Professor

Education: B. E. (Mechanical Engg.)

M. Tech. (Mechanical Engg.)

Ph. D. (Mechanical Engg.)

Dr. B. F. Jogi

Post: Professor

Education: B.E. (Mechanical Engg.)

M. Tech. (Manufacturing Technology)

Ph.D. (Nano Materials)

Dr. R. S. Pawade

Post: Associate Professor

Education: B. E. (Mechanical Engg.)

M. E. (Machine Tool Engg.)

Ph.D. (Mechanical Engg.)

Dr. H. S. Joshi

Post: Associate Professor

Education: B.E. Production Engg.

M.E. Mechanical-CAD/CAM

Ph.D. Mechanical Engg.

Dr. G. S. Warkhade

Post: Associate Professor

Education: B.Tech. (Mechanical Engg)

M.Tech. (Thermal and Fluids Engg.)

Ph. D. (Mechanical Engg.)

Dr. D. B. Waghmare

Post: Associate Professor

Education: B. E. (Mechanical Engg.)

M. E. (Mechanical - Production Engg.)

Ph. D. (Mechanical Engg.)

Prof. S. R. Dhale

Post: Assistant Professor

Education:B. E. (Mechanical Engg.)

M. E. (Design Engg.)

Ph.D. Ongoing (Manufacturing Engg.)

Ad-hoc Faculty

Mr. P D Agwane

Post: Assistant Professor

Education: M. Tech (Manufacturing Engg.)

Ph.D. (Mechanical Engg)(Pursuing)

Mr. Neeraj Kulkarni

Post: Assistant Professor

Education: M. Tech (Machine Design)

Ph.D. (Mechanical Engg)(Pursuing)

Mr. Pratik Dange

Post: Assistant Professor

Education: M. Tech (Thermal and fluid Engg.)

Miss. Nivedita Patil

Post: Assistant Professor

Education: B.E. (Mechanical Engg.)

M. Tech (Thermal Engg.)

Technical Supporting Staff

Mr. R. M. Chavan

Post: Lab Technician

Education: C.E.A.(BTE. Mumbai), B.A (Mumbai University)

Experience in Dept: 21 years

Mrs.

Post:
(Tech

Educa
Micro

Exper
years

Mr. A. K. Patil

Post: Lab Assistant

Education: Diploma in Mechanical Engineering

Experience in Dept: 10 years

7. ADDITIONAL RESPONSIBILITIES TO THE FACULTY

Dr. N. Agarwal

- Head, Mechanical Engineering Department.
- Training and Placement Officer
- Faculty Advisor, ISHRAE Local Chapter
- Chairman BOS of Mechanical Department

Dr. M.S. Tandale

- IQAC Coordinator
- CR Processing Officer
- M.Tech Faculty Advisor
- Dept Project Coordinator
- Dean (Skill Development)

Dr. V.G. Sargade

- Dean
- Students' Welfare

Dr. R. S. Pawade

- OSD Regional Center Nagpur
- Coordinator, UGC Cell and Manufacturing Engineering
- Workshop Superintendent

Dr. H. N. Warhatkar

- NSS Coordinator

Dr. B. F. Jogi

- Registrar
- OSD Affiliation as Joint Director Level
- Rector Sahyagiri and Gagangiri Boys Hostel

Dr. G. S. Warkhade

- Procurement Head

Dr. D. B. Waghmare

- Rector, Sahyagiri Hostel

8. ADVISORY BOARD AND BOARD OF STUDIES (BoS)

Advisory Board:

- Prof. Shripad P. Mahulikar
- Dr. Debdatta Ratna
- Mr. Vivek Garg
- Dr. Shendage Dadasaheb J.
- Dr. R. K. Shrivastava
- Mr. Adosh Thomas Varekat

Board of Studies:

Dr Neeraj Agrawal , Chairman

Dr. V. G. Sargade, Member

Dr. A Kumaraswamy, Member

Dr. P. B. Maheshwary, Member

Dr. Rahul Barjibhe, Invitee

Dr. Sanjeev Suryawanshi, Invitee

Dr. R. D. Patil, Invitee

Dr. Dilip Pangavhane, Invitee

Dr. Shendage Dadasaheb J., Invitee

9. FACULTY RESEARCH AND PUBLICATIONS

9.1 International Conference Publications

- Kiran Shende, **Neeraj Agrawal**, Passive Cooling and Human Thermal Comfort: A Case Study, 3rd Int. conference on Recent Advances in Mechanical Infrastructure at IITRAM Ahmedabad, 6 – 8th Aug 2021.
- Prathamesh Gund**, Neeraj Agrawal**, Studies on Fish supply chain management: A case study, ICAET Conference 5 – 6th Sept 2021 at VIMEET, Khopali.
- Kiran Shende, **Neeraj Agrawal,** Enhancement of thermal and noise comfort environment using High Volume Low Speed Fan (HVLS): A Case Study in Conference on Technologies for future cities at PCE Panvel, 8 – 9th Oct 2021
- Mandar Padhye, **Neeraj Agrawal**, Integration of Phase Change Materials (PCMs) in Freezer of a Domestic Refrigerator: A comparative study, 7th National and 1st International Conference on Refrigeration and Air Conditioning [NCRAC 2022], 24 – 26 Feb 2022, IITG & IITT
- Ganesh S. Kadam, **Raju S. Pawade**, Cutting Force assessment in HSM of Inconel 718 aided with Water Vapour as an Eco-friendly Cutting Fluid, in proc. International Conference in "Recent Advances in Manufacturing (RAM - 2021)" June 10-12, 2021 S. V. National Institute of Technology, Surat, India.
- Avinash N. Khadtare, **Raju S. Pawade**, Suhas S. Joshi, ANALYSIS OF DRILLING THRUST FOR STRAIGHT AND INCLINED MICRO-HOLE IN THERMAL BARRIER COATED INCONEL 718 SUPERALLOY, Proceedings of the ASME 2021 International Mechanical Engineering Congress and Exposition, IMECE2021, November 1-5, 2021, Virtual, Online

- Ganesh Kadam, **Raju Pawade**, Parametric evaluation in context to functional role of Eco-friendly Water Vapour Cutting Fluid through Chip Deformation analysis in HSM of Inconel 718, In proceedings of International conference CAMMP 2021, Malaviya National Institute of Technology, Jaipur, Rajasthan, India, 24-25, July 2021
- Ketan A. Jagtap, **Raju S. Pawade**, Effect of Machining Parameters on Machined Flatness for Optical PMMA by Single Point Diamond Turning (SPDT), 7th International Conference on Recent Trends in Engineering & Technology (ICRTET- 2021, SNJB KB CoE, Chandwad, MS, 15-16 November 2021, Virtual.

9.2 International Journals

1. Date Abhijit, Patil Omprakash, Shet Shrikant, **Agrawal N**. Experimental studies on Transcritical CO2 heat pump system for simultaneous water cooling and heating application, Int. J. Green Energy, An Int. j. of Taylor and Francis, Vol. 19, 2022 https://doi.org/10.1080/15435075.2021.1941045.

2. Mandar Padhye, **Neeraj Agrawal**, Integration of Phase Change Materials (PCMs) in Freezer of a Domestic Refrigerator: A comparative study, Journal of The Institution of Engineers (India): Series C (Under Review)

3. **Pawade Raju** and Shinde Babasaheb, Study on analysis of plasma resistance variation in WEDM of insulating zirconia, MATERIALS AND MANUFACTURING PROCESSES, Taylor and Francis, 2020

4. Bhushan Nikam, Avinash Khadtare, **Raju Pawade**, Machinability Assessment Of AISI 4140 Hardened Steel using CBN Inserts in Hard Turning, International Journal of Modern Manufacturing Technologies, ISSN 2067–3604, Vol. XIII, No. 1 / 2021

5. **Raju Pawade**, Ganesh Dhurde, Wire EDM of Aerospace grade 17-4 PH Stainless Steel: Application of Evolutionary JAYA Algorithm, International Journal of Mechatronics and Manufacturing Systems, Inderscience Publisher, 2021 Vol.14 No.3/4, pp. 240-265

6. Kuldeep A. Mahajan, **Raju Pawade,** Vinod Mishra, Tool Vibration Effect on Surface Roughness of Polymethylmethacrylate in Diamond Turning, Materials and Manufacturing Processes, Taylor & Francis, pp. 1-13

7. Vishal Yashwant Bhise and **Bhagwan F. Jogi**, "Recent developments on sustainable lubricants by using vegetable oil based nanofluids in machining", Materials Today: Proceedings, 2022, Elsevier, in press (Scopus)

8. **Bhagwan F Jogi**, Influence of multiwall carbon nanotubes and styrene acrylic acid on morphology and thermal properties relationship of 80/20 PA6/ABS blends, Plastics, Rubber and Composites, Taylor & Francis, 2022, pp. 1-15. Cited by 1 (Scopus)

9. **Bhagwan F Jogi,** Reactively compatibilized 80/20 PA6/ABS blends: effect of various compatibilizer's on morphology, dynamic mechanical analysis, crystallisation and thermal degradation kinetics, Plastics, Rubber and Composites, Taylor & Francis, 2022, pp. 1-14. Cited by 1 (Scopus)

10. Aishwarya Gosavi, Atul Kulkarni, Yogiraj Dama, Abhijeet Deshpande, **Bhagwan Jogi,** Comparative analysis of drop impact resistance for different polymer based materials used for hearing aid casing, Materials Today: Proceedings, vol. 49, Elsevier, 2022, pp. 2433-2441. (Scopus)

11. KR Madavi**, BF Jogi**, GS Lohar, Metal inert gas (MIG) welding process: A study of effect of welding parameters, Materials Today: Proceedings 51, Elsevier, 2022, pp. 690-698. Cited by 2 (Scopus)

12. KR Madavi, **BF Jogi**, GS Lohar, Investigational study and microstructural comparison of MIG welding

process for with and without activated flux, Materials Today: Proceedings 51, Elsevier, 2022, pp. 212-216. Cited by 1 (Scopus)

13. Ganesh Lohar, Pankaj Tambe, **Bhagwan Jogi**, Migration Induced Localization of Multiwalled Carbon Nanotubes in PP phase of PP/ABS Blend and their Hybrid Composites: Influence on Mechanical and Thermal Properties, Materials Today: Proceedings, vol. 49, Elsevier, 2022, pp. 1215-1224. Cited by 1 (Scopus)

9.3 National Journals and Conferences

1. **Raju Pawade,** Nikhil Khatekar, Rohit Wakade, Application of Evolutionary Teaching-Learning based Optimization (TLBO) in Wire Electro discharge Turning, 4th National Conference on Multidisciplinary Design, Analysis and Optimization (NCMDAO), to be held virtually on October 7-9, 2021, IIT Chennai.

10. DEPARTMENT ANNUAL BUDGET 2021-2022

Sr. No.	Details	Amount
P. 1.1	Salaries and Wages Teaching	
P. 1.2	Salaries and Wages Non-Teaching	
P. 1.3	Ad-hoc Salary Teaching	
P. 1.4	Ad-hoc Salary Non-Teaching	
P. 1.5	Daily Wages Salary	
P. 1.6	Machinery & Equipment UG	8,95,620
P. 1.7	Machinery & Equipment PG	53,100
P. 1.10	Laboratory Expenditure(recurring)	2,05130
P. 1.11	TA/DA	29,142
P. 1.12	Medical/LTC	
P. 1.14	Conferences & Seminars	9,200
P. 1.15	Office Expenses	1,61,59
P. 1.16	Departmental Students' Activities	

11. LABORATORIES

11.1 Major Facilities/Instruments/Equipment added in Laboratories

Sr. No.	Name of Instrument	Qty.	Total Cost
1	CNC TRAINER LATHE with Supporting Software, Training Manuals	01	4,79,476.69/
2	CNC MILL TRAINER MT- 200 with Supporting Software & Training Manuals	01	4,62,272.36/-

3	A.C. 1.5 Tonnes Videocon,	03	77,000/-
4	CAD / CAM Table, Size: H 30” X L 96” X W 24”, 6 Drawer with Lock	10	92,936/-
5	Computer system	06	1,92,000/-
6	HP Compaq system	05	1,75,000/-
7	Liebet made Online UPS	01	77,480/-
8	HP Compaq Presario Computer System SR1530	05	1,92,500/-
9	HP Compaq Presario Computer System SR1530	05	1,92,500/-
10	Desktop HP DX 7200 Processor Computer System	15	6,52,500/-
11	Desktop HP DX 7200 Processor Computer System	05	217500/-
12	Desktop HP DX 7200 Processor Computer System	10	4,18,270/-
13	Computer Application Software (Autodesk Inventor Professional 2008 Education Network Copy) (Sr. No. 346-8911-0604, 0998, 1255,1592,1889,2186,2483,0703,1790,1493,1097,1394,1691,1988, 2285,2582,0802,1196,2087,2384)	20	6,34,400/-
14	Computer Application Software (Autodesk Inventor Professional 2008 Education)	20	90,000/-
15	Online UPS System of KVA Capacity	01	2,27,595/-
16	Laptop DELL Vostro 1510 (Sr. No. 68GL2BS, D8GL2BS, 26HN2BS,68GL2BS, B8GL2BS, 78GL2BS, CIDN2BS, 58GL2BS, 88GL2BS, 98GL2BS, 48GL2BS)	11	4,34,500/-
17	HP/8300 Desktop computer with preloaded operating system Microsoft windows 8	20	7,56,000/-
18	HP/830 Desktop Computer with Preloaded operating System	15	
19	Carbon Dioxide 2 kg	01	19,096.87/-
20	Drawing Desk Frame	110	55,249/-
21	Drawing Stool	180	52,189/-
22	G.I.Pipe 2350 mm dia	8mtr	68,888/-
23	Fluid Mechanics Test Bench	02	2,95,510/-
24	SAJ make Eddy current dynamometer	01	1,12,760/-

25	Constant temperature oil bath with ms powder stand	01	68,000/-
26	Metzer - m Trinolar Research metallurgical microscope	01	1,24,110/-
27	Microhardness Tester Shimadzu make	01	1,602300 yen
28	Measuring microscope	01	404468 yen
29	Automatic Specimen mounting press Bain mount	01	1,18,390/-
30	Slip Gauge Accessories	1 set	1,58,207/-
31	Digital Venturis 466 as Nodes	04	3,62,660/-
32	2KVA CVT Elect.	01	95,250/-
33	Rank Tailor Hobson Surface Roughness Testing Instrument Surtronic 3+(Battery Operated Printer)	01	1,90,179/-
34	Gear Rolling Tester	01	96,286/-
35	Baker Dot Matrix 24 column print Module "PM" suitable for ED1/EC10	01	10,400/-
36	Monochromatic Light Source	01	52,312/-
37	Refrigeration Test Rig	01	75,240/-
38	Pyrometer	01	1,44,000/-
39	Universal Testing Machine	01	1,50,000/-
40	Pyranometer	01	1,84,653/-
41	Vibration Laboratory	01	86,130/-
42	Cam Analysis Apparatus	01	37,125/-
43	Journal Bearing Apparatus	01	66,037/-
44	Coriolis Acceleration Apparatus	01	79,531/-
45	Lab View Software	01	1,41,614/-
46	CRIO-9025	01	3,15,188/-
47	CRIO-9118	01	2,94,228/-
48	NI 9234	01	2,43,661/-

49	NI 92194	01	72,181/-
50	12" Industrial Panel	01	72,181/-
51	PS-2 Power supply for field point	01	1,68,074/-
52	CDAR 9174 Compact	01	83,250/-
53	Stat graphics centurion professional xv -01 box with CD and Manual	02	62,450/-
54	Metallurgical sample saw	01	1,23,750/-
55	Wear and Frication monitor	01	3,93,750/-
56	Refrigeration test ring	01	84645/-
57	Fluid mechanics test bench 02	01	2,95,510/-
58	Signal cylinder Two stoke petrol engine test ring.	01	87,912/-
59	Fluid mechanics test bench 01	01	1,85,364/-
60	Heat transfer in Forced Convocation	01	59,061/-
61	Wire Electrical Discharge Machine- ECOCUT- Electronica	01	2509000/-
62	Constant temperature oil bath with ms powder stand	01	68000/-
63	Inverter 600 VA luminous make	01	10940/-
64	Electromagnetic Flow Meter	01	23388/-
65	Magnetic dial stand	01	6750/-
66	Monochromatic Light Source	01	45562/-
67	Mounting Arrangement	01	6325/-
68	Erichsen cupping tester	01	41468/-
69	CNC Simulators for offline programming (HASS USA Make, Model: CSMD)	06	999000/-
70	High Speed Camera	01	2298339/-
71	Mini smart classroom	01	178925/-
72	Engineering Graphics Laboratory HP Multifunction Printer	01	23,800/-

73	Refrigeration and Air Conditioning Laboratory Vapour Compression refrigeration	01	1,12,000/-
74	laptops (In-progress) *	20,44,870/-	
75	Desktop and Monitor (In-progress)*	1,96,400/-	
76	Vapour Compression refrigeration test Rig*	1,12,000/-	
77	SPE 20 ATT AC WS pulse Generator with standard accessories*	2,95,000/-	
78	IM001 Air flow manometer plus fluid *	84,960/-	
79	Environmental chamber *	2,04,750/-	
80	Nineteen Heat Transfer Lab setups *	6,36,020/-	

(All * Facilities/Instruments added/Proposed in year 2021-2022)

SOME MAJOR INSTRUMENTS IN THE LABORATORIES 20121-2022

	Environmental chamber

	Hilton make Air conditioning Test Rig
	Vapor Compression Test Rig
	Heat transfer in forced convection apparatus

	Heat Transfer in natural convection
	Heat pipe demonstration unit
	Thermal Conductivity insulating powder

	Thermal conductivity of gases and liquid apparatus
	Thermal Conductivity of metal bar
	Stefan Boltzmann Apparatus

	Parallel Flow and counter flow heat exchanger

12. PROJECTS

12.1 List of Undergraduate Projects

Sr. No.	Name of the Project	Advising Faculty
1	HVAC design for Multispecialty Hospital	Dr. N Agrawal
2	Validation of AHC For Accurate Prediction of Thermal Comfort and IAQ	
3	Identification of Defect Possibilities for EVTA and Implementation of subsequent control action	
4	Energy Simulation of an Office Building	
5	CMTI Banglore drishti, Title: Inhouse Generation of Electrochromic Glass & Manufacturing of Vertical Axis Wind Turbine	Dr. M. S. Tandale
7	Internship Project with CCTech Pune, Title: Data converter for web scraping oil and gas production data from legacy IBM mainframe EBCDIC format to modern formats for Data Analytics	
8	Internship Project in Steradix Solutions Pvt Ltd, Title: ADVANCED ENGINEERING TECHNIQUES FOR INDUSTRIAL DESIGN	
9	Design and Simulation of All terrain vehicle	Dr. H.S.Joshi
10	Design and development of Test rig for oil filters at CMTI Banglore drishti	
11	Spider Fixture design for welding at Hypro Engg.	
12	BTP on Pneumatic Engine	Dr. V. G. Sargade

13	Rukart Tech Pvt Ltd	
14	ASAL Automotive Stampings and Assemblies ltd. (A TATA enterprise) Pune	
15	Acoustic Emission Characteristics Studies in Micro Drilling of Titanium -CFRP stacked composite	Dr. R. S. Pawade
16	Analysis of car Bumper using ANSYS under different conditions and for different materials.	
17	File Converter-STL to OBJ and vice versa Centre for Computational Technology(cctech) pune	
18	DESIGNING A HVAC SYSTEM FOR A MULTI-SPECIALITY HOSPITAL	Dr. R P Kate
19	Internship: Process design of steam trap and industrial problems	
20	Design and Analysis of Vertical Axis Wind Turbine	
21	Design of Hydraulic Power Unit	Dr. M. Sadaiah
22	Development and Enhancement in Machining Techniques on CNC Machine	
23	Benchmarking and Designing of Electric Motor for a Single Seater Electric Scooter	
24	Manufacturing of Unthank	
25	Design, Analysis and Optimization of Punching Operation Carried out by Power Press Machine	
26	Highway Power Generation using Vertical Axis Wind Turbine	
27	Leena Industries Solapur	Dr. D B Waghmare
28	Enaltech Laboratories Pvt. Ltd. Badlapur, Mumbai	
29	SVR InfoTech, Pune	
30	BTP-Design of Automatic Solar Panel Dust Cleaner and Sun Tracker	Dr. S R Dhale
31	Internship-Analysis of Sewage Treatment Plant, Hydroshpere Envirotech, Navi Mumbai	
32	Internship- Analysis and Testing of Automobile Radiator test Rig MSRTC Mumbai	

33	Performance Improvement of Solar Photovoltaic system with CFD Analysis	Ms. Nivedita Patil
34	Excel Roha	Pratik Dange
35	Tubon Energy Systems, Plot no. W-67, M.I.D.C. Shiroli, Dist Kolhapur 416122 Maharashtra	
36	Akshay Metal Industries at A-19, Akshay Chowk, National Highway 211,M.I.D.C , Osmanabad, Maharashtra 413501	
37	TATA MOTORS LIMITED (CVBU), PUNE (Sludge Press Machine, Axle Inversion Unit and Pipe Bending Fixture Design	Prashant Agwane
38	Enaltec labs pvt ltd , Ambernath MIDC, ambarnath East Dist :Thane, Maharashtra 421506 (Engineering & Maintenance)	
39	SHIRODKAR PRECI COMP PVT LTD,PUNE (Process Improvement for Cycle time reduction & Cost Optimization of Raw Material)	
40	Automatic wall Painting machine	Mr. Neeraj P. Kulkarni

12.2 List of TPCS Projects

Sr. No.	Title	Advising Faculty
1	Water level indicator	Dr. Neeraj Agrawal
	Application of PCM in evaporative cooler	
2	Mango plucker	Dr. M. S. Tandale
3	Solar Pizza Oven	Dr. M. Sadaiah
4	Ultrasonic paste Repeller	Dr. R. P. Kate
5	Solar Lamp	Dr. R. S. Pawade
6	Water purifier using natural sources	
7	Modified agriculture equipment	Dr. G S Warkhade
8	Modification of stair walker	Dr. D. B. Waghmare
9	Fertilizer prayer	Dr. H N Warhatkar

10	Plastic bricks	
11	Hydraulic lift	Dr. H. S. Joshi
12	Robotic arm with line follower	
13	Smart Irrigation system	Dr. S R Dhale
14	Traffic signal controller	
15	Grass cutter	Mr. Pratik Dange
16	Snake catcher	
17	UV Document Steralizer	Mr. Neeraj Kulkarni
18	Mechanical Alarm	
19	Solar charger	Ms. Nivedita Patil
20	Advance technique for agriculture	Mr. Prashant Agwane

12.3 List of PhD candidates

Sr. No.	Name of the Candidate	Registration Number	Broad area of Research	Research Guide
1	Thorat Shrikant B.*	RS20140115	Some investigations in photochemical machining of cobalt chromium alloy.	Dr. M. Sadaiah
2	Chavan Ajay A.*	RS20120109	Hard turning using coated carbide tools.	Dr. V.G.Sargade
3	Nipanikar Suresh R.*	RS20120112	Machinability Studies of Ti6Al4V in Dry and Minimum Quantity Lubrication (MQL) Environment.	Dr. V.G.Sargade
4	Shinde Babasaheb D.	RS20140113	Machinability assessment of low electrical conductivity ceramics by using WEDM.	Dr. R. S. Pawade
5	Madavi Kishor R.	RS20140110	Optimization of welding process parameters.	Dr. B.F. Jogi
6	BhanavaseVishavjit L.	RS20140106	Study of tribologicalbehaviour of polymer composite.	Dr. B.F. Jogi
7	NirantarShripad R.	RS20150103	Preparation and Characterization of Polymer based nano composite.	Dr. B.F. Jogi

8	Bhise Vishal Y.	RS20150101	Sustainable manufacturing: An Eco-intelligent design of product system	Dr. B.F. Jogi
9	Gujar R.A.	RS20140101	Some investigations in Biomechanical properties of Lower Extremity Bones	Dr. H. N. Warhatkar
10	Pansare S. R.	RS20140102	Some studies on Effect of Crack in Beam/Shaft	Dr. H. N. Warhatkar
11	Kadhane Somnath Hanumant*	RS20120106	Some investigation into mechanical behaviour of soft biological tissues	Dr. H. N. Warhatkar
12	Rohit V. Zende	RS20180102	Intelligent Monitoring of Cylindrical parts using Industry 4.0 Approach	Dr. R. S. Pawade
13	Pankaj M. Dhongade	RS20180103	Processing of Polymer-Matrix Composite Material	Dr. V.G.Sargade
14	Sagar Sakharkar	RS20180104	Mechanical Micro-drilling of Titanium CFRP stack material	Dr. R. S. Pawade
15	Prasad J Waste	RS20180105	Some Investigations in WireEDM	Dr. B. F. Jogi
16	Sagar Ajanalkar	RS20180106	Robot based ASRS System	Dr. H. S. Joshi
17	Deshmukh Shahaji Prakashrao	RS20190103	Manufacturing	Dr. V.G.Sargade
18	Yogiraj Basavraj Dama	RS20190104	3D implant design	Dr. B. F. Jogi
19	Agwane Prashant Dattu	RS20190108	Evaluation of 3D printing strategies for strength and material optimization	Dr. H. S. Joshi
20	Avinash Khadtare	RS 20140108	Micromachinng of TIB coated Inconel 718	Dr. R. S. Pawade
21	Kuldeep A Mahajan	RS 20140111	Diamond Turning	Dr. R. S. Pawade

(* PhD Degree awarded in 2021-2022)

13. INDUSTRY INSTITUTE INTERACTION

13.1 Industry Projects by Students

Sr. No.	Name of the Student	Name of the Project and Industry	Advising Faculty
1		HVAC design for Multispecialty Hospital 1. Validation of AHC For Accurate 2. Prediction of Thermal Comfort and IAQ	Dr. N. Agrawal

13.2 Industry Institute Interaction by Faculty

Sr. No.	Name of the Faculty	Name of the Industry and Interaction
1.	Dr. N. Agarwal	• ISHRAE • Gratitude Energy Pune • Bajaj Auto Aurangabad, • CC Tech Pune for BTP
2.	Dr. R. S. Pawade	• SAE
3.	Dr. B. F. Jogi	• DRDO, Mumbai
4.	Dr. M. Sadaiah	• Internship Projects at CMTI • Bangalore; ARAI, Pune • Viraj Prifiles Ltd, Boisar • Asmita Engg. Equipment's-Scissor Lift Manufacturer, Pune • Kanakadhara Industries Pvt Ltd, Jalna • Hypro Engg. Pvt Ltd, Mulshi
5.	Dr. M.S. Tandale	• Internship Projects at CMTI • CC Tech Pune • Steradix (Consultant Pune)
6.	Dr. D. B. Waghmare	• 4 Internship projects at SVR Infotech Pune • 1 Internship project at ENALTECH Labs Pvt. Ltd. Mumbai • 1 Internship project at Leena industries, Solapur
7.	Mr. Neeraj Kulkarni	• Tubon Energy System, Kolhapur

13.3 Industry/Exhibition visits by Faculty, UG, PG students and Research candidates

Sr. No.	Name of Industry/Exhibition	Place	Visit by
1	Gratitue Energy	Pune	Faculty/TPO
4	h2e Power Systems Pvt. Ltd	Pune	Faculty/TPO
5	Soft Box	Panvel	Faculty/TPO

14. WORKSHOPS ATTENDED BY FACULTY MEMBERS, RESEARCH SCHOLARS AND PG STUDENTS

14.1 Workshops attended by Faculty Members

14.2 Expert Lecture by Faculty Members

Sr. No.	Title	Date	Participants
1	AICTE Examination reform workshop	23-25 August 2021	Dr. N. Agarwal
2	AICTE EVC process	23-25 June 2021	Dr. N. Agarwal
3	AICTE internship workshop	21 Nov 2021	Dr. N. Agarwal
4	5 Days UHV workshop	13-17 Dec 2021	Dr. N. Agarwal
5	3D Printing Solutions for Medical Innovation	17-18 July 2021	Dr. R. S. Pawade
6	Numerical simulation and soft computing techniques in advanced manufacturing processes	5th – 09th of July 2021	Dr. R. S. Pawade
7	Administrative staff professional Development	27-29 May 2021	Dr. R. S. Pawade
8	Design Thinking and Creativity for Educators	13-17 December 2021	Dr. R. S. Pawade
9	DST-SERB Winter Karyashala on Luminescent Nanomaterials for Photonic and Bio-photonic Applications" held at Institute of Nano Science and Technology	17th – 23rd, September 2021	Dr. B. F. Jogi
10	undergone Innovation Ambassador training (Advanced Level, Total 16 Sessions of 30 contact hours) conducted by MoE's Innovation Cell & AICTE	30th June - 30th July 2021	Dr. G. S. Warkhade
11	Inculcating universal human values in technical educatoin	15-19 Nov, 2021	Dr. D. B. Waghmare
12	Workshop on Examination Reforms	10-12 Jan 2022	
13	AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "Innovation Management	06/09/2021 to 10/09/2021	Dr. S. R. Dhale
14	Innovation Ambassador Training conducted by MoE's Innovation Cell & AICTE	16- 02-2021	Dr. S. R. Dhale
15	Online National Workshop on NAAC Accreditation, Engineering Staff College of India, Hyderabad.,	3-4 March 2022	Dr. M.Sadaiah
16	Future Perspective of Non-Conventional, Renewable & Clean Energy Resources	9-13 may 2021	Mr. N.P.Kulkarni
17	ICT Tools for effective teaching learning	23-28 may 2022	Mr. N.P.Kulkarni

Sr. No.	Name of the Event	Faculty delivering the Lecture
1.	Residual Stress Measurement of Inconel 718' in AICTE-ISTE Induction /Refresher Program 2021-22 on "Recent Advances in Materials Science and Engineering", from 18th – 24th January, 2022 at SVERI Pandharpur (MS)	Dr. R. S. Pawade
2.	Mechanical Micro drilling - Basics and Research in DTE Approved STTP on Advances in Manufacturing processes and Systems AMPS 22 from 21-25 February 2022 at GP Nashik (online mode)	Dr. R. S. Pawade
3.	AICTE-ISTE New Delhi sponsored Induction/Refresher program for Six Day's to the faculty members, on "Effective Teaching Learning for OBE" from 14th February 2022 – 19th February 2022	Dr. B. F. Jogi
4.	on Advanced Nano Materials, ICAN 2021 on 14th & 16th December, 2021 by Centre for Nano Science and Technology, Amal Jyothi College of Engineering and School of Energy Materials, Mahatma Gandhi and University Gdansk University of Technology, Kottayam.	Dr. B. F. Jogi
5.	International Online Conference on Advanced Nano Materials, ICAN 2021 on 14th & 16th December, 2021 by Centre for Nano Science and Technology, Amal Jyothi College of Engineering and School of Energy Materials, Mahatma Gandhi University and Gdansk University of Technology,Kottayam.	Dr. B. F. Jogi
6.	Recent Advances in Mechanical Engineering organized by Agnel Technical College (Polytechnic), Bandra Mumbai on 12th- 13th June 2021.	Dr. B. F. Jogi
7.	Worked as Chairperson at Technical Programme of International Online Conference on Nano Materials (ICN 2021) during Invited Session on Ist Day of the Conference (09th April 2021), delivered Expert Talk at Hall 3 Organized by Mahatma Gandhi University, P.D Hills P.O, Kottayam, Kerala, India & Wroclaw University of Technology Wroclaw, Poland & Gdansk University of Technology Poland & Wuhan University China.	Dr. B. F. Jogi
8	Life Struggle of Dr. Babasaheb Ambedkar, its present status and future roadmap.	Dr. D. B. Waghamre
9	Role of New Education Policy in Higher Education	
10	Dr. Bbasaheb Ambedkar - Founding father of Modern India	

15. ACADEMIC ACHIEVEMENTS

15.1 Faculty Achievements

Following list shows the statistics of citation index published by the faculty members of the department.

Sr. No.	Name of the Faculty	Total citations	h Index	i10 Index
1	Dr. N. Agrawal	81	15	18
2	Dr. R. S. Pawade	261	17	25
3	Dr. B. F. Jogi	336	9	8
4	Dr. M. Sadaiah	415	12	18
5	Dr. M.S. Tandale	309	9	9
6	Dr. G. S. Warkhade	55	4	3
6	Dr. D. B. Waghmare	18	2	1

15.2 Distinguished Alumni of the Department

Sr. No.	Name	Name of the Company/Institution	Designation
1	Chandrashekhar Singh	Infosys Ltd.	Lead Technology Specialist
2	Vikram Masur	Siemens Indu Software Pvt. Ltd.	Manager
3	Kantilal Puri	Thyssenkrupp Industries, India	Manager
4	Sandeep Gosavi	John Deere Technology Center, India	Manager
5	Nilesh Kargutkar	Infosys Ltd.	Senior Engineering Manager
6	Amey Pore	Tata Technologies	Project Manager
7	Indranil Marathe	Precision Auto & Robotics Ltd.	Lead Member
8	Rajesh Ghadi	Air India	Senior Engineer
9	Jitendra Pathak	Dextra India	Director- Sales & Operations
10	Jitendra Deshmukh	Voltas Ltd.	Procurement Head
11	Nitin Tiwari	Ebmpapst India Pvt. Ltd.	Regional Sales Manager
12	Milind Choudhary	Sterling & Wilson Pvt. Ltd.	Procurement Senior Manager
13	Sachin Pawar	ShapoorjiPallonji	Assistant General Manager

14	Raju More	Reliance Group of Industries	Manager
15	Dr.Shivkumar Iyer	Rowan University, USA	Assistant Professor
16	Sandip Jadhav	CC Tech Pune	Chief Executive Officer
17	Nagesh Belure	Nyantara Enterprises, Pune	Entrepreneur
18	Yogesh Patil	DuFlon Industries Pvt. Ltd.	Head, Research & Development
19	Dr. Vikas Sargade	Dr. BATU	Professor, Former Registrar, Dean

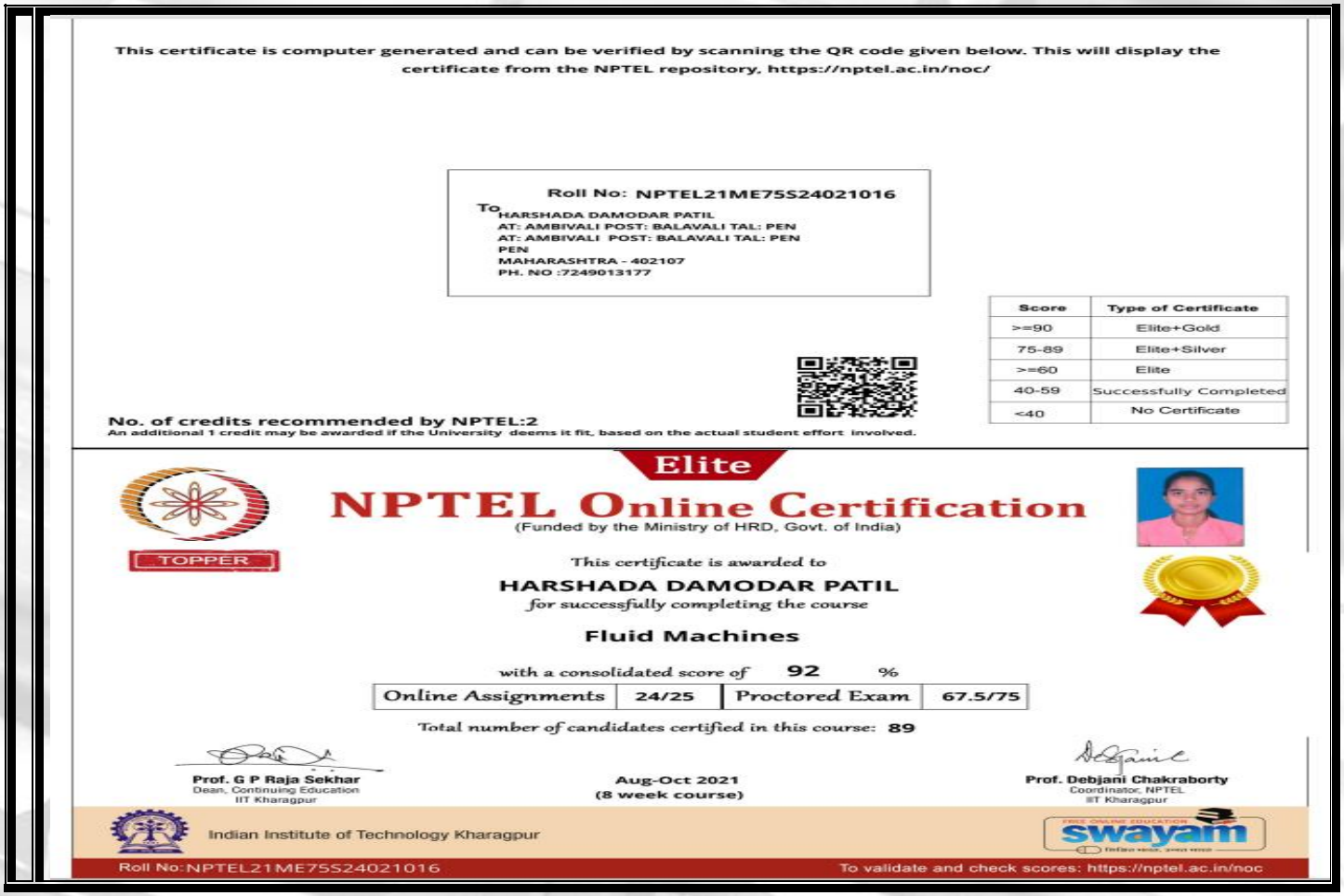
15.3 STUDENTS ACHIEVEMENTS

15.3.1 ISHRAE Chapter

- ISHRAE National Student Design Competition 2021-22 NSDC 86 ISHRAE Mumbai Chapter West
  1 Sarthak Prasad Shindikar , Mugdha Deepak Durge, Samruddhi Mirgane, Harshada Patil
  2. Rahul Wagh

15.3.2 NPTEL Local Chapter

- Harshada D Patil scored 92% in Fluids Mechanics Aug Oct 21



This certificate is computer generated and can be verified by scanning the QR code given below. This will display the certificate from the NPTEL repository, https://nptel.ac.in/noc/

Roll No: NPTEL21ME75S24021016

To HARSHADA DAMODAR PATIL
AT: AMBIVALI POST: BALAVALI TAL: PEN
AT: AMBIVALI POST: BALAVALI TAL: PEN
PEN
MAHARASHTRA - 402107
PH. NO :7249013177

Score	Type of Certificate
>=90	Elite+Gold
75-89	Elite+Silver
>=60	Elite
40-59	Successfully Completed
<40	No Certificate

No. of credits recommended by NPTEL:2
An additional 1 credit may be awarded if the University deems it fit, based on the actual student effort involved.

Elite

TOPPER

NPTEL Online Certification
(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to
HARSHADA DAMODAR PATIL
for successfully completing the course
Fluid Machines

with a consolidated score of 92 %

Online Assignments	24/25	Proctored Exam	67.5/75

Total number of candidates certified in this course: 89

Prof. G P Raja Sekhar
Dean, Continuing Education
IIT Kharagpur

Aug-Oct 2021
(8 week course)

Prof. Debjani Chakraborty
Coordinator, NPTEL
IIT Kharagpur

Indian Institute of Technology Kharagpur

swayam

Roll No:NPTEL21ME75S24021016

To validate and check scores: https://nptel.ac.in/noc

15.3.3 GATE Scores (GATE 2022)

Following students have a qualified GATE 2022 score from the department of mechanical engineering during academic year 2021-22.

- Mr. Kundeshwar vijay pundalik, B. Tech. Final Year Mechanical secured AIR 155 in GATE 2022 in Engineering Science stream
- Other stduents are Pratik Chandrakant Patil, Kriteemoy Basu, Mandar Dodkulkar Mandar Mahesh Dodkulkar

Additional Achievement

- Mr. Sanket S kumbhar had secured second best project award (AIR 2) on his innovation Mechanical Pressure Cooker Whistle With Counter and Alarm in the Research Convention 2021-22 ogannized by Association of Indian University at National level at AMET Chennai during March 27-28 2022
- Four stdunts Gaurav Rajendra Khirdikar, Pallavi Hemantkumar Warhatkar, Ramkrishna Dakwa and Manashi Kasare were selected for Internshsip at CMTI Banglore at National Level

16. DEPARTMENTAL ACTIVITIES BY FACULTY AND STUDENTS

75@AKAM (month of February)-Organized Patriotic Song Competition

75@AKAM (month of March)- Organized Speech on Unsung Freedom Fighter of India

75@AKAM (month of April)- Organized Essay writing competition

75@AKAM (month of May)- Organized Poster presentation

75@AKAM (month of June)- Organized Speech on “Dr. Babasaheb Ambedkar – Founding Father of Modern India”

	75@AKAM (month of June)- Organized Speech on “Dr. Babasaheb Ambedkar – Founding Father of Modern India” delivered by Dr. D. B. Waghmare

	75@AKAM (month of March)- Organized Speech on Unsung Freedom Fighter of India

16.2 ISHRAE Chapter 2021-22

The local chapter of ISHRAE (Indian Society of Heating, Refrigerating & Air Conditioning Engineering) conducted various activities under their banner. Various events were conducted and local chapter of Dr. BATU brought numerous accolades with them. The working committee of year 2021-22 is given below.

Sr. No.	Name of Member	Year	Position
1	Mugdha Durge	2021	President
2	Priti Watgure	2021	Secretary
3	Manshi Kasare	2021	Treasurer
4	Samruddhi Mirghane	2021	Active Member
5	Kriteemoy Basu	2021	Active Member
6	Gaurav Khirdikar	2021	Active Member
7	Shweta Brahmankar	2021	Active Member
8	Shivam Kadukar	2021	Active Member

16.2 MESA (Mechanical Engineering Students Association), TNPC (Members of Mechanical Engineering) and SAE (Society of Automobile Engineers)

SAE 2021-2022

Sr no	Name	Sr no	Name
1.	Vikas Salunkhe	13.	Ritik Gadge
2.	Devesh Deshmukh	14.	Nilesh Govindrao Mahmadapure
3.	Prashant Sudhakar Chaudhari	15.	Siddhesh Santosh Mhaparle
4.	Sanket Sanjay Parthe	16.	Vaibhav Namdeo Masirkar
5.	Niranjan Ulage	17.	Sakshi Sanjay Shinde
6.	Sarthak Prasad Shindikar	18.	Abhishek Padmakar More.
7.	Sumeet Manoj Turkar	19.	Kunal Phadatare
8.	Shreyash Ganpati Lokare	20.	ManasiAshok Kasare
9.	Siddharth Mahadu Kamble	21.	Shweta Brahmankar
10.	viraj vijay chogale	22.	Shreyash Nitin Wankhede

11.	Pratiksha pandurang adsul	23.	Vignesh Bharat chandorkar
12.	Rahul Sonawane	24.	Bhushan Rajabhau jadhav

SAE BAJA 2021-2022

17. FIVE-YEAR DEVELOPMENT PLAN (2019-2024)

Expansion of Academic Activities:

- Academic programs to be added:
  - ✓ M. Tech. in Design Engineering
  - ✓ M. Tech. in CAD/CAM in collaboration with Indo-German Tool Room
- To help in fetching QIP Centre to the university and become part of it.
- Each faculty member will have average three research scholars

Research & Development & Innovation:

- Number of research scholars to be enhanced to 3 research scholars per faculty at any point of time.
- Each faculty member with PhD qualification will have at least one sponsored project funded by external agency such as UGC/DST/AICTE/BRNS at any point of time.
- Each faculty member with PhD qualification will have at least one consultancy project from Industry per year.
- At least five commercial products/processes/ technologies to be developed by 2021.

Extension & Outreach Activities

- At least two CEPs/Workshops for industries/academia will be organized every year.
- At least one National/International conference to be organized every alternate year.

- At least 5 skill development program will be organized for the unemployed youth in the vicinity

Faculty & Staff Development

- Faculty will undergo on an average one week of training per year in the industry.
- Supporting staff will also undergo on an average one week of training as per training needs.

Networking

- At any point of time, at least five network projects in collaboration with organizations like ICT, IIT, RRCAT, BARC and NCL will be going on.

Co-curricular/Professional Chapter Activities

- SAE BAHA/ISHRAE chapters will be conducting activities with full swing. In addition, an ASM Students' Chapter is to be established.
- Robo-Study Circle will be established for the students.

18. DEPARTMENTAL STRENGTHS, WEAKNESSES, OPPORTUNITIES AND CHALLENGES

Major Strengths of the Department:

- Qualified and Experienced Faculty.
- Advanced Research Facility.
- Research culture through PGs and PhD programme.
- No faculty attrition.
- Industry surrounding.

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Weaknesses of the Department:

- Soft computing.
- availability of latest software.
- Decline admission at UG and PG.
- sufficient manpower.
- In line with technology upgradation.
- student placement.
- No grant for M. Tech. Program.

Opportunities:

- Collaboration with surrounding industries.
- Funded Research projects.
- Research Publications, Certificate programmes.
- Training and research collaboration with affiliated institutes.
- Industrial consultancy.

Challenges:

- UG/PG admissions.
- Student placement.
- keeping phase with Technology upgradation.
- Soft computing.