

# Newsletter

## Department of Mechanical Engineering



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Madhav Institute of Technology &  
Science, Gwalior-474005

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### Vision

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*"To develop innovative and creative Mechanical Engineers catering the global industrial requirements and social needs".*

### Mission

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1. To prepare effective and responsible graduate engineers for global requirements by providing quality education.
2. To enhance knowledge through project and internship in the field of Mechanical and allied engineering.
3. To guide students in acquiring career-oriented jobs in the field of Mechanical engineering.
4. To provide academic environment of excellence, leadership, ethical values and lifelong learning to cater the need of society by sustainable solutions.

#### Editorial Team

- Mr. Bhupendra Pandey
- Mr. Sayed Faiz Ahmad

#### Students

- Ravi Kushwah
- Aniket Gupta
- Kabir Saraswat

## PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

1. Graduates of the program will be able to have successful professional career.
2. Graduates of the program will be able to develop attitude of learning and become adaptable to dynamic industrial and social environment.
3. Graduates of the program will be able to design and develop mechanical system by using skills and knowledge of core competency along with allied engineering skill.
4. Graduates of the program will be able to undertake interdisciplinary research needed to build a sustainable society.

## PROGRAM OUTCOMES (POs)

### **Mechanical and Automobile Engineering Graduates will be able to:**

- PO 1** Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- PO 2** Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO 3** Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- PO 4** Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

- PO 5** *Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.*
- PO 6** *The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.*
- PO 7** *Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.*
- PO 8** *Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.*
- PO 9** *Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.*
- PO 10** *Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.*
- PO 11** *Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.*
- PO 12** *Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.*

## Faculty Outreached

5. Dr M.K. Gaur Delivered a lecture on "Solar Still: A solution to get pure water" on June 11, 2020 in a Five-Day online FDP on "Energy conservation and Renewable Energy" organised by School of Engineering and Technology, IGNOU, New Delhi.
6. Dr M.K. Gaur participated in a one-week TEQIP- online faculty development program on "MATLAB Applications in Engineering and Science (MAES-2020)"
7. Dr M.K. Gaur participated in an online faculty awareness program on "Outcome Based Education & NBA Accreditation" during May 12 to 17, 2020 organised by Rajgad Dnyanpeeth's Shri Chhatrapati Shivajiraje College of Engineering, Dhangawadi, Pune.
8. M. K. Gaur participated in "Faculty Awareness Programme on Research Methodology" organized by Research & Development Cell, Datta Meghe Institute of Engineering, Technology and Research Sawangi (Meghe), Wardha on 15th May 2020.
9. Prof. Dhruv Maggu attended a one-week national faculty development program and online training on "Open FOAM" from May 18 to 24, 2020 hosted by Prakasam Engineering College, Kandukur In association with Spoken Tutorial Project, IIT-Bombay, funded by National Mission on Education through ICT, MHRD, Govt. of India.
10. Dr Amit Aherwar participated in a five-day online FDP on "Evolution of teaching learning process – Post COVID 19"
11. Dr C.S. Malvi, Dr M. K. Gaur and Prof. Anand Kushwah participated in an online FDP on "renewable Energy Sources: A Way Ahead" from May 15 to 21, 2020 organised by ASM International Pune Chapter.

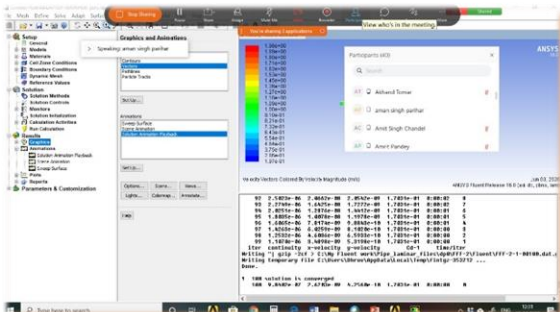
## Departmental Activities

### Online Internship: Advances in Mechanical Engineering

Sector	MW	% of Total
Central Sector	93,477	25.20%
State Sector	103,322	
Private Sector	173,308	
<b>Total</b>	<b>3,70,106</b>	
<b>Fuel</b>		
<b>Total Thermal</b>		
Coal	2,30,600	
Lignite	6,610	
Gas	24,937	
Diesel	510	
Hydro (Renewable)	45,699	12.4%
Nuclear	6,780	1.9%
RES* (MNRE)	87,028	23.5%
<b>Total</b>	<b>370,106</b>	

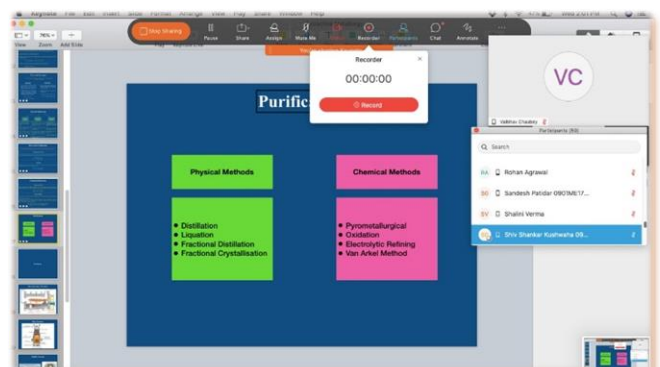
Department of Mechanical Engineering conducted an online internship on “Advances in Mechanical Engineering” under the Finishing School Program offered by the institute to the final year and pre-final year students. Following topics were covered in the four-week module offered by the department.

1. Thermal Analysis of Coal based Power Plants
2. Modelling of Physical Systems
3. Scope of Solar Energy Utilisation in India
4. ANSYS- FLUENT Software
5. Extractive Metallurgy
6. Miscellaneous Topics (Effective utilisation of MS Word and MS PPT, Using Mendeley for Study, Patent and Copyright etc.)



• The Numerical Technique that we will be going to be used for solving the governing equations is FVM because Ansys FLUENT uses this method. Basic idea is to divide the flow domain into little control volumes (CVs) and apply conservation law to each CV. We do this using integral form to governing equations and results we get the set of algebraic equations.

✓ For CFD applications we will be using FVM simply because of its one big advantage that it apply the conservation laws directly rather than indirectly to each discrete cells.



## Students Achievements & Activities

### National Science Gaming Competition 2020

Satyam Singh Rajawat, student of Automobile Engineering VIII Sem, participated and achieved 22nd rank in the “National Science Gaming competition 2020” organised by Dept of Atomic Energy, Govt of India.

### GATE 2020

Shubham Agarwal, student of Mechanical Engineering VIII Sem achieved an All India Rank 943 with a GATE-Score of 777 in GATE 2020 organised by IIT Delhi.

### Internship

Following students successfully completed internships on Internshala.

1. Anand Singh Chaurasiya
2. Aditya Soni
3. Abhishek Gupta
4. Nilaya Singh - Solidworks
5. Mayank Agrawal
6. Aditi Chourey
7. Ravindra sanadya - Solid Works
8. Ravindra sanadya - Solid Works

### Online Courses

1. Vasu Pandey successfully completed an online course 'Introduction to Mechanical Engineering Design and Manufacturing with Fusion 360' offered through Coursera.
2. Rishabh Jain and Kartik Karambelkar successfully completed an online course on 'python' course offered through Coursera.
3. Vibhor Choubey successfully completed an online course on 'Data Science and AI' offered through Coursera.

## Publications

1. Vedansh Chaturvedi, "Automated pick and throw robotic arm from conveyer belt", International Journal of Engineering and Technology, Jun. 2020.
2. Jyoti Vimal, "Designing and simulation of all terrain vehicle", International research journal of Modernization in engineering technology and science, Jun. 2020.
3. Sharad Shukla, Shiv Shanakar Kushwaha, Amrat Kumar Dhamneya, "Air conditioner coupled with indirect direct evaporative cooling system", international journal of advances in engineering and technology, vol. 2(1), Jun. 2020.
4. Shubham Shrivastava, "Pothole Detection System", International Research Journal of Engineering and Technology, Vol. 7(6), Jun. 2020.
5. Vikas Kumar thakur, M.K gaur, M.K Sagar, "role of advance solar desalination technique for sustainable development", springer nature switzerland, pp. 28-38, Apr 2020.
6. Patel Shivani, Gautam Garima, Jain Ayush, Gupta Suraj, and Sagar Manish, "Cost Effective Harvester for Small Scale Cultivators", International Research Journal of Engineering and Technology, pp. 01-08, vol. 07, Jun.
7. Vishesh Kumar Anand, Amit Aherwar, Mozammel Mia, Omer Elfakir, Liliang Wang, "Influence of silicon carbide and porcelain on tribological performance of Al6061 based hybrid composites" pp-106514, Jun 2020.
8. Arun Kumar Sharma, Rakesh Bhandari, Amit Aherwar, Camelia Pinca-Bretotean, "A study of fabrication methods of aluminum based composites focused on stir casting process", Materials Today: Proceedings, Apr 2020.